

# CZECH MYCOLOGY

Publication of the Czech Scientific Society for Mycology

Volume 58

August 2006

Number 1–2

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## Preliminary checklist of the genus *Psathyrella* in the Czech Republic and Slovakia

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Vašutová M. (2006): Preliminary checklist of the genus *Psathyrella* in the Czech Republic and Slovakia. – *Czech Mycol.* 58(1–2): 1–29.

A list of 53 *Psathyrella* species (*Psathyrellaceae*, *Agaricales*) known from the area of the Czech and the Slovak Republics is presented. Species names are completed with references to selected descriptions and illustrations in literature, distribution and ecology in the studied area and a list of specimens examined by the author. The main problems in *Psathyrella* taxonomy and possibility of further species records are outlined.

**Key words:** Czech Republic, Slovakia, *Psathyrellaceae*, *Psathyrella*, diversity, ecology, taxonomy

Vašutová M. (2006): Předběžný seznam druhů rodu *Psathyrella* v České republice a na Slovensku. – *Czech Mycol.* 58(1–2): 1–29.

V příspěvku je předložen revidovaný seznam 53 druhů rodu *Psathyrella* (*Psathyrellaceae*, *Agaricales*) nalezených na území České a Slovenské republiky. Jméno každého druhu je doplněno odkazy na vybrané popisy a vyobrazení v literatuře, údaji o rozšíření, ekologii a revidovaných položkách. Jsou nastíněny hlavní problémy taxonomie a možnosti nálezů dalších druhů rodu *Psathyrella* ve studovaném území.

### INTRODUCTION

*Psathyrella* (Fr.) Quél. is a traditional genus of dark-spored agarics proposed by Quélet (1872) and later delimited by Singer (1951) in a broader sense (including *Psathyra* (Fr.) Quél.). The genus is a member of the family *Psathyrellaceae* (Redhead et al. 2001), proposed in consequence of changes in nomenclature and taxonomy of the related genus *Coprinus*. The genus *Psathyrella* is probably polyphyletic according to preliminary studies based on molecular methods (Walther et al. 2005). Therefore, the genus concept should be revised.

The genus *Psathyrella* in its traditional concept is characterised as follows (Singer 1986, Smith 1972): „spore print of some shade of cocoa–color to chocolate–black, dull brick red, or avellaneous; spores typically with a truncate germ pore, rarely with a non–truncate very narrow pore and in few species without trace of a germ pore, smooth and with complex wall, fading appreciably in concentrated H<sub>2</sub>SO<sub>4</sub>. Pileus typically thin and fragile, frequently or mostly distinctly hygrophanous often glittery when faded, veil development various; stipe central, usually tubulose, flexuous or straight, hyphae usually with clamp connections.”

There are around 800 species names in the genus *Psathyrella* (according to Index fungorum; <http://www.indexfungorum.org>), the number of really existing described species may be about 600. Most of them have rather broad substrate relationship. However, some *Psathyrella* species are highly substrate–specific (*Sphagnum*, burnt places, decayed fallen trunks, etc.) and can be used as indicators for nature conservation.

The first monograph focused on North American species was elaborated by A. H. Smith (1972), the second one on west European species was written by E. Kits van Waveren (1985), based on his previous studies (Kits van Waveren 1971a, 1971b, 1972, 1976, 1977a, 1977b, 1980, 1981, 1982). These works were followed by several additional studies (Kits van Waveren 1987a, 1987b, 1988a, 1988b, 1992; Kits van Waveren and Örstadius 1986). An important contribution to *Psathyrella* taxonomy was made by H. Romagnesi (1952, 1966, 1975a, 1975b, 1976, 1982, 1986); Malençon and Romagnesi (1953) and Kühner and Romagnesi (1953). A key based on Kits van Waveren's work including Mediterranean species was published by F. Fouchier (1995). At present the genus is mainly studied by M. Enderle in Germany (1984, 1985, 1986, 1987, 1989, 1992, 1994, 1996, 1997a, 1997b, 1998, 2000, 2004; Enderle and Christan 1992; Enderle and Hübner 2005; Enderle and Reininger 1995; Enderle and Zuccherelli 1993), by M. Heykoop, F. Esteve–Raventós and G. Moreno in Spain (Heykoop and Esteve–Raventós 1994; Heykoop and Moreno 1998, 2001, 2002; Esteve–Raventós and Enderle 1992); by L. Örstadius in Sweden (1986, 1992, 2001a, 2001b, Örstadius and Huhtinen 1996; Örstadius and Ludwig 1987); by G. Tassi in France (1997, 2000) and by E. Arnolds in the Netherlands (Arnolds 2003).

In the Czech and Slovak Republics, occurrence of 36 species was mentioned by Velenovský (1921) (7 of them were classified in *Hypholoma*, 3 in *Psilocybe*, 18 in *Psathyra*, 6 in *Psathyrella*). A few articles about several species of *Psathyrella* have been published in Czech and Slovak journals (Kotlaba 1952, 1957; Kotlaba and Pouzar 1963; Kubička 1985; Svrček 1961, 1962, 1969; Šebek 1984; Škubla 1993; Veselský 1965). Velenovský described seventeen species new to science: *Psathyra laricina*, *P. alnetorum*, *P. pseudomycena*, *P. heterospora*, *Psathyrella rugosa*, *P. sulcata* (Velenovský 1921), *Psathyra carbonaria*, *P. fasciculata*, *P. graminicola*, *Psathyrella lateritia* (Velenovský 1940), *Psathyra solitaria*, *P. vacini*, *P. punctata*, *P. microspora*, *P. major*, *Psathyrella vernalis*, *P. filopes* (Velenovský 1947), the re-

vision of which will be prepared for publication in a separate paper. Only one generally accepted *Psathyrella* species – *P. typhae* was described from Slovakia (Kalchbrenner 1862), and one of its forms from the Czech Republic – *P. typhae* f. *acoris* (Veselský 1965). Recently, two Slovak checklists of macromycetes have been published (Lizoň and Bacigálová 1998: 29 species and 1 form of *Psathyrella*; Škubla 2003: 41 species of *Psathyrella*). However, the data on *Psathyrella* in these lists are based only on published records and herbarium specimens without critical revision of the material.

The aim of this study is to present a first critical list of species that have been found on the territory of the Czech and Slovak Republics.

#### METHODS

The list of species is based on fresh material collected in the years 2001–2005 by the author (deposited in the author's herbarium – MV) and on some specimens from the following herbaria: PRM, BRNM, BRA, CB, herbarium of Agency for Nature Conservation and Landscape Protection in Brno (AOPK), Slovak Academy of Science (SAV), and private collections of Ladislav Hagara (LH), Pavol Škubla (PS), Helena Deckerová (HD), Ján Červenka (JC) and Jiří Burel (JB) studied by the author. Microscopic observations were performed according to Kits van Waveren's method (Kits van Waveren 1971).

Due to the fact that some authors did not study collections with a microscope or did have not much experience with identification in the genus *Psathyrella*, literature data about *Psathyrella* records without revision of herbarium material are misleading. I mention them only in connection with examined specimens. In many cases it is not possible to revise published records, because herbarium material is mostly lacking or in a bad state – cystidia are often collapsed.

The information on each species is structured as follows: 1) basionym, sometimes synonym commonly used in Czech and Slovak literature; 2) description and 3) illustration – references to the most appropriate descriptions and illustrations in literature; 4) distribution – the genus *Psathyrella* has not been very well sampled in the studied area in the past decades. Therefore the number of examined specimens is not correlated with the real distribution of the species. Sufficient data are only available in the case of species with large fruitbodies or endangered and easily identifiable species. In order to describe the presupposed distribution of species I have used four categories based on my own five-year observation: very common (species is found very often and almost everywhere), common (species is found in its suitable habitat more times per year and its habitat is not rare), scattered (species is found in its suitable habitat less than three times per year and its habitat is not rare) and rare (species is not found every year, moreover its

habitat is rare). In the case of scattered and rare species, localisation coded by numbers of the phytogeographical units according to phytogeographical division of the Czech and Slovak Republics (Skalický 1988, Futák 1966) is attached (Fig. 1, 2). The Czech Republic is abbreviated CZ, Slovakia SK. Data about species included in the Red List of Czech macrofungi (Holec and Beran; in prep.) and the Slovak Red List (Lizoň 1995) are added. Abbreviations of Red List categories are used according to IUCN (2001). 5) ecology – habitats, substrate and fructification period – is based on my own observations and on data from labels of revised specimens; 6) specimens examined – list of studied specimens; if a herbarium does not have numbered specimens, a specimen is identified as herbarium abbreviation and combination of locality, date of collection and name of collector. 7) note.

