

## HETEROBASIDIOMYCETES OF THE FAMILIES OLIVEONIACEAE AND TULASNELLACEAE FROM POLAND

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**Abstract:** Nine resupinate heterobasidiomycetes recently collected in southern Poland are reported and discussed. *Oliveonia fibrillosa* (Burt) Donk, *Tulasnella albida* Bourdot & Galzin, *T. saveloides* P. Roberts and *T. tomaculum* P. Roberts are recorded for the first time in Poland. A key is provided to the 14 known Polish species of *Tulasnella* J. Schröt.

**Key words:** *Oliveonia*, *Tulasnella*, heterobasidiomycetes, Poland

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In the course of studies on wood-inhabiting fungi in southern Poland by one of us (M.P.) a number of resupinate heterobasidiomycetes were found. These collections were determined at the Royal Botanic Gardens, Kew (P.R.). The identified fungi belong to two families, Oliveoniaceae and Tulasnellaceae, represented in the collections by one and eight species respectively. The present paper gives details on the fungi collected together with their current distribution in Poland. Since all of them have been previously described and illustrated from European collections we do not repeat this information here. The type specimens listed have all been examined by the first author (P.R.).

### 1. Family OLIVEONIACEAE P. Roberts

Folia Cryptog. Estonica 33: 128. 1998.

Oliveoniaceae was recently proposed by Roberts (1998) to accommodate the single genus *Oliveonia* Donk. It is small genus with only five species which were redescribed and illustrated by Roberts (1999), who also provided a key to their identification. *Oliveonia* has not been recorded from Poland before and the collection of *Oliveonia fibrillosa* (Burt) Donk reported here is the first Polish record of the species, the genus and the family.

### *Oliveonia fibrillosa* (Burt) Donk (Fig. 1)

Fungus 28: 20. 1958.

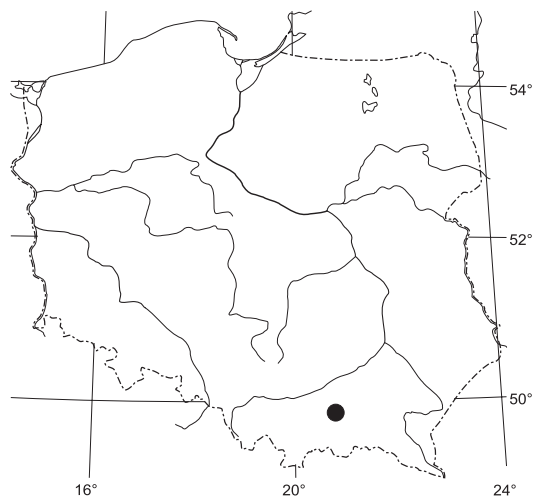
*Sebacinia fibrillosa* Burt, Ann. Miss. Bot. Gard. 13: 335. 1926. – *Ceratobasidium fibrillosum* (Burt) D. P. Rogers & H. S. Jacks., Farlowia 1: 327. 1943.

TYPE SPECIMEN: MEXICO. Cuernavaca, along Tepeite River, on wood, 28 Dec. 1909, W. A. & E. L. Merrill 515 (HOLOTYPE: FH).

SPECIMEN EXAMINED. POLAND. WESTERN CARPATHIANS: Panińska Góra Reserve, ca 16 km SW from centre of Tarnów, *Tilio cordatae-Carpinetum betuli*, on fallen branch of *Fraxinus excelsior*, 2 May 2000, leg. M. Piątek [K(M) 121542, KRAM F-53761].

*Oliveonia fibrillosa* typically forms thin, effused basidiomes on rotten wood. Hyphae are clamped, but agglutinated and difficult to see. Hyaline cystidia are present, occasionally up to 100 µm long, but often much shorter and inconspicuous. Basidiospores are oblong, ventrally depressed, 6.5–8.5 × 4.0–5.0 µm, and often produce secondary spores. The basidia are aseptate. It was redescribed and illustrated in Roberts (1999).

*Oliveonia pauxilla* (H. S. Jacks.) Donk has unclamped hyphae and rather different spores. Species of *Endoperplexa* P. Roberts are superficially similar, but have septate, tremelloid basidia.



**Fig. 1.** Distribution of *Oliveonia fibrillosa* (Burt) Donk in Poland.

*Oliveonia fibrillosa* is a cosmopolitan species known from Asia, Europe, North and South America. The collections from Europe are rather scanty, but the species has been reported from the British Isles (Roberts 1999) and Germany (Grosse-Brauckmann 2002), and there are additional collections at K from Finland, France, and Italy.

## 2. Family TULASNELLACEAE Juel

Bih. K. Svenska Vet. Akad. Handl. **23**: 21. 1897.

