

**Diptera associated with fungi
in the Czech and Slovak Republics**

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Čas. Slez. Muz. Opava (A), **55**, suppl.2: 1-84, 2006.

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Abstract: This work summarizes data on 188 species of Diptera belonging to 26 families reared by the author from 189 species of macrofungi and myxomycetes collected in the Czech and Slovak Republics in the years 1998 – 2006. Most species recorded belong to the family Mycetophilidae (84 species), followed by the families Phoridae (16 spp.), Drosophilidae (12 spp.), Cecidomyiidae (11 spp.), Bolitophilidae (9 spp.), Muscidae (8 spp.) and Platypezidae (8 spp.). The other families were represented by less than 5 species. For each species a list of hitherto known fungus hosts in the Czech and Slovak Republic is given, including the previous literature records. A systematic list of host fungi with associated insect species is also provided. A new species of Phoridae, *Megaselia sevciki* Disney sp. n., reared from the fungus *Bovista pusilla*, is described. First record of host fungus is given for *Discobola parvispinula* (Alexander, 1947), *Mycetophila morosa* Winnertz, 1863 and *Trichonta icenica* Edwards, 1925. Two species of Mycetophilidae, *Mycetophila estonica* Kurina, 1992 and *Exechia lundstroemi* Landrock, 1923, are for the first time recorded from the Czech Republic and two species, *Allodia (B.) czernyi* (Landrock, 1912) and *Exechia repanda* Johannsen, 1912, from Slovakia. Comments are also made on larval parasitoids reared from Mycetophilidae and Phoridae.

Key words: Diptera, insects, fungi, biology, ecology, taxonomy, Czech Republic, Slovakia, Europe.

Dvoukřídlí vázaní na houby v České a Slovenské republice

Čas. Slez. Muz. Opava (A), **55**, suppl.2: 1-84, 2006.

Abstract: V práci jsou shrnuty údaje o 188 druzích dvoukřídleho hmyzu (Diptera) patřících do 26 čeledí, které byly vychovány autorem ze 189 druhů vyšších hub (Fungi) a hlenek (Myxomycetes) nalezených v České a Slovenské republice v letech 1998 až 2006. Nejvíce zaznamenaných druhů patří do čeledi Mycetophilidae (84 druhů), následují čeledi Phoridae (16 dr.), Drosophilidae (12 dr.), Cecidomyiidae (11 dr.), Bolitophilidae (9 dr.), Muscidae (8 dr.) a Platypezidae (8 dr.). Ostatní čeledi byly zastoupeny méně než 5 druhy. Ke každému druhu je podán přehled dosud známých hostitelských hub v České a Slovenské republice, včetně předchozích literárních údajů. Připojen je také systematický přehled hostitelských hub a příslušných druhů hmyzu. Je popsán nový druh čeledi Phoridae, *Megaselia sevciki* Disney sp. n., vychovaný z prášivky *Bovista pusilla*. Poprvé je zaznamenána hostitelská houba pro druhy *Discobola parvispinula* (Alexander, 1947), *Mycetophila morosa* Winnertz, 1863 a *Trichonta icenica* Edwards, 1925. Dva druhy čeledi Mycetophilidae, *Mycetophila estonica* Kurina, 1992 a *Exechia lundstroemi* Landrock, 1923, jsou poprvé zaznamenány z České republiky a druhy *Allodia (B.) czernyi* (Landrock, 1912) a *Exechia repanda* Johannsen, 1912 ze Slovenska. Uveden je také přehled parazitoidů larev čeledí Mycetophilidae a Phoridae.

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Front cover illustration:

Ditomyia fasciata (Meigen, 1818) – orig. **JINDŘICH ROHÁČEK**

Illustration on page 5 taken from the New Year's card by J. Roháček entitled "Only dipterists keep it together".
All photographs by Jan Ševčík.

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1. Introduction

Fruiting bodies of macrofungi and myxomycetes represent a suitable food source and habitat for the larvae of several insect groups, mainly flies (Diptera) and beetles (Coleoptera), but also tineid moths (Lepidoptera: Tineidae), springtails (Collembola), thrips (Thysanoptera) and hymenopteran parasitoids of all these insects. Most of the fungicolous insects (excluding parasitoids) are mycophagous or mycosaprophagous with various degree of specialisation on fungus host, while some groups are predaceous or polyphagous, but still more or less associated with fungi.

Two-winged flies (Diptera) belong to the most common and most frequent inhabitants of both the fresh and decaying fruit bodies of fungi, together with beetles (mainly from the families Ciidae, Staphylinidae and Mycetophagidae), which usually prefer wood-decaying fungi (Polyporaceae). More than 25 families of Diptera have some species with fungicolous larvae and some of them as far as is known entirely comprise species associated with fungi (e.g. Bolitophilidae, Platypezidae).

In this work all available data on host fungi, parasitoids and habitat associations are summarized for 26 families of Diptera reared by the author from fungi collected in the territory of the Czech Republic or Slovakia.