The infrageneric system follows that by Kits van Waveren (1985), nomenclature is adapted according to later works, especially Enderle (2004) and Enderle and Hübner (2005).

## RESULTS

### LIST OF SPECIES

#### ***Psathyrella*** (Fr.) Quél.

##### **Subgenus *Psathyrella***

##### **Section *Psathyrella***

##### ***Psathyrella narcotica*** Kits van Wav.

Bas.: *Psathyrella narcotica* Kits van Wav., Persoonia 6: 305, 1971.

Descr.: Kits van Waveren (1985: p. 41–43).

Illustr.: Kits van Waveren (1985: fig. 1–5); Moser and Jülich (1996: *Psathyrella* 13).

Distribution: rare; CZ: 6, 93 (Fellner: pers. comm.); SK: not known.

Ecology: in forests; on soil along roadsides; Oct.

Specimens examined: JB Boubová, 11 Oct 2004, J. Burel and M. Beran; MV 05/207.

Note: the species has not been reported from the Czech Republic before.

##### ***Psathyrella corrugis* f. *gracilis*** (Fr.) Enderle

Bas.: *Agaricus gracilis* Fr., Syst. mycol. 1: 299, 1821; syn. *Psathyrella gracilis* (Fr.) Quél.

Descr.: Kits van Waveren (1971: p. 251–257).

Illustr.: Breitenbach and Kränzlin (1995: fig. 330); Kits van Waveren (1971: fig. 1–10, 32–37, 40–42).

Distribution: common; very often recorded during mycofloristical studies, but could be easily confused with other members of sect. *Psathyrella*.

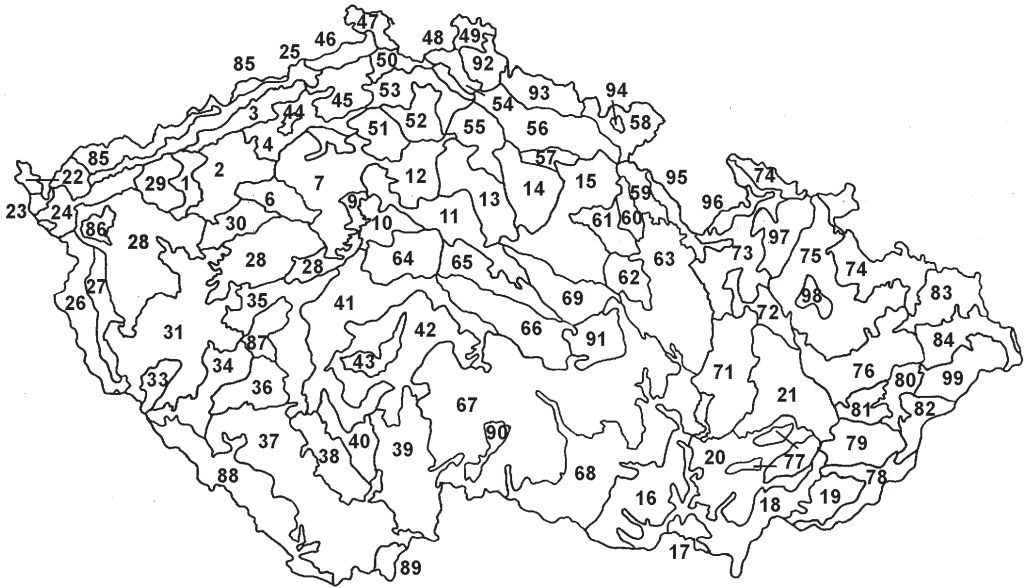


Fig. 1. Phytogeographical division of the Czech Republic (Skalický 1988).

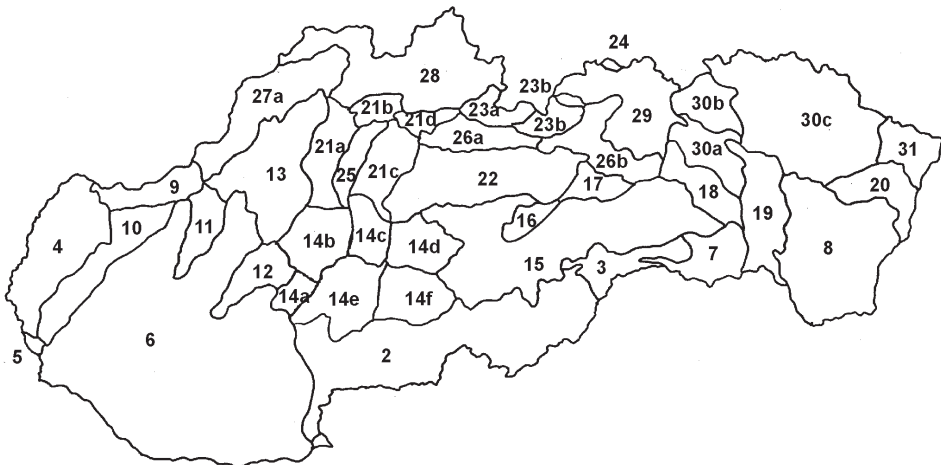


Fig. 2. Phytogeographical division of the Slovak Republic (Futák 1966).

**Ecology:** in deciduous forests, along stream banks and roadsides; terrestrial or attached to herb or wood remnants; Oct.–Nov.

**Specimens examined:** MV 00/006 (Tomšovský 2001), MV 02/594; MV 04/519; MV 05/147; MV 05/148; MV 05/156; MV 05/157; MV 05/174.

***Psathyrella pseudogracilis* (Romagn.) M.M. Moser**

**Bas.:** *Drosophila pseudogracilis* Romagn., Bull. Mens. Soc. Linn. Lyon 21: 152, 1952.

**Descr.:** Kits van Waveren (1985: p. 50–52).

**Illustr.:** Breitenbach and Kränzlin (1995: fig. 353); Kits van Waveren (1985: fig. 14–16); Moser and Jülich (1993: *Psathyrella* 2).

**Distribution:** scattered; CZ: 16, 37, 71, 76; SK: not known.

**Ecology:** along stream bank or by roadsides in deciduous forests; in grass, on soil or on herb remnants; Oct.–Nov.

**Specimens examined:** AOPK Rokytá, 3 Sept 2001, Z. Bieberová; MV 03/409; MV 03/455; MV 04/405.

**Note:** the species has not been reported from the Czech Republic before.

***Psathyrella atrolaminata* Kits van Wav.**

**Bas.:** *Psathyrella atrolaminata* Kits van Wav., Persoonia 11: 362, 1981.

**Descr.:** Kits van Waveren (1981: p. 362–365).

**Illustr.:** Kits van Waveren (1981: fig. 1–11), Hagara et al. (1999: fig. 329).

**Distribution:** rare; CZ: not known; SK: 1 record – 6.

**Ecology:** in a park; on soil and on remnants of decayed wood (probably *Aesculus hippocastanum*); Oct.

**Specimens examined:** LH Bratislava–Rusovce, 25 Oct 1992, L. Hagara.

**Note:** the species has not been reported from Slovakia before.

***Psathyrella polycystis* (Romagn.) Kits van Wav.**

**Bas.:** *Drosophila polycystis* Romagn., Bull. Mens. Soc. Linn. Lyon 21: 152, 1952.

**Descr.:** Kits van Waveren (1976: p. 393–396); Enderle (2005: p. 57–58).

**Illustr.:** Breitenbach and Kränzlin (1995: fig. 348); Kits van Waveren (1976: fig. 10–14, 50–55); Enderle and Hübner (2005).

**Distribution:** scattered; CZ: 70, 78; SK: 1 record – 2.

**Ecology:** deciduous forests, along stream bank or roadsides; terrestrial; Oct.

**Specimens examined:** MV 02/556; MV 04/497; MV 05/216.

**Note:** the species has not been reported from the Czech Republic before. I do not have herbarium material of published records from Slovakia (Škubla 2003).

***Psathyrella microrrhiza* (Lasch: Fr.) Konrad et Maubl.**

**Bas.:** *Agaricus microrrhizus* Lasch, Linnaea 3: 426, 1828.

**Descr.:** Kits van Waveren (1971: p. 269–273).

**Illustr.:** Kits van Waveren (1971: fig. 20–31, 43–50, 57–62); Enderle (1987); Hagara et al. (1999: fig. 328); Tassi (2000: tab. 1).