Tulasnellaceae is a small family with only two genera *Tulasnella* J. Schröt. and *Stilbotulasnella* Oberw. & Bandoni. Of these only *Tulasnella* is known from Europe and Poland. It is a well-defined genus of heterobasidiomycetes with a unique basidial morphology comprising about 46 species worldwide (Kirk *et al.* 2001). Most of them were recently described (or redescribed) and illustrated by Roberts (1992, 1993, 1994a, b, 1996) and a key to world taxa was published in Roberts (1999). The genus is poorly investigated in Poland; information on these fungi is included only in 19 publications (Schröter 1888; Bresadola 1903; Eichler 1901, 1904, 1907; Heinrich & Wojewoda 1976; Łuszczynski 1998; Roberts 1999; Ronikier 2002; Stasińska 2000; Teodorowicz 1936; Wojewoda 1978, 1981, 1984, 1986, 1991, 1996; Wojewoda

*et al.* 1999, 2004). In total, 11 species of *Tulasnella* have been reported from the country. They are: *T. calospora* (Boud.) Juel, *T. deliquescens* (Juel) Juel, *T. eichleriana* Bres., *T. fuscoviolacea* Bres., *T. hyalina* Höhn. & Litsch., *T. pallida* Bres., *T. pinicola* Bres., *T. pruinosa* Bourdot & Galzin, *T. rubropallens* Bourdot & Galzin, *T. thelephorea* (Juel) Juel, and *T. violea* (Qué.) Bourdot & Galzin. An additional three species are reported below together with supplementary information on five species rarely collected in Poland.

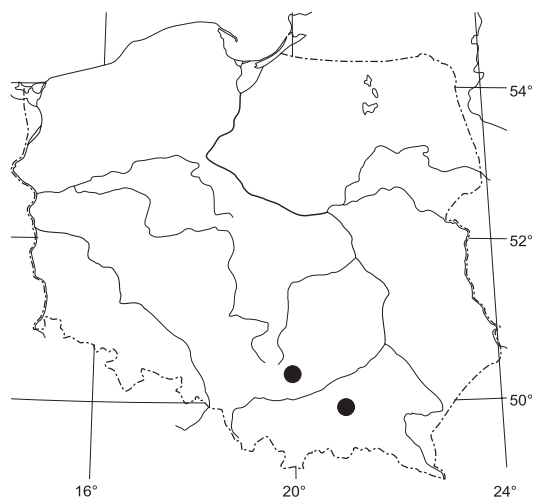
### *Tulasnella albida* Bourdot & Galzin (Fig. 2)

Hymén. France: 59. 1928.

*Tulasnella intrusa* Hauerslev, Opera Bot. **100**: 114. 1989.

TYPE SPECIMENS: DENMARK. Sjælland, Sorgenfri, on wood with *Botryobasidium* sp., 24 May 1988, K. Hauerslev 6910 (HOLOTYPE of *Tulasnella intrusa*: C); FRANCE. Allier, Mazeau, on rotten *Quercus* wood with *Sistotrema* sp., 18 July 1909, H. Bourdot 6496 (LECTOTYPE of *T. albida*: PC).

SPECIMENS EXAMINED. POLAND. KOTLINA SANDOMIERSKA BASIN: Tarnów, south of the Błonie St., shrubbery, on fallen branch of *Sarothamnus scoparius*, 27 Nov. 2000, leg. M. Piątek (KRAM F-53599); WYŻYNA MAŁOPOLSKA UPLAND: Biała Góra Reserve,



**Fig. 2.** Distribution of *Tulasnella albida* Bourdot & Galzin in Poland.

near Miechów, *Tilio cordatae-Carpinetum betuli*, on fallen branch of *Carpinus betulus*, 3 May 2004, leg. M. Piątek [K(M) 123790, KRAM F-54062].

*Tulasnella albida* lacks clamp-connexions (though occasional clamps occur on basal hyphae in culture), forms basidia in clusters, and is very similar to *T. pinicola*, but has subglobose to ellipsoid basidiospores. The species is often found in the hymenium of ephemeral corticioid fungi, such as *Botryobasidium* and *Sistotrema* species, but is not restricted to this habitat. It is infrequently recorded, but is widespread in Europe and known from Belgium (Van de Put & Antonissen 1996), Denmark (C), England (K), Finland (K), France (PC), Portugal, and Spain (Dueñas 2001). It was redescribed and illustrated in Roberts (1994b). The species is here recorded for the first time in Poland.

***Tulasnella calospora* (Boud.) Juel** (Fig. 3)

Bih. Svensk. Vet.-Akad. Handl. **23**: 23. 1897.

*Prototremella calospora* Boud., J. Bot. **10**: 85. 1896.  
– *Gloeotulasnella calospora* (Boud.) D. P. Rogers, Ann. Mycol. **31**: 201. 1933.

TYPE SPECIMEN: FRANCE. St Denis, on rotten sacking, undated, *J. L. E. Boudier* (HOLOTYPE: PC).

SPECIMENS EXAMINED. POLAND. WESTERN CARPATHIANS: Uroczyisko Wróblowice, ca 18 km SW from Tarnów, *Tilio cordatae-Carpinetum betuli*, on fallen branch of *Quercus robur* (with *T. eichleriana*), 20 May 2004, leg. M. Piątek [K(M) 123785].

*Tulasnella calospora* is distinguished by its elongated, fusiform basidiospores, substantially longer than those of *T. pallida* and of a different shape from those of *T. deliquescens* (Roberts 1994b). The name was formerly used for any long-spored *Tulasnella* species, so older records should be treated with caution. The species is known in Europe from Belgium (Van de Put & Antonissen 1996), Denmark (C), England (K), France (PC & K), Germany (Krieglsteiner 1999), and Spain (Dueñas 1995). It was redescribed and illustrated in Roberts (1994a).

The only previous record of *T. calospora* in Poland is from Stołpno near Międzyrzec Podlaski

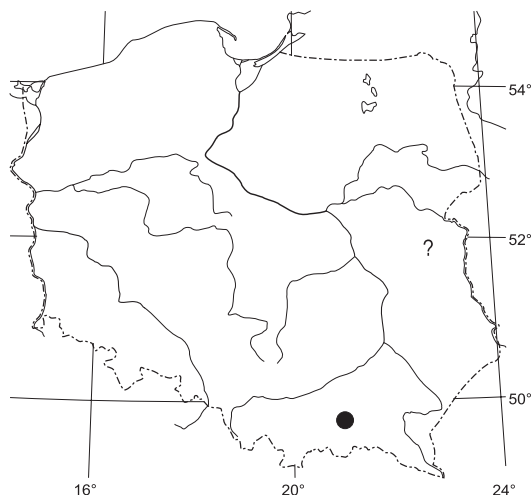


Fig. 3. Distribution of *Tulasnella calospora* (Boud.) Juel in Poland: question mark indicates doubtful locality.

(Bresadola 1903; Eichler 1907) in the north-east part of the country. The basidiospore dimensions given by these two authors, 26–45 × 4–6 µm, and their shape ‘fusioideae et saepe flexuosae’ suggest that the specimens may have represented *Tulasnella deliquescens* (Juel) Juel, but basidiospores were wider than in this latter species. This locality is indicated on the map with question mark.

***Tulasnella eichleriana* Bres.** (Fig. 4)

Ann. Mycol. **1**: 113. 1903.

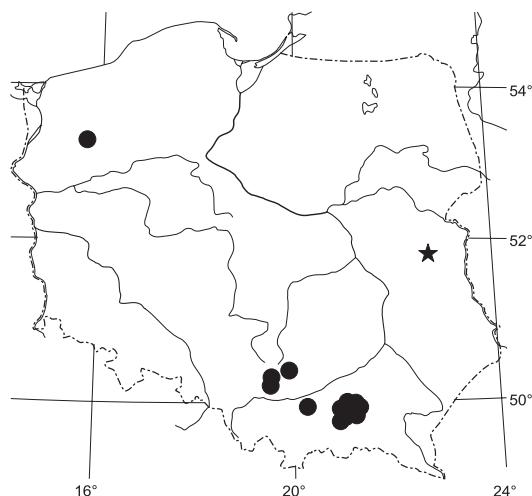
*Tulasnella microspora* Wakef. & A. Pearson, Trans. Brit. Mycol. Soc. **8**: 220. 1923.

*Tulasnella lactea* Bourdot & Galzin, Bull. Soc. Mycol. France **39**: 263. 1923.

*Tulasnella obscura* Bourdot & Galzin, Bull. Soc. Mycol. France **39**: 265. 1923.

TYPE SPECIMENS: ENGLAND. Surrey, Horsley, on conifer wood, 11 Mar. 1922, *A. A. Pearson* [HOLOTYPE of *Tulasnella microspora*: K(M) 46255]; FRANCE. Aveyron, Le Rec, on *Corylus*, 25 July 1914, *A. Galzin 15813* (*H. Bourdot 17375*) (LECTOTYPE of *T. obscura*: PC); POLAND. unlocalized, July 1901, *B. Eichler* (HOLOTYPE of *T. eichleriana*: S).

SPECIMENS EXAMINED. POLAND. WESTERN CARPATHIANS: Tarnów, on northern slopes of Góra Św.



**Fig. 4.** Distribution of *Tulasnella eichleriana* Bres. in Poland; asterisk indicates type locality.

Marcina, *Tilio cordatae-Carpinetum betuli*, on charred deciduous tree, 12 Oct 2001, *leg. M. Piątek* (KRAM F-53601, F-53608), same location and habitat, on fallen branch of deciduous tree, 29 Mar. 2000, *leg. M. Piątek* (KRAM F-39843), same location and habitat, on dead stump of *Larix decidua*, 16 Oct. 2000, *leg. M. Piątek* (KRAM F-53602); Tarnów, Lasek Zbylitowski (at Krakowska St.), *Tilio cordatae-Carpinetum betuli*, on fallen branch of *Prunus padus*, 7 Sept. 2000, *leg. M. Piątek* (KRAM F-53609); Ryglice, near Galia Górna farmstead, ca 20 km SE from centre of Tarnów, forest with *Abies alba* and *Fagus sylvatica*, on fallen branch of *Abies alba*, 8 Aug. 2000, *leg. M. Piątek* (KRAM F-53611); Uroczysko Wróblowice, ca 18 km SW from Tarnów, *Tilio cordatae-Carpinetum betuli*, on fallen branch of *Quercus robur* (with *T. calospora*), 20 May 2004, *leg. M. Piątek* [K(M) 123785]; KOTLINA SANDOMIERSKA BASIN: Tarnów, Las Lipie (at Błonie St.), *Tilio cordatae-Carpinetum betuli*, on fallen branch of *Prunus padus*, 27 Mar. 2000, *leg. M. Piątek* (KRAM F-39844); Tarnów, Debrza Reserve (at Wiśniowa St.), *Tilio cordatae-Carpinetum betuli*, on deciduous woody debris, 19 Sept. 2001, *leg. M. Piątek* (KRAM F-53605); Tarnów, Lasy Krzyskie (at Kalinowa St.), forest with *Fraxinus excelsior* and *Quercus rubra*, on fallen branch of deciduous tree, 22 Oct. 2001, *leg. M. Piątek* (KRAM F-53609); Tarnów, Lasy Krzyskie (at Ścieżki St.), *Tilio cordatae-Carpinetum betuli*, on fallen branch of *Prunus padus*, 16 May 2001, *leg. M. Piątek* (KRAM F-53615); Tarnów, south of Błonie St., shrubbery, on fallen branch of *Sarothamnus scoparius*, 23 Aug. 1999,