**Distribution:** common, probably more frequent than *P. corrugis* f. *gracilis*, very often so-called transient forms between *P. corrugis* f. *gracilis* and *P. microrhiza* are found.

**Ecology:** along roadsides in forests or on ruderal places; on remnants of wood or on leaf litter; Oct.

**Specimens examined:** MV 02/553; MV 02/548; MV 04/516; MV 05/191.

**Note:** the species has not been reported from Slovakia before.

***Psathyrella bifrons* (Berk.) A.H. Sm.**

Fig. 5

**Bas.:** *Agaricus bifrons* Berk. in Hooker, J. E. Smith, Engl. Fl., ed. 2, 5: 114, 1836.

**Descr.:** Kits van Waveren (1976: p. 356–363).

**Illustr.:** Kits van Waveren (1976: fig. 1, 19–22).

**Distribution:** rare; CZ: 1 record – 68; SK: not known.

**Ecology:** in deciduous forest; on leaf litter; Oct.

**Specimens examined:** MV 02/534; (PRM 735341 – Svrček (1960) – because a description of macroscopic characters is lacking, this collection cannot be confirmed).

Members of *Psathyrella* sect. *Psathyrella* are common; the most frequent species are *P. gracilis*, *P. microrhiza* and transient forms between them. *P. pseudo-gracilis* is less common, *P. polycystis* is quite rare. Other species of this section are extremely rare. My observation is in agreement with that by Kits van Waveren (1976). There are quite a lot of collections that cannot be identified with any of described species. They will be evaluated in the future.

**Section *Atomatae* (Romagn.) ex Singer**

***Psathyrella prona* (Fr.) Gillet**

**Bas.:** *Agaricus pronus* Fr., Epicr. syst. mycol.: 239, 1838.

**Descr.:** Kits van Waveren (1972: p. 24–28); Kits van Waveren (1985: p. 81–85).

**Illustr.:** Breitenbach and Kränzlin (1995: fig. 351); Enderle (2004: p. 414); Hagara et al. (1999: fig. 339); Kits van Waveren (1985: fig. 75–79).

**Distribution:** common.

**Ecology:** in deciduous forests by roadsides on soil, in ruderal places in grass or on soil, in calcareous spring fens on mosses, on herbs and moss remnants, April–Oct.

**Specimens examined:** MV 00/002 (Tomšovský 2001); MV 01/001; MV 03/006; MV 03/056; MV 03/062; MV 03/067; MV 03/096; MV 04/010; MV 04/106 (Vašutová 2005); MV 04/574; AOPK Rokytná, 3 Sept 2001, Z. Bieberová (var. *utriiformis*).

**Note:** *P. prona* is a species of great variability; therefore revision of its varieties and forms is necessary. Specimens found in spring fens (mostly darker and with distinctly developed veil) are close to the doubtful species *Psathyrella infida* Quél.; specimens with few pleurocystidia could be misidentified as *Psathyrella canoceph* (Kauffman) A.H. Sm.

***Psathyrella hirta* Peck**

Bas.: *Psathyrella hirta* Peck, Ann. Rep. New York State Mus. 50: 107, 1897.

Descr.: Kits van Waveren (1985: p. 96–98).

Illustr.: Breitenbach and Kränzlin (1995: fig. 331); Kits van Waveren (1985: fig. 99–103).

Distribution: rare; CZ: not known, SK: 1 record – 15.

Ecology: on cow dung; Oct.

Specimen examined: MV 04/586.

Note: observed fruitbodies were not subcaespitose, which is different from the original description. It seems that there exist two microspecies: the first one is represented by the specimen MV 04/586 and the specimens that Kits van Waveren (1985) and Breitenbach and Kränzlin (1995) described; the second microspecies is represented by collections described by Enderle and Christian (1992), Tassi (1997) and Doveri (2004).

**Section *Ammophilae* (Morg.) Kits van Wav. emend.**

***Psathyrella ammophila* (Durieu et Lév.) P.D. Orton**

Bas.: *Agaricus ammophilus* Durieu et Lév., Expl. sci. Algérie 14: pl. 31, 1868.

Descr.: Kits van Waveren (1985: p. 101–103)

Illustr.: Kits van Waveren (1985: p. 113–117); Kotlaba and Pouzar (1963: fig. 1); Moser and Jülich (1993: *Psathyrella* 7); Cetto (1987: fig. 1734).

Distribution: rare; published by Kotlaba (1995) – 3 localities (specimens from Chotínské písky do not belong to the genus *Psathyrella*); CZ: not known, one record published by Veselský (1967) belongs to the genus *Inocybe*; SK: 4, 5, 6; Slovak Red List – E

Ecology: on sand; Apr.–Sept.

Specimens examined: PRM 577101 (Kotlaba and Pouzar 1963, Kotlaba et al. 1995); PRM 882419 – extremely light-coloured spores; BRA Brodské, 23 Apr 1973, I. Fábry – cystidia not found (Škubla 2003).

**Section *Subatratae* (Romagn.) ex Singer**

***Psathyrella conopilus* (Fr.: Fr.) A. Pearson et Dennis**

Bas.: *Agaricus conopilus* Fr., Syst. mycol. 1: 504, 1821.

Descr.: Kits van Waveren (1977: p. 223–226); Kits van Waveren (1985: p. 104–106).

Illustr.: Kits van Waveren (1977: fig. 4–12, 47–52); Breitenbach and Kränzlin (1995, fig. 326); Hagara et al. (1999: fig. 330); Enderle (1992: p. 89).

Distribution: common.

Ecology: in nutrient rich deciduous forests or herb fringes of brooks; terrestrial or attached to wood remnants; rarely on pastures in grass; Sept.–Oct., rarely May.



Specimens examined: MV 02/532; MV 02/554; MV 03/412; MV 04/062; MV 04/573; MV 05/174c; MV 05/182; MV 05/201; MV 02.204; JC Bratislava-Vrakuňa, 10 Oct 2003, M. Zelenay; HD 4/1797; SAV Abrod, 20 June 2000, Hagara et Hausknecht (Adamčík and Hagara 2003).

### Section *Bipelles* (Malençon et Romagn.) ex Singer

#### *Psathyrella bipellis* (Quél.) A.H. Sm.

Bas.: *Psathyra bipellis* Quél., C. R. Ass. Franç. Av. Sci. 12: 501. 1884.

Descr.: Kits van Waveren (1977: p. 210–214); Kits van Waveren (1985: p. 107–110).

Illustr.: Kits van Waveren (1977: fig. 2, 3, 30–46); Breitenbach and Kränzlin (1995: fig. 321); Enderle (2004: p. 402).

Distribution: rare; CZ: not known; SK: 2 records – 6; May.

Ecology: data on ecology were mentioned on the label of the second specimen only: pond side, on thick leaf layer.

Specimens examined: BRA Kalinkovo, 10 May 1964, I. Fábry; JC Bratislava-Klepáč, 18 June 2003, J. Červenka.

Note: the species has not been reported from Slovakia before.

### Subgenus *Psathyra* (Fr.) Singer ex Kits van Wav.

#### Section *Pseudostropharia* A.H. Sm.

#### *Psathyrella caput-medusae* (Fr.) Konrad et Maubl.

Bas.: *Agaricus caput-medusae* Fr., Epicr. syst. mycol.: 216. 1838.

Descr.: Kits van Waveren (1985: p. 118–121); Enderle (1985: p. 34–35).

Illustr.: Kits van Waveren (1985: fig. 136–140); Enderle (1985: p. 35+photo); Enderle (2004: p. 403).

Distribution: rare, especially in last decades almost missing; CZ: 37, 67, 88; SK: 10, 28; Czech Red List – E.

Ecology: in forests; on stumps or on basis of stumps of *Picea abies* (rarely *Betula* sp.); Sept.–Oct.

Specimens examined: CB 3493; CB 7668; BRNM 289891; BRNM 331432; BRNM 331433; BRNM 331434; PRM 715377; PRM 715371; BRA Raková, 6 Oct 1974, J. Kuthan; BRA Rača, 13 Oct 1968, I. Fábry.

#### *Psathyrella populina* (Britzelm.) Kits van Wav.

Bas.: *Agaricus populinus* Britzelm., Ber. Naturh. Ver. Augsburg 28: 131, 1885.

Descr.: Kits van Waveren (1985: p. 121–123).

Illustr.: Kits van Waveren (1985: fig. 141–144); Hagara et al. (1999: fig. 340).

Distribution: rare, published by Fellner (1989); CZ: 9 (not revised), 11, 17, 18, 20, 93 (not revised); SK: 6, 31; Czech Red List – E.