*leg. M. Piątek* [K(M) 123782, KRAM F-54057], same location, habitat and host, 30 Sept. 2000, *leg. M. Piątek* (KRAM F-53606); Tarnów, Lasek Chyszowski (at Hodowlana St.), deciduous forest, on fallen trunk of deciduous tree, 18 Oct. 2000, *leg. M. Piątek* (KRAM F-53614), same location and habitat, on fallen branch of *Betula pendula*, 13 Oct. 2001, *leg. M. Piątek* (KRAM F-53613); Tarnów, at Żytunia St., deciduous forest, on fallen branch of *Prunus padus*, 8 Sept. 2003, *leg. M. Piątek* [K(M) 123787, KRAM F-54060]; WYŻYNA ŚLĄSKO-KRAKOWSKA UPLAND: Pustynia Błędowska, near Błędów, shrubbery, on fallen branch of *Salix*, 10 Apr. 2002, *leg. M. Piątek* (KRAM F-53604); Źródła Centurii, near Ogrodzieniec, meadow, on fallen branch of *Salix*, 14 May 2004, *leg. M. Piątek* [K(M) 123796]; WYŻYNA MAŁOPOLSKA UPLAND: Biała Góra Reserve, near Miechów, *Inuletum ensifoliae*, on fallen branch of deciduous tree, 3 May 2004, *leg. M. Piątek* [K(M) 123781, KRAM F-54058].

*Tulasnella eichleriana* is a common, cosmopolitan species distinguished by its unclamped hyphae and small subglobose to ellipsoid basidiospores, never more than 3.5 µm wide. The name almost certainly covers a complex of small-spored taxa, since some collections have predominately subglobose to pip-shaped basidiospores, others have predominately ellipsoid to oblong basidiospores, and still others have a mixture of both. The type collection is from Poland and the species is known from at least 15 other European countries. It was redescribed and illustrated in Roberts (1994b).

In Poland *Tulasnella eichleriana* was previously reported from three widely scattered localities. The initial collection was made by Bogumir Eichler in Jażwiny near Międzyrzec Podlaski in eastern Poland from where the species was originally described. It should be pointed out that the type locality in the protologue (Bresadola 1903) and on the herbarium label is unlocalized. In his introduction, however, Bresadola (1903) briefly noted that all the fungi described were collected by B. Eichler in 'Podlachia'. It is well known that Bogumir Eichler, an outstanding Polish botanist, collected fungi exclusively in the neighbourhood of Międzyrzec Podlaski and he reported most of the collections determined and published by Bresadola (1903) separately in a series of papers (e.g., Eichler 1901, 1904, 1907). One paper contains

information on *T. eichleriana* with a short description of the fungus and the name of the locality: Jaźwiny village (Eichler 1907). Almost certainly it is the *locus classicus*. Nearly one hundred years after the description of *T. eichleriana*, Wojewoda *et al.* (1999) collected it in Lipówka Reserve in southern Poland and Stasińska (2000) found it in Wyspa Sołtyski Reserve in Ińsko Landscape Park in north-western Poland. The large number of new records published here make *Tulasnella eichleriana* the commonest species of the genus in Poland.

***Tulasnella pallida* Bres. (Fig. 5)**

Ann. Mycol. 1: 122. 1903.

*Tulasnella albolilacea* Bourdot & Galzin, Bull. Soc. Mycol. France 39: 264. 1923.

*Tulasnella violacea* (Johan-Olsen) Juel, Bihang till K. Svenska Vet.-Akad. Handl. 23, Afd III, 12: 22. 1897 [*nom. dub.*; *sensu auct. pro parte*].

TYPE SPECIMENS: FRANCE. Aveyron, Boutaran, on *Quercus*, Nov. 1917, *A. Galzin* 23485 (*H. Bourdot* 23559) (LECTOTYPE of *Tulasnella albolilacea*: PC); POLAND. unlocalized, on deciduous branch, Apr. 1900, *B. Eichler* (HOLOTYPE of *T. pallida*: S).

SPECIMENS EXAMINED. POLAND. KOTLINA SANDMIERSKA BASIN: Tarnów, Piaskówka (near Elektryczna St.), deciduous forest, fallen branch of *Acer platanoides*, 18 Sept. 1999, *leg. M. Piątek* (KRAM F-39599), same location and habitat, fallen branch of *Quercus rubra*, 18 May 2001, *leg. M. Piątek* (KRAM F-53598); Tarnów, south of the Błonie St., shrubbery, fallen branch of *Betula pendula*, 21 Nov. 2000, *leg. M. Piątek* (KRAM F-52187); WESTERN CARPATHIANS: Uroczysko Wróblowice, ca 18 km SW from Tarnów, *Tilio cordatae-Carpinetum betuli*, on fallen branch of *Quercus robur*, 20 May 2004, *leg. M. Piątek* [K(M) 123788].