Ecology: in alluvial forests or rarely in mountainous beech forests; on decayed trunks or stumps of deciduous trees (*Fagus sylvatica*, *Fraxinus* sp., *Salix fragilis*, *Populus nigra*, *Ulmus* sp.); June–Oct.

Specimens examined: BRNM 331353; BRNM 489822; PRM 731707 (Fellner 1989); PRM 735649 (Fellner 1989); PRM 768615 (Fellner 1989); PRM 836514 (Fellner 1989); PRM 838043; BRA Stučica, 11 Oct 1990, J. Terray (Kuthan et al. 1999, Škubla 2003); MV 01/470; MV 04/082.

***Psathyrella maculata* (C.S. Parker) A.H. Sm.**

Bas.: *Hypholoma maculata* C.S. Parker, Mycologia 25: 205, 1933.

Descr.: Kits van Waveren (1985: p. 124–126).

Illustr.: Kits van Waveren (1985: p. 145–149); Enderle (2004: p. 410); Breitenbach and Kränzlin (1995: fig. 334).

Distribution: rare, CZ: 1 record – 4; SK: not known; Czech Red List – DD.

Ecology: in a park; on stump of a deciduous tree; Oct.

Specimen examined: MV 00/005 (Tomšovský 2001).

***Psathyrella cotonea* (Quél.) Konrad et Maubl.**

Bas.: *Stropharia cotonea* Quél., Bull. Soc. Bot. France 23: 328, (1876) 1877.

Descr.: Kits van Waveren (1985: p. 127–129).

Illustr.: Kits van Waveren (1985: p. 150–154); Hagara et al. (1999: fig. 338); Breitenbach and Kränzlin (1995: fig. 327).

Distribution: rare; CZ: 39, 88, 89; SK: 4, 26a; Czech Red List – E.

Ecology: in deciduous or rarely in coniferous forests; terrestrial or on and around stumps and decayed trunks of trees (*Quercus*, *Fagus*, *Picea*), especially on roots of uprooted trees; May–Oct.

Specimens examined: CB 14535; BRNM 331333; BRNM 331336; BRA Kopčany, 27 Jul 1974, A. Dermek (Dermek 1978); BRA Sirková voda, 25 Sept 1976, A. Dermek; BRA Važecká Pořana, 19 July 1981, J. Kuthan; MV 04/412; MV 05/149; MV 05/165b; LH Rusovské rameno, 16 May 1992, L. Hagara.

**Section *Spintrigerae* (Fr.) Konrad et Maubl.**

***Psathyrella typhae* (Kalchbr.) A. Pearson et Dennis**

Bas.: *Agaricus typhae* Kalchbr. in Rabenh., Fungi Eur. Exsicc. Klotzsch. Herb. Vivi Mycol. 4: 306, 1861.

Descr.: Enderle (1989: p. 70); Kotlaba (1959: p. 170).

Illustr.: Kits van Waveren (1985: fig. 158–161); Kotlaba (1952: p. 172); Breitenbach and Kränzlin (1995: fig. 360); Moser and Jülich (1995, *Psathyrella* 10).

Distribution: rare; published by Fellner (1989); CZ: 6, 7, 9, 10, 11, 24, 39, 76, 78, 83; SK: 2, 4; Czech Red list – E.

Ecology: in calcareous fens, in transitional mires, rarely in alluvial forests or in a botanical garden; on dead stems and leaves of *Typha* spp., *Carex* spp., *Acorus* spp. or on wet soil with herb remnants; June–July.

Specimens examined: PRM 516572 (Kotlaba 1957, Fellner 1989, Škubla 2003); PRM 533865 (Fellner 1989); PRM 533935 (Fellner 1989); PRM 605901; PRM 704673 (Fellner 1989); PRM 704674 (Fellner 1989); PRM 704667 (Fellner 1989), PRM 704675 (Fellner 1989); PRM 704676 (Fellner 1989); PRM 704678; PRM 704680 (Fellner 1989), PRM 704681 (Fellner 1989); PRM 796459 (*Psathyrella* sect. *Spintrigerae* close to *P. typhae*); PRM 852282; PRM 879221; MV 02/084; MV 02/085; MV 02/086; MV 02/085; MV 02/161; MV 03/061; MV 04/099 (Vašutová 2005); HD Žebračka, 27 June 2004, H. Deckerová

**Note:** it is necessary to evaluate if the described varieties and form (var. *sulcato-tuberculosa*; var. *bispora*; f. *acoris*) are caused by substrate linkage or have some taxonomic value. In the case of Czech collections, fruitbodies growing on *Carex* sp. div. and *Eriophorum* sp. div. are distinctly smaller than those from *Typha* sp.

***Psathyrella submicrospora* Heykoop et G. Moreno**

**Bas.:** *Psathyrella submicrospora* Heykoop et G. Moreno, Mycotaxon 73: 426, 2002.

**Descr.:** Heykoop and Moreno (2002: p. 426–428).

**Illustr.:** Heykoop and Moreno (2002: fig. 1–15).

**Distribution:** rare; CZ: not known, SK: 1 record – 2.

**Ecology:** on sandy soil; Oct.

**Specimen examined:** SAV Chrámec, 27 Oct 2002, S. Adamčík.

**Note:** the species has not been reported from Slovakia before.

***Psathyrella canocephs* (Kauffman) A.H. Sm.**

**Bas.:** *Hypholoma canocephs* Kauffman, Pap. Michigan. Acad. Sci. 5: 132, 1926.

**Descr.:** Enderle (2000: p. 4–5).

**Illustr.:** Enderle (2000: fig. 1); Breitenbach and Kränzlin (1995: fig. 323).

**Distribution:** rare; CZ: 1 record – 21; SK: 1 record – 6.

**Ecology:** in garden, in alluvial forest; among grass on calcareous clay, on the bottom of dry–up oxbow; Aug.– Sept.

**Specimens examined:** MV 03/168; SAV Štitáre, 18 Aug 2005, S. Adamčík.

**Note:** the species has not been reported from the Czech Republic before. The only specimen (LH Dobrošský prales, 11 Sept 1998, L. Hagara) from published records from Slovakia (Škubla 2003) I have revised, was misidentified (*Psathyrella* cf. *friesii*).

So-called „small species” of section *Spintrigerae* are still badly known and new species are being described (Esteve–Raventós and Enderle 1992, Heykoop and Moreno 2002). During my studies I have found several collections from various substrates which I was not able to identify with described species. Because of lack of herbarium material more finds are needed to assess them more precisely.

***Psathyrella marcescibilis* (Britzelm.) Singer**

**Bas.:** *Agaricus marcescibilis* Britzelm., Bot. Centralbl. 54: 69, 1893.

**Descr.:** Kits van Waveren (1985: p. 141–143).

**Illustr.:** Kits van Waveren (1985: p. 173a–176); Breitenbach and Kränzlin (1995: fig. 335); Hagara et al. (1999: fig. 334).

**Distribution:** common.

**Ecology:** in meadows, in deciduous forests or herb fridges of brooks; on soil or rarely attached to wood remnants, in grass; Aug.–Oct.

**Specimens examined:** MV 02/529; MV 03/164; MV 04/275; MV 04/574c; MV 05/183; MV 05/192.

***Psathyrella leucotephra* (Berk. et Broome) P.D. Orton**

**Bas.:** *Agaricus leucotephrus* Berk. et Broome, Ann. Mag. Nat. Hist., ser. IV, 6: 468, 1870.

**Descr.:** Kits van Waveren (1985: p. 145–146); Enderle and Hübner (2005)

**Illustr.:** Breitenbach and Kränzlin (1995: fig. 332); Enderle and Hübner (2005); Kits van Waveren (1985: fig. 179–181); Moser and Jülich (1996: *Psathyrella* 11).

**Distribution:** rare, CZ: 1 record – 68, SK: 1 record – 6.

**Ecology:** in deciduous forests; on sandy soil under *Quercus* sp. or near trunks of *Quercus* sp.; Aug.

**Specimens examined:** BRNM 331330; LH Bratislava, 6 Aug 1987, L. Hagara

**Note:** records published by Hagara (1989) and Bieberová (2000) are in fact *P. spintrigera*, a record published by Fábry (1974) is *P. cf. candolleana*. Specimens from South Bohemia – Žofín virgin forest (MV 03/254, CB14531) are close to *P. leucotephra*. They differ by the presence of a germ pore on the spores and by smaller fruitbodies.

***Psathyrella spintrigera* (Fr.) Konrad et Maubl.**

**Bas.:** *Agaricus spintriger* Fr., Epicr. syst. mycol.: 217, 1838.

**Descr.:** Kits van Waveren (1985: p. 147–149).

**Illustr.:** Hagara et al. (1999: p. 333); Kits van Waveren (1985: p. 182–183); Moser and Jülich (1996: *Psathyrella* 14).

**Distribution:** scattered; CZ: 20, 83, 89; SK: 2, 6, 21a.

**Ecology:** in deciduous forests, in forests with *Robinia pseudacacia*; on trunk of *Fagus sylvatica*, *Quercus* sp., around stump of *Populus* sp. or terrestrial under *Quercus* sp., *Ulmus* sp., *Aesculus* sp. as well as on ruderal places on sandy soil; Apr.–Aug.

**Specimens examined:** CB 14532; BRA Hrabůvka, 12 May 1965, J. Kuthan; BRA Stránska, 27 June 1982, S. Hagara, BRA Bystrička, S. Hagara 9 June 1984 (Škubla 2003); BRA Čenkov, 8 June 1988, J. Kuthanová; BRA Marcelová, 14 Aug 1985, L. Hagara (Hagara 1989 as *P. leucotephra*); AOPK Malhotky, 24 June 1998, Z. Bieberová (Bieberová 2000 as *P. leucotephra*); LH Gestenec, 18 June 1991, L. Hagara; LH Ladia, 2 July 1984, L. Hagara.

**Note:** *P. spintrigera* is very close to *P. candolleana*. Differences are based mainly on macroscopic characters, especially the presence of an annulus in the case of *P. spintrigera*. Sometimes it was identified as *P. leucotephra*, which differs mainly by its spores, which are differently shaped, darker and without a germ pore.



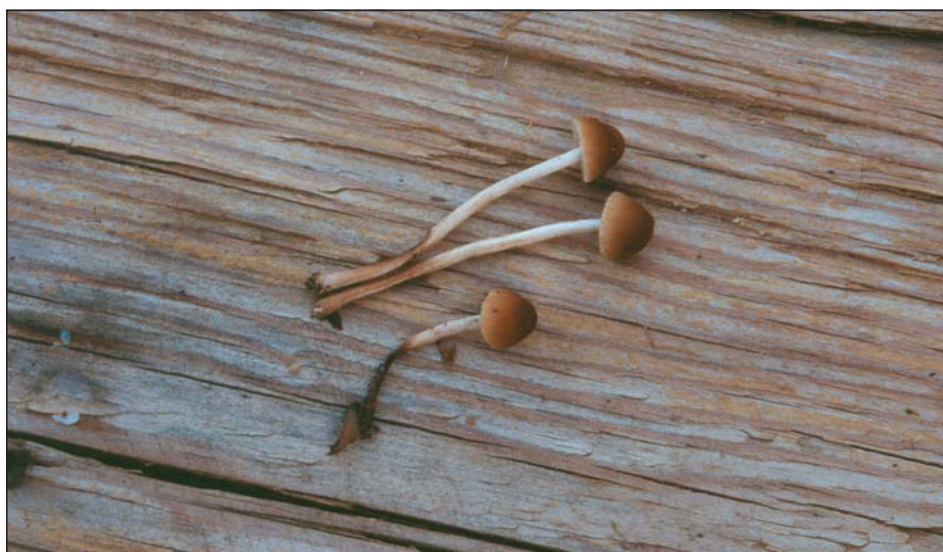
**Fig. 3.** *Psathyrella friesii*, Malá niva, 8 Oct 2004, leg. J. Burel, M. Beran et M. Vašutová (MV 04/441).



**Fig. 4.** *Psathyrella berolinensis*, Boubín, 5 Oct 2004, leg. D. Dvořák (MV 04/389).



**Fig. 5.** *Psathyrella bifrons*, Vranov, 19 Oct 2002, leg. M. Vašutová (MV 02/534).



**Fig. 6.** *Psathyrella dicrani*, Frahelž, 26 Sept 2005, leg. M. Mikšík (MV 05/151).

***Psathyrella candolleana* (Fr.) Maire**

Bas.: *Agaricus candolleanus* Fr., *Observ. mycol.* 2: 182, 1818.

Descr.: Kits van Waveren (1985: p. 149–152).

Illustr.: Kits van Waveren (1985: p. 184–187); Hagara et al. (1999: fig. 331); Breitenbach and Kränzlin (1995: fig. 322).

Distribution: very common.

Ecology: in deciduous forests, parks, gardens or herb fridges of books; on or around stumps of deciduous trees; May–Sept.

Specimens examined: MV 02/153; MV 03/038; MV 03/044; MV 03/050a; MV 03/097; MV 03/111; MV 04/071; MV 04/079; MV 04/080; MV 04/084; MV 04/086; MV 04/087; MV 03/096b; MV 04/111; MV 05/025; MV 05/027; BRA Jakubovo, 27 Aug 1976, P. Lizoň; BRA Bratislava, 12 July 1975, I. Fábry.

**Section *Spadiceae* (Morgan) Kits van Wav. emend.**

***Psathyrella pygmaea* (Bull.: Fr.) Singer**

Bas.: *Agaricus pygmaeus* Bull., *Hist. Champ. France* II: 437, 1792.

Descr.: Kits van Waveren (1985: p. 156–157).

Illustr.: Enderle and Hübner (2005); Breitenbach and Kränzlin (1995: fig. 354); Kits van Waveren (1985: fig. 193–196); Moser and Jülich (1995: *Psathyrella* 9).

Distribution: scattered; CZ: 11, 16, 18, 37, 83; SK: no voucher specimen seen.

Ecology: in deciduous forests (alluvial); gregarious on stumps, wood remnants or at the base of deciduous trees; rarely in grass in a park; June–Oct.

Specimens examined: MV 01/469; MV 04/386; HD Hraniční meandry Odry, 8 June 2004, H. Deckerová; PRM 616623 (Svrček 1962); BRNM 664988.

***Psathyrella cernua* (Vahl: Fr.) Hirsch**

Bas.: *Agaricus cernuus* Vahl, *Fl. Dan.* 6(17): 9, 1790.

Descr.: Kits van Waveren (1985: p. 160–161).

Illustr.: Kits van Waveren (1985: fig. 203–207).

Distribution: common.

Ecology: in deciduous forests; on base or in frost cracks on trunks of living trees (*Fagus sylvatica*, *Populus* sp., *Ulmus* sp., *Quercus cerris*, *Acer pseudoplatanus*); less frequently on decayed stumps or lying decayed trunks of *Fagus*; Sept.–Oct.

Specimens examined: MV 02/511; MV 02/530; MV 02/541; MV 03/444; MV 04/492; MV 04/500; MV 05/217; BRA, Stučica, 28 Sept 1988, J. Kuthan (Kuthan et al. 1999, Škubla 2003); BRNM 612191; CB 14532; BRA Havešová, 4 Oct 1989 J. Kuthan (Kuthan et al. 1999, Škubla 2003); PRM 885578.

Note: according to Enderle (1989) the species name is based on a dubious description.

***Psathyrella spadicea* (Schaeff.) Singer**

Bas.: *Agaricus spadiceus* Schaeff., Fung. Bavar. Palat. nasc., vol. 4: 27, 1774.

Descr.: Kits van Waveren (1985: p. 161–164).

Illustr.: Kits van Waveren (1985: fig. 208–212); Enderle (1989).

Distribution: common.

Ecology: in deciduous forests, parks or alleys; on base or in frost cracks on trunks of living trees (*Fagus sylvatica*, *Populus* sp. div., *Acer pseudoplatanus*, *Quercus* sp.); Oct.–Nov., rarely May.

Specimens examined: PRM 822335; CB 2125; BRNM 665300, BRNM 642347; BRA, Park kultúry a oddechu, 16 Nov 1987, L. Anovčín; MV 04/402; MV 04/411; MV 04/459; MV 04/491; MV 04/572.

Note: a species very close to *P. spadicea* is *Psathyrella sarcocephala* (Fr.) Singer, that Örstadius (2001a) synonymised with *P. spadicea*. According to Kits van Waveren (1985) *P. sarcocephala* differs mainly by spores darker than those of *P. spadicea*. This feature was not found in any collections labelled as *P. sarcocephala*. They were mostly *P. spadicea* or erroneous identifications. The basionym of *P. spadicea* is linked to a picture, which is according to Enderle (1989) a mixture of several species.