*Tulasnella pallida* is similar to *T. violacea*, but distinguished by its broadly fusiform to fusiform basidiospores. The species is more generally known as *Tulasnella violacea*, but this is a *nomen dubium* of uncertain application, lacking a type or authentic material. The type of *T. pallida* was from Poland, and the species has been reported from at least 10 other European countries. It was redescribed and illustrated in Roberts (1994b).

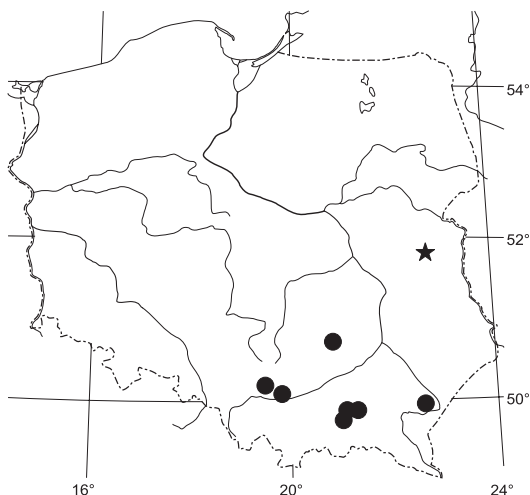


Fig. 5. Distribution of *Tulasnella pallida* Bres. in Poland: asterisk indicates type locality.

In Poland *Tulasnella pallida* was previously known from five localities. The first of these was reported by Bresadola (1903) in the original description of the species. It is worth noting that he described it under two different names *Tulasnella pallida* and *Tulasnella violacea* (Johan-Olsen) Juel var. *lilacea* Bres. As noted above, Bresadola (1903) did not specify type localities, but he briefly noted in the introduction to his work that all the fungi described were collected by Bogumir Eichler in 'Podlachia'. Thus the type locality of *T. pallida* is almost certainly in the neighbourhood of Międzyrzec Podlaski (see the discussion under *T. eichleriana* above). Three further localities for *T. pallida* have been found in southern Poland: Puszcza Dulowska, Kraków-Przegorzały and Karczmarowa Mt near Przemyśl (Wojewoda 1986), and one in central Poland: Grzywy Korzeczkowskie in Góry Świętokrzyskie Mts (Łuszczynski 1998). Three additional records are reported in this paper.

***Tulasnella saveloides* P. Roberts (Fig. 6)**

Mycol. Res. 97: 217. 1993.

TYPE SPECIMEN: ENGLAND. Devon, Bovey Tracey, Great Plantation, on fallen wood, 23 Mar. 1991, *P. Roberts* 142 [HOLOTYPE: K(M) 21325].

SPECIMENS EXAMINED. POLAND. WESTERN CARPATHIANS: Tatra Mts, Dolina Suchej Wody valley, ca 1000 m a.s.l., *Plagiothecio-Piceetum*, on dead standing trunk of *Picea abies*, 3 Jun. 2004, leg. M. Piątek [K(M) 123789, KRAM F-54059].

*Tulasnella saveloides* is an allantoid-spored counterpart of *T. pinicola*, producing subgelatinous basidiomes with the basidia arising in clusters. The spores are of similar shape and size to those of *T. allantospora* Wakef. & A. Pearson, which differs in possessing clamp-connexions, and to those of *T. rubropallens* Bourdot & Galzin, which appears to have a branching hymenial structure similar to that of *T. violae*. It was described and illustrated in Roberts (1993). The species is known in Europe from England (K), Finland (K), and Norway (K). It is recorded here for the first time in Poland.

***Tulasnella thelephorea* (Juel) Juel (Fig. 7)**

Arkiv Bot. 14: 8. 1914.

*Muciporus corticola* f. *thelephorea* Juel, Bih. K. Svensk. Vet.-Akad. Handl. 23: 23. 1897.

*Tulasnella cremea* Jülich, J. Mycol. & Lich. 1: 122. 1982.

*Tulasnella inclusa* (M. P. Christ.) Donk, Persoonia 4: 263. 1966 [sensu auct.].

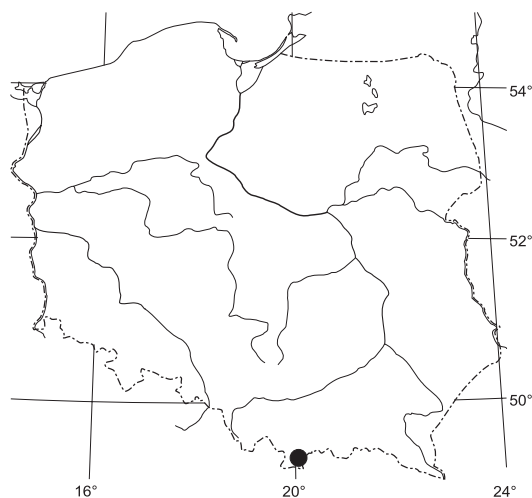


Fig. 6. Distribution of *Tulasnella saveloides* P. Roberts in Poland.