There is another species of the section *Spadiceae* mentioned in Czech and Slovak literature (CR: Holec 1997, Bieberová 2000; SK: Kuthan et al. 1999) – *Psathyrella olympiana* A.H. Sm. Although its occurrence is highly probable, due to bad quality of herbarium specimens (damaged cystidia) their identification has not been confirmed. Rarely collections close to *Psathyrella spintrigeroides* P.D. Orton occur, which differ from the type by other cystidia. Their taxonomic value will be studied.

**Section *Hydrophilae* (Romagn.) ex Singer emend. Kits van Wav.**

***Psathyrella subpapillata* (P. Karst.) Romagn.**

Bas.: *Hypholoma subpapillatum* P. Karst., Medd. Soc. Fauna Fl. Fenn. 5: 31, 1879.

Descr.: Kits van Waveren (1985: p. 176–177).

Illustr.: Kits van Waveren (1985: fig. 228–230).

Distribution: rare; SK: 1 record – 9.

Ecology: on litter; July.

Specimens examined: SAV Grúň, 9 July 2000, S. Adamčík.

Note: the species has not been reported from Slovakia before.

***Psathyrella hydrophiloides* Kits van Wav.**

Bas.: *Psathyrella hydrophiloides* Kits van Wav., Persoonia 11: 488, 1982.

Descr.: Kits van Waveren (1985: p. 176–177).

Illustr.: Kits van Waveren (1985: fig. 231–234).



**Distribution:** rare; CZ: 2 records – 4, 91; SK: not known.

**Ecology:** in deciduous forests; on fallen trunk of deciduous tree (*Fagus sylvatica*); Oct.

**Specimens examined:** BRNM 648811; MV 00/004.

**Note:** according to Kits van Waveren (1985) *P. hydrophiloides* grows terrestrial. The species has not been reported from the Czech Republic before.

***Psathyrella piluliformis* (Bull.: Fr.) P.D. Orton**

**Bas.:** *Agaricus piluliformis* Bull., Herb. France: pl. 112, 1783; syn.: *Psathyrella hydrophila* (Bull.) Maire.

**Descr.:** Kits van Waveren (1985: p. 180–183).

**Illustr.:** Kits van Waveren (1985: fig. 235–239); Hagara et al. (2006), Breitenbach and Kränzlin (1995: fig. 347).

**Distribution:** very common.

**Ecology:** in deciduous forests; on stumps, trunks or logs of deciduous trees (*Fagus sylvatica*, *Quercus* sp., *Acer pseudoplatanus*, *Betula* sp.), or terrestrial; Sept.–Oct., rarely May–June.

**Specimens examined:** BRA Boubínský prales, 17 Oct 1979, J. Kubička; BRA Kal. Ráztoka, 21 June 1991, J. Terray (Kuthan et al. 1999); MV 01/515; MV 02/368; MV 02/487; MV 02/535; MV 02/537; MV 02/542; MV 03/184; MV 03/185; MV 03/187; MV 03/190; MV 03/238; MV 03/267; MV 03/426; MV 03/430; MV 03/431; MV 03/445; MV 03/446; MV 04/046; MV 04/489b; MV 04/499; MV 04/515.

***Psathyrella chondroderma* (Berk. et Broome) A.H. Sm.**

**Bas.:** *Agaricus chondrodermus* Berk. et Broome, Ann. Mag. Nat. Hist., ser. IV., 7: 132, 1876.

**Descr.:** Kits van Waveren (1985: p. 191–192).

**Illustr.:** Kits van Waveren (1985: p. 264–268); Cetto (1983: no. 1297); Moser and Jülich (1993: *Psathyrella* 6).

**Distribution:** rare; CZ: 67, 75; SK: 28; Czech Red List – DD.

**Ecology:** in coniferous forests; on stumps of *Picea abies*; July–Oct.

**Specimens examined:** BRNM 331437; BRA Raková, 29 Sept 1974, J. Kuthan; HD Dolejší Kunčice 29 Sept 1974, J. Kuthan.

**Note:** the species has not been reported from the Czech Republic before.

The occurrence of *Psathyrella obtusata* (Pers.: Fr.) A.H. Sm. often mentioned in Czech and Slovak literature (Sobotka and Sobotková 1966, Holec 1992, Holec 1997, Kuthan et al. 1999, Záhorovská et al. 1996) has not yet been confirmed; herbarium material was erroneously identified or lacking. I also found several specimens close to *Psathyrella frustulenta* (Fr.) A.H. Sm. and *Psathyrella rannochii* Kits van Wav. but could not identify them with any of the mentioned species.

***Psathyrella berolinensis* Ew. Gerhardt**

Fig. 4

Bas.: *Psathyrella berolinensis* Ew. Gerhardt, Die höheren Pilze des Langen Luch in Berlin (Morphologie, Systematik, Ökologie und Verbreitung): 137, 1978.

Descr.: Gerhardt (1978: p. 137–138), Kubička (1982: p. 41–42).

Illustr.: Gerhardt (1978: fig. 120, XV).

Distribution: rare; CZ: 2 records – 39; 88; SK: 2 records – 26a, 26b.

Ecology: on deer, wild-boar and bear dung; June–Oct.

Specimens examined: MV 04/389; PS 138/10; PS 31/10-12; CB 4160 (Kubička 1982) – the collection has spores larger than the type.

Note: The species close to *P. berolinensis* is *P. minima* Peck. Örstadius and Huhtinen (1996) identified these two coprophilous species with the non coprophilous species *P. tenuicula* (P. Karst.) Örstadius et Huhtinen.

**Section *Spadiceogriseae* Kits van Wav.**

**Subsection *Lutenses* Kits van Wav.**

***Psathyrella lutensis* (Romagn.) Bon**

Bas.: *Drosophila lutensis* Romagn., Bull. Mens. Soc. Linn. Lyon 21: 155, 1952.

Descr.: Kits van Waveren (1985: p. 201–203).

Illustr.: Kits van Waveren (1985: fig. 285–289); Breitenbach and Kränzlin (1995: fig. 333); Moser and Jülich (1996: *Psathyrella* 18).

Distribution: common.

Ecology: in deciduous forests, by roadsides, in montane grey alder galleries; terrestrial, rarely on herb or wood remnants; Apr.–May, rarely Oct.

Specimens examined: MV 00/010; MV 04/012; MV 04/371; MV 04/075; MV 04/015; bisporical specimens MV 04/070; MV 04/009a.

***Psathyrella sphagnicola* (Maire) J. Favre**

Bas.: *Stropharia sphagnicola* Maire, Bull. Soc. Mycol. France 26: 192, 1910.

Descr.: Kits van Waveren (1985: p. 203–205).

Illustr.: Kits van Waveren (1985: fig. 290–294); Breitenbach and Kränzlin (1995: fig. 358); Moser and Jülich (1993: *Psathyrella* 4).

Distribution: rare; CZ: 3 records – 38, 67, 88; SK: 1 record – 28; Czech Red List – CR.

Ecology: in *Sphagnum* fens or bog spruce forests; in *Sphagnum* spp.; June–Sept.

Specimens examined: CB 14534; MV 02/318; MV 04/420; PRM 687592 – cystidia damaged.

Note: the species has not been reported from the studied area before.

***Psathyrella pannucioides* (J.E. Lange) M.M. Moser**

Bas.: *Hypholoma pannucioides* J.E. Lange, Fl. agar. dan. 5: iv, 104, 1940.

Descr.: Kits van Waveren (1985: p. 206–207).

Illustr.: Kits van Waveren (1985: fig. 295–299).

Distribution: rare; CZ: not known; SK: 1 record – 21a.

Ecology: on sandy soil by riverside; June.

Specimen examined: BRA Bystrička, 6 June 1982, L. Hagara (Škubla 2003).

***Psathyrella tephrophylla* (Romagn.) M.M. Moser**

Bas.: *Drosophila tephrophylla* Romagn., Bull. Mens. Soc. Linn. Lyon 21: 154, 1952.

Descr.: Kits van Waveren (1985: p. 210–212).

Illustr.: Kits van Waveren (1985: fig. 310–314); Breitenbach and Kränzlin (1995: fig. 359); Hagara et al. (1999: fig. 342); Enderle (2004: p. 419); Moser and Jülich (1996: *Psathyrella* 15).

Distribution: scattered; CZ: 6, 71; SK: 2, 13.

Ecology: in deciduous forests, by forest roadsides or in stream alluvia; terrestrial or attached to wood remnants or logs; Oct.

Specimens examined: MV 02/557; MV 04/566; MV 05/179; MV 05/215.

Note: the species has not been reported from the studied area before.

***Psathyrella panaeoloides* (Maire) Arnolds**

Bas.: *Psathyra panaeoloides* Maire, Publ. Inst. Bot. Barcelona 3: 117, 1937.