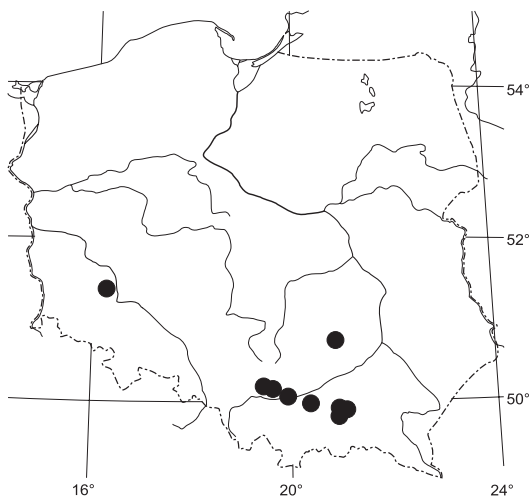


Fig. 7. Distribution of *Tulasnella thelephorea* (Juel) Juel in Poland.

TYPE SPECIMENS: FRANCE. Mazet, on *Castanea*, 21 Mar. 1913, A. Galzin 12813 (H. Bourdot 35622) (HOLOTYPE of *Tulasnella cremea*: PC); SWEDEN. Uppsala, Norby, on *Populus tremula*, 1896, H. O. Juel (LECTOTYPE of *T. thelephorea*: UPS).

SPECIMENS EXAMINED. POLAND. KOTLINA SANDOMIERSKA BASIN: Tarnów, Sanguszki Park (at Gumniska St.), ex manor park, on fallen branch of deciduous tree, 17 May 2001, leg. M. Piątek (KRAM F-53600); Tarnów, Piaskówka (near Elektryczna St.), deciduous forest, on fallen branch of *Quercus rubra*, 18 May 2001, leg. M. Piątek (KRAM F-53603); WESTERN CARPATHIANS: Tarnów, Zbylitowski Lasek (at Krakowska St.), *Tilio cordatae-Carpinetum betuli*, on fallen branch of *Quercus robur*, intermixed with *Botrybasidium candicans*, 31 Aug. 2001, leg. M. Piątek (KRAM F-53696).

*Tulasnella thelephorea* forms basidia in clusters and is very similar to *T. pinicola*, but has clearly visible clamp-connexions at all septa. Like *T. albida* (above), the species is often found in the hymenium of ephemeral corticioid fungi, but is not restricted to this habitat. *Tulasnella thelephorea* is not uncommon, and has been reported from at least eight other European countries. It was redescribed and illustrated in Roberts (1994b).

In Poland *Tulasnella thelephorea* has previously been reported from six localities but, possibly because the basidiomes are invisible to the naked eye,

it was not found until the 1970s. Wojewoda (1978) recorded it in four localities: Panińskie Skały Reserve in Kraków, Wąwóz Mnikowski Reserve, Puszcza Dulowska in southern Poland, and in the neighbourhood of Lubin in western Poland. Additional localities have been reported from Grzywy Korzeczkowskie in Góry Świętokrzyskie Mts (Łuszczynski 1998) in central Poland and in Lipówka Reserve in southern Poland (Wojewoda *et al.* 1999). Three further records are reported here.

***Tulasnella tomaculum*** P. Roberts (Fig. 8)

Mycol. Res. 97: 215. 1993.

TYPE SPECIMEN: ENGLAND. Devon, Ipplepen, Orley Common, on fallen deciduous branch, 27 Dec. 1990, P. Roberts 119 [HOLOTYPE: K(M) 21322].

SPECIMENS EXAMINED. POLAND. WESTERN CARPATHIANS: Tatra Mts, Sarnia Skała massif, Grześkówki, *Dentario glandulosae-Fagetum*, on fallen branch of *Fagus sylvatica*, 5 Sept. 2001, leg. M. Piątek (KRAM F-53610); KOTLINA SANDOMIERSKA BASIN: Tarnów, Debrza Reserve (at Wiśniowa St.), *Tilio cordatae-Carpinetum betuli*, on dead stump of *Quercus*, 22 Oct. 2001, leg. M. Piątek (KRAM F-53612).

*Tulasnella tomaculum* is similar to *T. eichleriana* (above), but can be distinguished by its weakly allantoid basidiospores. Though only recently described, the species is cosmopolitan and widespread, having now been recorded in Europe from Belgium (Van de Put & Antonissen 1996), England (K), Finland (K), Germany (K), Italy (K), Netherlands (K), Norway (K), and Sweden (K). It is possible that some older collections were determined as *T. allantospora*, but this latter species has clamp-connexions. The species is here recorded for the first time in Poland.

***Tulasnella violea*** (Quél.) Bourdot & Galzin (Fig. 9)

Bull. Soc. Mycol. France 25: 31. 1909.

*Hypochnus violeus* Quél., Ass. Fr. Av. Sci. '1882': 401. 1883.

*Prototremella tulasnei* Pat., J. Bot. 2: 270. 1888. – *Tulasnella tulasnei* (Pat.) Juel, Bih. Svensk. Vet.-Akad. Handl. 23: 21. 1897.