Descr.: Kits van Waveren (1985: p. 212–213); Arnolds (2003: p. 50–51); Svrček (1961: p. 204–205).

Illustr.: Kits van Waveren (1985: fig. 315–319); Svrček (1961: p. 204); Enderle (2004: p. 413).

Distribution: rare; CZ: 2 records – 9; 72; SK: not known.

Ecology: in garden and park; in grass; May–Oct.

Specimens examined: PRM 616622 (Svrček 1961); MV 02/341.

Note: more detailed data on the variability of this species are still lacking. The important character – triangular shape of spores – is according to Örstadius (in Enderle 2004) not always present. The large range of spore lengths described by Kühner and Romagnesi (1953) and Kits van Waveren (1985) was not confirmed in the studied specimens.

***Psathyrella noli-tangere* (Fr.) A. Pearson et Dennis**

Bas.: *Agaricus noli-tangere* Fr., Epicr. syst. mycol.: 234, 1838.

Descr.: Kits van Waveren (1985: p. 215–217); Tassi (1997: tab. 113).

Illustr.: Kits van Waveren (1985: fig. 321–325); Tassi (1997: tab. 113); Moser and Jülich (1996: *Psathyrella* 16).

Distribution: rare; CZ: not known; SK: 1 record – 20.

Ecology: in deciduous forest; on litter (*Carpinus*, *Quercus*); June.

Specimens examined: SAV Jovsianská hrabina, 10 June 2002, V. Kučera.

Note: the species has not been reported from Slovakia before.

***Psathyrella fusca*** (Schumach.: Fr.) A. Pearson

Bas.: *Agaricus fuscus* Schumach., Enum. Pl. 2: 280, 1803.

Descr.: Kits van Waveren (1985: p. 218–220).

Illustr.: Kits van Waveren (1985: p. 326–330); Enderle (2004: p. 408).

Distribution: scattered; CZ: 13, 68; SK: not seen any voucher specimen.

Ecology: in deciduous forests; on litter or attached to wood remnants; June–Sept.

Specimens examined: PRM 892301, BRNM 590147 (Antonín et al. 1997).

***Psathyrella suavissima*** Ayer

Bas.: *Psathyrella suavissima* Ayer, Mycol. Helv. 1(3): 146, 1984.

Descr.: Ayer (1984: p. 145–151).

Illustr.: Ayer (1984: p. 147, fig. 1–9, p. 154–156, fig. 1–3).

Distribution: rare; CZ: not known, SK: 1 record – 26a.

Ecology: in coniferous forest; terrestrial; July.

Specimen examined: BRA Hrdovo, 10 July 1985, P. Škubla (Škubla 1993, 1996a, 2003).

Note: two very close species, *P. suavissima* Ayer and *P. sacchariolens* Enderle, have been described. According to Enderle (1997) they are the same species.

As the observed specimen is more in agreement with the first of the mentioned species (cystidia of *P. suaveolens* are narrower, and the fruitbody is tinier), I identified it as *P. suavissima*.

**Subsection *Spadiceogriseae*** (Romagn.) ex Kits van Wav.

***Psathyrella casca*** (Fr.) Konrad et Maubl.

Bas.: *Agaricus cascus* Fr., Epicr. syst. mycol: 224, 1838.

Descr.: Kits van Waveren (1985: p. 228–229); Tassi (2000: p. 373–376).

Illustr.: Hagara et al. (1999: fig. 346); Tassi (2000: tab. VII, fig. 13); Kits van Waveren (1985: fig. 349–353).

Distribution: rare; CZ: not seen any voucher specimen; SK: 1 record – 14d.

Ecology: in a park; on soil by roadside; May.

Specimen examined: LH Sliáč; 31 May 1992, L. Hagara.

Note: the species has not been reported from Slovakia before.

***Psathyrella phegophila*** Romagn.

Bas.: *Psathyrella phegophila* Romagn. in Kits van Waveren, Persoonia, suppl. vol. 2: 282, 1985.

Descr.: Kits van Waveren (1985: p. 227–228).

Illustr.: Kits van Waveren (1985: fig. 345–348); Tassi (2000: fig. 12, tab. 8).

Distribution: rare; CZ: not known; SK: 1 record – 13.

Ecology: beech forest; terrestrial on litter; Oct.

Specimen examined: MV 05/176.

Note: the species has not been reported from Slovakia before.

***Psathyrella niveobadia* (Romagn.) M.M. Moser**

Bas.: *Drosophila niveobadia* Romagn., Bull. Mens. Soc. Mycol. France 91: 173, 1975.

Descr.: Kits van Waveren (1985: p. 230–231); Tassi (2000: p. 368–370).

Illustr.: Tassi (2000: tab. 7, fig. 11); Kits van Waveren (1985: fig. 354–357).

Distribution: rare; CZ: 1 record – 99; SK: not known.

Ecology: in *Petasites* fridge vegetation; on soil and herb remnants; May.

Specimen examined: MV 04/027.

Note: the species is very close to *P. spadiceogrisea*. Without a macroscopic description it cannot be distinguished. *P. niveobadia* has not been reported from the Czech Republic before.

***Psathyrella pseudocorrugis* (Romagn.) Bon**

Bas.: *Drosophila pseudocorrugis* Romagn., Bull. Mens. Soc. Linn. Lyon 21: 152, 1952.

Descr.: Kits van Waveren (1985: p. 231–232).

Illustr.: Kits van Waveren (1985: fig. 358–361); Moser and Jülich (1995: *Psathyrella* 8).

Distribution: rare; CZ: 1 record – 21; SK: not seen any voucher specimen.

Ecology: roadside in alluvial forests; on decayed branch of deciduous tree in litter; May.

Specimens examined: MV 03/034; BRNM 599267 (Antonín et al. 1997) – *P. cf. pseudocorrugis* – differs by another cheilocystidia pattern.

***Psathyrella spadiceogrisea* (Schaeff.) Maire**

Bas.: *Agaricus spadiceogriseus* Schaeff., Fung. Bavar. Palat. nasc., Index: 59, 1774.

Descr.: Enderle (2000, p. 16–19).

Illustr.: Breitenbach and Kränzlin (1995: fig. 357); Enderle (2000: fig. 8).

Distribution: common.

Ecology: deciduous forests (mostly alluvial); terrestrial, on litter or attached to wood remnants or decayed logs of deciduous trees; Apr.–Oct.

Specimens examined: MV 02/345; MV 02/536; MV 04/002; MV 04/003; MV 04/007.

***Psathyrella spadiceogrisea f. vernalis* (J.E. Lange) Kits van Wav.**

Bas.: *Psathyra obtusata* var. *vernalis* J.E. Lange, Dansk Bot. Ark. 9(6): 92, 1938

Descr.: Kits van Waveren (1985: p. 237).

Illustr.: Kits van Waveren (1985: fig. 371).

Distribution: according to Czech and Slovak literature *Psathyrella spadiceogrisea f. vernalis* is quite common, but because herbarium specimens are mainly without macroscopic descriptions, it is not possible to revise them.

Ecology: my collection was terrestrial, growing in a roadside in an alluvial forest; Apr.

Specimen examined: MV 04/012.

A species very close to *Psathyrella spadiceogrisea* is *Psathyrella fatua* (Fr.) Konrad et Maubl, which is represented by two specimens – LH Svätý Jur, 10 Jun 1988 L. Hagara and BRNM 383906 (based on microscopic characters only). Legon and Henrici (2005) synonymised *P. fatua* with *P. spadiceogrisea*. According to Enderle (2000) *P. fatua* differs by caespitose growth, smaller fruitbodies, more brown coloured cap, cystidia being more subcapitate, spores with smaller germ pore, cuticle composed of two layers of cells and occurrence later in the year. I have never seen fresh material of *P. fatua* to examine its characters so I have decided not to put it on the list.

**Section *Pennatae*** Romagn. emend. Kits van Wav.

***Psathyrella pennata*** (Fr.) A. Pearson et Dennis

Bas.: *Agaricus pennatus* Fr., Syst. mycol. 1: 297, 1821.

Descr.: Kits van Waveren (1985: p. 243–245).

Illustr.: Kits van Waveren (1985: fig. 378–382); Hagara et al. (1999: fig. 347); Breitenbach and Kränzlin (1995: fig. 344); Moser and Jülich (1996: *Psathyrella* 21).

Distribution: scattered; CZ: 67; SK: 26, 28.

Ecology: on burnt places; June–Oct.

Specimens examined: BRNM 599270; BRNM 331468 (as *P. gossypina*); BRA Važecká Pořana, 13 Aug 1977, J. Kuthan (as *P. gossypina*); MV 04/131.

***Psathyrella artemisiae*** (Pass.) Konrad et Maubl.

Bas.: *Agaricus artemisiae* Pass., Nuovo Giorn. Bot. Ital. 4: 82, 1872.

Descr.: Kits van Waveren (1985: p. 245–247).

Illustr.: Kits van Waveren (1985: fig. 383–386); Enderle (2004: p. 402); Enderle (1996).

Distribution: scattered; CZ: 39, 89; SK: no voucher specimen seen.

Ecology: in forests; on litter or attached to logs of deciduous or coniferous trees; in one case on trunk of deciduous tree; Sept.–Oct.

Specimens examined: MV 03/204; MV 03/209; MV 03/449.

***Psathyrella friesii*** Kits van Wav.

Fig. 3

Bas.: *Psathyrella friesii* Kits van Wav., Persoonia 9: 282, 1977.

Descr.: Kits van Waveren (1985: p. 250–251).

Illustr.: Kits van Waveren (1985: fig. 391–395).

Distribution: scattered; CZ: 78, 88, 89; SK: 2.

Ecology: in deciduous or mixed forests; terrestrial or attached to wood remnants; June–Oct.

Specimens examined: MV 02/561; MV 03/098; MV 04/403b; MV 04/441.

***Psathyrella impexa* (Romagn.) M.M. Moser ex Bon**

Bas.: *Drosophila impexa* Romagn., Bull. Soc. Linn. Lyon 21: 153, 1952.

Descr.: Kits van Waveren (1985: p. 248–249).

Illustr.: Kits van Waveren (1985: fig. 387–390); Enderle (2004: p. 408); Enderle (1994); Moser and Jülich (1996: *Psathyrella* 17).

Distribution: rare; CZ: no voucher specimen seen; SK: 1 record – 20.

Ecology: in a beech forest; on decayed wood of deciduous tree; Sept.

Specimen examined: MV 03/186.

Note: *P. impexa* is close to *P. friesii* and without macroscopic description it is not easy to distinguish them.

***Psathyrella gossypina* (Bull.: Fr.) A. Pearson et Dennis**

Bas.: *Agaricus gossypinus* Bull., Herb. France: pl. 425, fig. 2, 1789.

Descr.: Kits van Waveren (1985: p. 252–253); Arnolds (2003: p. 63–65).

Illustr.: Kits van Waveren (1985: fig. 396–400); Arnolds (2003: fig. 5B, 19).

Distribution: rare; CZ: 1 record – 21; SK: no voucher specimen seen.

Ecology: along roadside in an alluvial forest; in litter on log of deciduous tree; May.

Specimen examined: MV 03/050.

Note: specimens of *P. pennata* were often identified as *P. gossypina*.

***Psathyrella dicrani* (A.E. Jansen) Kits van Wav.**

Fig. 6

Bas.: *Psathyrella fulvescens* var. *dicrani* A.E. Jansen, Veget. macrofungi acid oakwoods (thesis): 120, 1981.

Descr.: Kits van Waveren (1985: p. 257–258); Arnolds (2003: p. 56–58).

Illustr.: Kits van Waveren (1985: fig. 414–418); Arnolds (2003: fig., 5A, 16).

Distribution: rare; CZ: 1 record – 39; SK: not known.

Ecology: along roadside by pond; on soil; Sept.

Specimen examined: MV 05/151.

Note: the species has not been reported from the Czech Republic before.

***Psathyrella fulvescens* (Romagn.) A.H. Sm.**

Bas.: *Drosophila fulvescens* Romagn., Bull. Soc. Linn. Lyon 21: 153, 1952.

Descr.: Kits van Waveren (1985: p. 258–263); Arnolds (2003: p. 61–63).

Illustr.: Kits van Waveren (1985: fig. 419–424); Arnolds (2003: fig. 3B, 18); Moser and Jülich (1996: *Psathyrella* 18).

Distribution: scattered; CZ: 21, 47, 71; SK: 2.

Ecology: in deciduous forests; terrestrial, on litter or on remnants of logs of deciduous trees; Aug.–Oct.

Specimens examined: PRM 616619; MV 02/562; MV 03/450; MV 04/541.

***Psathyrella multipedata* (Peck) A. H. Sm.**

Bas.: *Psathyra multipedata* Peck, Bull. Torrey Bot. Club 32: 80, 1905.

Descr.: Enderle (2000: p. 8–12); Kits van Waveren (1985: p. 263–264).

Illustr.: Breitenbach and Kränzlin (1995: fig. 337); Enderle (2000); Kits van Waveren (1985: fig. 425–428).

Distribution: scattered; CZ: 18, 76; SK: no voucher specimen seen.

Ecology: on ruderal places, along riverside; terrestrial; May–Oct.

Specimens examined: BRNM 693797, MV 02/404, MV 05/009.

***Psathyrella fagetophila* Örstadius et Enderle**

Bas.: *Psathyrella fagetophila* Örstadius et Enderle in Enderle, Beitr. Kenntn. Pilze Mitteleurop. 10: 45, 1996; syn.: *Psathyrella murcida* ss. auct.

Descr.: Enderle (1996: p. 42–44); Tassi (1997: tab. 330) as *P. murcida*.

Illustr.: Tassi (1997: tab. 330) as *P. murcida*; Breitenbach and Kränzlin (1995: fig. 338) as *P. murcida*; Enderle (1996: p. 43), Enderle (2004: p. 407); Moser and Jülich (1999: *Psathyrella* 22) as *P. murcida*.

Distribution: common.

Ecology: in beech forests; terrestrial or attached to wood remnants; Sept.–Nov., rarely May.

Specimens examined: PRM 735390; MV 01/536a; MV 03/188; MV 03/207; MV 03/443; MV 04/039; MV 04/067; MV 04/498c; MV 04/498d; MV 04/567; MV 05/184; MV 05/220.

Quite often collections are found having small fruitbodies close to *P. senex* (Peck) A.H. Smith, *P. ocellata* (Romagn.) M.M. Moser and *P. panaeoloides*, which cannot be identified with any of the described species. A similar situation exists with medium-sized species close to *P. fulvescens* and *P. fusca*.

CONCLUSIONS

The presented list of 53 *Psathyrella* species found in the Czech Republic and Slovakia is my first contribution to the knowledge of the diversity and ecology of this fascinating group of saprophytic fungi. Nine species are published from the Czech Republic for the first time (*P. dicrani*, *P. hydrophiloides*, *P. chondroderma*, *P. narcotica*, *P. niveobadia*, *P. polycystis*, *P. pseudogracilis*, *P. sphagnicola*, *P. tephrophylla*); 14 species are new for Slovakia (*P. atrolaminata*, *P. berlinensis*, *P. bipellis*, *P. casca*, *P. friesii*, *P. fulvescens*, *P. impexa*, *P. noli-tangere*, *P. microrrhiza*, *P. phegophila*, *P. sphagnicola*, *P. submicrospora*, *P. subpapillata*, *P. tephrophylla*). Published data of several species (e. g. *P. olympiana*, *P. obtusata*) could not be confirmed because of a bad state or absence of herbarium material. Other new species could be revealed for the studied area because of not all preserved specimens of *Psathyrella* in Czech and Slovak herbaria were revised. In



addition, some areas of the Czech Republic and Slovakia are less known in terms of biodiversity of the macrofungi. Approximately a third to a half of all studied collections could not be identified with any of the described species, either because of lacking macroscopic descriptions or the existence of transient forms between species and aberrant collections. Especially members of sections *Psathyrella*, *Lutenses* a *Pennatae* are quite problematic from this point of view. Therefore following studies will be focused on the last two of the above-mentioned sections.

#### ACKNOWLEDGEMENTS

I wish to thank J. Holec and V. Antonín for supervision and comments on the manuscript and M. Enderle for valuable comments on some *Psathyrella* species. The curators and employees of the herbaria (PRM, BRNM, CB, BRA, SAV, AOPK), J. Holec, L. Edrová, A. Vágner, M. Beran, Z. Bieberová, I. Kautmanová and S. Adamčík are thanked for arranging loans. My thanks are also expressed to L. Hagara, P. Škubla, J. Červenka, H. Deckerová, J. Burel and D. Dvořák for loaning their private collections, J.-P. Vidonne and D. Cacciali for providing not easy accessible literature, J.W. Jongepier for revising the English text and to all my mycological colleagues and friends for their support and assistance in the field.

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