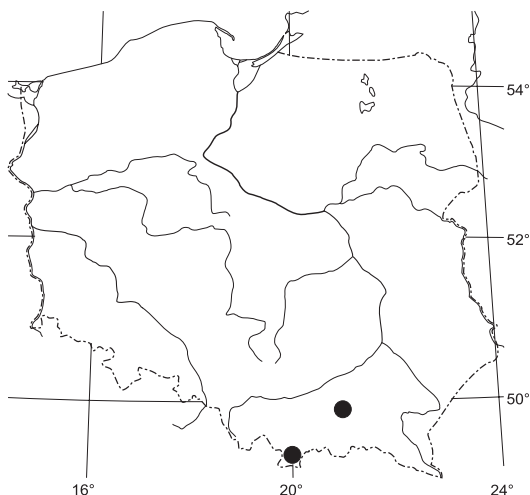


Fig. 8. Distribution of *Tulasnella tomaculum* P. Roberts in Poland.

SPECIMENS EXAMINED. POLAND. WESTERN CARPATHIANS: Tarnów, on northern slopes of Góra Św. Marcina, *Tilio cordatae-Carpinetum betuli*, on fallen trunk of *Betula*, 16 Oct. 2000, leg. M. Piątek (KRAM F-53607, F-53694); SUDETES: Karkonosze Mts, Kocioł Małego Stawu, *Salicetum lapponicum*, on fallen branch of *Salix lapponum*, 17 Jul. 2003, leg. M. Piątek [K(M) 123786, KRAM F-54061].

*Tulasnella violea* is distinguished by its wide, unclamped hyphae, its ceraceous, often conspicuous basidiomes, and its comparatively large, globose to broadly ellipsoid basidiospores. It is one of the most commonly collected *Tulasnella* species in Europe, reported from at least 14 countries.

The historical data of *Tulasnella violea* in Poland are slightly problematic. Schröter (1888) described *Tulasnella lilacina* J. Schröt. as type species of the genus *Tulasnella*, and cited two stations in Lower Silesia: Oborniki Śląskie and Wodzisław Śląski. No type collections are known, but the name is considered to be a probable synonym of *T. violea* (see Roberts 1994b). Eichler (1901, 1904), using the name *Tulasnella incarnata* (Tul.) Bres., reported three localities from the neighbourhood of Międzyrzec Podlaski: Liski, Stołpno and Jażwiny. Based on the same collections Bresadola (1903) reported the fungus under the name *Tulasnella tulasnei* (Pat.) Juel.

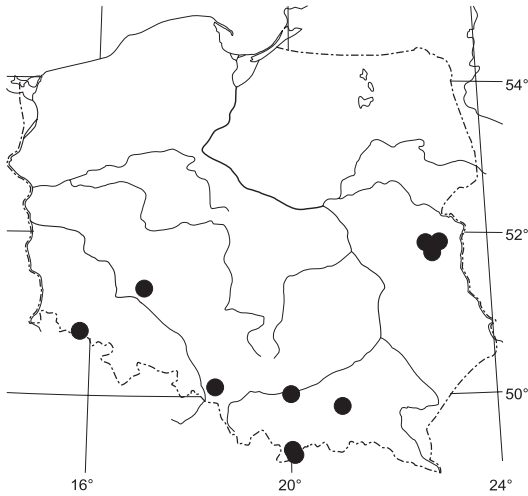


Fig. 9. Distribution of *Tulasnella violea* (Quél.) Bourdot & Galzin in Poland.

The dimensions of basidiospores given by these authors ( $6-8 \times 6-7 \mu\text{m}$  – Bresadola 1903;  $7-9 \times 5-7 \mu\text{m}$  – Eichler 1904) suggest that these collections probably refer to *Tulasnella violea*. More recent findings with voucher specimens are from Kraków (Wojewoda 1991) and Tatra National Park (Ronikier 2002). Two additional collections are reported in this paper.

#### KEY TO *TULASNELLA* SPECIES IN POLAND

1. Clamp-connexions absent (or rare and scattered on basal hyphae only) ..... 2
- 1'. Clamp-connexions present at all septa ..... 14
2. Basidiospores globose to ellipsoid to cylindrical ( $Q = 1.0-3.5$ ), but not allantoid, always under  $15 \mu\text{m}$  long ..... 3
- 2\*. Basidiospores allantoid or frequently over  $15 \mu\text{m}$  long ..... 10
3. Most basidiospores globose to ellipsoid ( $Q = 1.0-1.6$ ) ..... 4
- 3'. Most basidiospores oblong to cylindrical ( $Q = 1.7-4.5$ ) ..... 7
4. Basidiospores small,  $2.5-4.5(-6.0) \times 2.5-3.5 \mu\text{m}$ , subglobose to pip-shaped or ellipsoid ( $Q = 1.1-1.6$ ), a minority occasionally oblong ( $Q = 1.7-2.0$ ); hymenium similar to that of *T. violea*, but with all dimensions much smaller ..... *T. eichleriana*
- 4\*. Basidiospores larger, all or most over  $5.0 \times 3.5 \mu\text{m}$  ..... 5

5. Most basidiospores slightly or distinctly tapered at both ends, ellipsoid to oblong or broadly fusiform ( $Q = 1.25-1.9$ ),  $8-12(-14) \times 4-6(-8) \mu\text{m}$ , hymenium similar to that of *T. violea* ..... *T. pallida*
- 5\*. Basidiospores not tapered ..... 6
6. Basidiospores  $5.5-9.0 \times 5.5-7.5 \mu\text{m}$ , most globose to broadly ellipsoid ( $Q = 1.0-1.3$ ), a minority occasionally ellipsoid ( $Q = 1.4-1.6$ ), hyphae  $2.5-6.0 \mu\text{m}$  wide, normally forming a compact, branching hymenium, basidiome (when visible) ceraceous, often conspicuous ..... *T. violea*
- 6\*. Most basidiospores smaller,  $(3.5-5.0-6.5 \times 3.0-5.0 \mu\text{m})$  subglobose to ellipsoid ( $Q = 1.1-1.6$ ), hymenium similar to that of *T. pinicola*, hyphae  $1.5-3.0 \mu\text{m}$  wide, normally in a slightly gelatinized matrix, producing basidia in clusters, basidiome (when visible) gelatinous, but often inconspicuous and intermixed with corticioid basidiomes, particularly those of *Botryobasidium* spp., occasional clamp-connexions observed in culture ..... *T. albida*
7. Basidiospores oblong ( $Q = 1.6-2.0$ ),  $6.0-7.5 \times 3.0-3.5 \mu\text{m}$ , hymenium similar to that of *T. violea*, but all dimensions smaller, basidia not formed in clusters ..... *T. pruinosa*
- 7\*. Basidiospores larger, most over  $7.5 \mu\text{m}$  long ... 8
8. Most basidiospores slightly or distinctly tapered at both ends, ellipsoid to oblong or broadly fusiform ( $Q = 1.25-1.9$ ),  $8-12(-14) \times 4-6(-8) \mu\text{m}$ , hymenium similar to that of *T. violea* ..... *T. pallida*
- 8\*. Basidiospores not tapered ..... 9
9. Most basidiospores oblong to subcylindrical ( $Q = 1.4-2.4$ ), often depressed,  $6.5-10.0 \times 3.5-4.5 \mu\text{m}$ , hyphae in a slightly gelatinized matrix, producing basidia in clusters, basidiome (when visible) gelatinous, but often inconspicuous and intermixed with corticioid basidiomes, particularly those of *Botryobasidium* spp. .... *T. pinicola*
- 9\*. Basidiospores  $(7.0-8.5-12.0 \times 4.0-4.5 \mu\text{m})$  ( $Q = 1.8-2.6$ ), often ventrally depressed, with obtuse apex .. *T. fuscoviolacea*
10. Basidiospores allantoid, most under  $15 \mu\text{m}$  long ..... 11
- 10\*. Basidiospores fusiform to sinuous, over  $15 \mu\text{m}$  long ..... 13
11. Basidiospores  $5.0-7.5 \times 2.5-3.0 \mu\text{m}$ , weakly allantoid, apex mostly obtuse ..... *T. tomaculum*
- 11\*. Basidiospores larger, weakly or distinctly allantoid, apex mostly tapered ..... 12
12. Basidiospores  $6.5-12.0 \times 2.5-3.5 \mu\text{m}$ , distinctly allantoid or angled, hymenium similar to that of *T. pinicola*, hyphae normally in a slightly ge-



- latinized matrix, producing basidia in clusters, basidiome (when visible) gelatinous, but often inconspicuous and intermixed with corticioid basidiomes, particularly those of *Botryobasidium* spp. . . . . *T. saveloides*
- 12\* Basidiospores  $6.5\text{--}9.0 \times 2.5\text{--}3.0 \mu\text{m}$ , weakly allantoid, hymenium similar to that of *T. violea*, but all dimensions smaller, basidia not formed in clusters . . . . . *T. rubropallens*
13. Basidiospores narrow ( $Q = 8.0\text{--}17.0$ ), straight or sinuous, often very long . . . . . *T. deliquescens*
- 13\* Basidiospores broadly to narrowly fusiform ( $Q = 2.8\text{--}6.5$ ),  $16.0\text{--}30.0 \times 3.5\text{--}5.0(-8.0)$ , often with a distinct apical projection . . . . *T. calospora*
14. Conspicuous cystidia present up to  $60 \times 10 \mu\text{m}$ , basidiospores globose to subglobose ( $Q = 1.0\text{--}1.2$ ),  $5.5\text{--}7.5 \mu\text{m}$ , hyphae  $2\text{--}3(-6) \mu\text{m}$  . . . . . *T. hyalina*
- 14\* Cystidia absent, basidiospores ellipsoid to oblong ( $Q = 1.3\text{--}2.0$ ),  $4.5\text{--}10.0 \times 3.0\text{--}5.5 \mu\text{m}$ , hymenium similar to that of *T. pinicola*, hyphae normally in a slightly gelatinized matrix, producing basidia in clusters, basidiome (when visible) gelatinous, but often inconspicuous and intermixed with corticioid basidiomes, particularly those of *Botryobasidium* spp. . . . . *T. thelephorea*

ACKNOWLEDGEMENTS. The work of Marcin Piątek was supported by the State Committee for Scientific Research (KBN grant 6 P04G 034 18).

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Received 30 June 2004