Acknowledgements

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2. Materials and methods

The samples of fungi were collected by the author and the collaborators mentioned above from April to November in the years 1998 - 2006. Altogether, more than 580 samples of fungi infested by Diptera (mainly Mycetophilidae) were collected, out of which 477 samples are recorded in this work.

The method of rearing was principally described by Laštovka (1971). The samples of fungi with insect larvae were placed into glass jars with a small amount of soil. Soil packaged for gardeners was used to avoid infestation of soil-living larvae. The jars were then closed by monofil (**Fig. 1**) and placed into a cellar with temperature around 10-15 °C. The samples were regularly sprayed with water to maintain the humidity. The mould growing on decaying fruit bodies of fungi was usually removed, but sometimes it was tolerated, because it was suitable habitat for Cecidomyiidae larvae.



Fig. 1: The sampling jar

Most of the examined material of both the larvae and reared adults is preserved in ethanol in the author's collection. A lesser part is deposited in the collections of particular specialists. Some of the reared adults were prepared and pinned. The sampling localities, including habitats, are listed below. The systematic list of fungi species is presented in a separate chapter.

A total of 188 species belonging to 26 families of Diptera were reared from 187 species of fungi (plus two named only to genus) in 1998-2006, see **Tab. 1**. All the rearing records are summarized below. Only Czech or Slovak well-documented rearing records from reliably identified fungi are listed and accidental observations of adult insects on fungi are not taken into account. Each record is given in the following form: species name of insect - locality: collecting date/ emerging date, number of males/ number of females, host fungus.

3. List of localities and associated habitats

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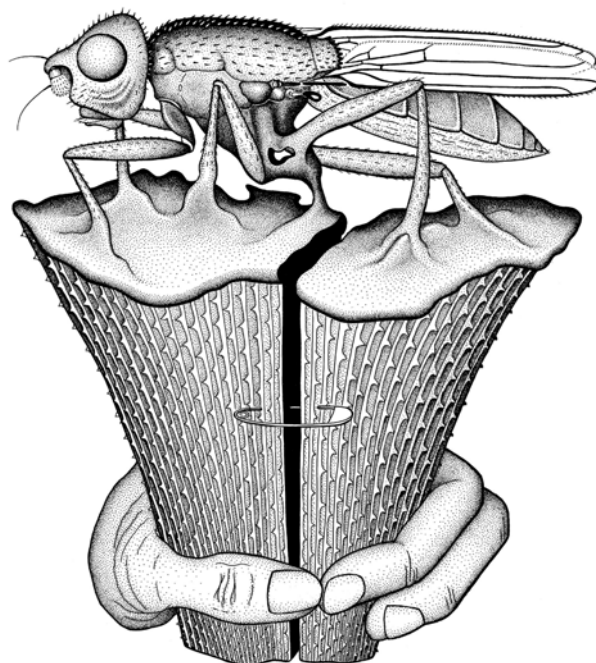
Bohemia. B1: Bor near Tišnov, coniferous forest; B2: Nový Vojítov near Nová Bystřice, coniferous forest; B3: Trutnov, town park; B4: Ulrichov, mixed forest; B5: Žacléř, spruce forest; B6: Žamberk, town park.

Moravia & Silesia. M1: Bartošovice, pond dam with oak trees; M2: Bartošovice, hornbeam forest; M3: Brumovice-Pocheň, mixed forest; M4: Dolní Lomná, fir-beech forest; M5: Hněvošice, deciduous forest; M6: Horní Lipová, mixed forest; M7: Hrubá Voda, mixed forest; M8: Hradec nad Moravicí, beech forest; M9: Hrubý Jeseník Mts., Klepáčov, spruce forest; M10: Hrubý Jeseník Mts., Praděd National Nature Reserve (= NNR), spruce and birch forest; M11: Hrubý Jeseník Mts., Rejviz NNR, peat-bog; M12: Hrubý Jeseník Mts., Vidly, beech forest; M13: Hrubý Jeseník Mts., Vrbno pod Pradědem, Jelení Bučina Nature Reserve (= NR), maple-beech forest; M14: Jistebník, pond dam with oak trees; M15: Karlov pod Pradědem, spruce forest; M16: Krnov-Cvilín, coniferous forest; M17: Křtiny nr. Brno, botanical garden; M18: Kunín, Bařiny NR; M19: Kunín, Oderské louky-Panský les NR; M20: Melč, garden; M21: Moravskoslezské Beskydy Mts., Bílá env., Velká Smradlava Valley, mixed forest; M22: Moravskoslezské Beskydy Mts., Ostravice env., spruce-beech forest; M23: M. Beskydy Mts., Staré Hamry, spruce forest; M24: Lednice, park; M25: Oldřichovice,

mixed forest; M26: Opava, town park; M27: Ostrava, mine dump “Zárubek”; M28: Ostrava, town centre, Šmeralova street; M29: Ostrava, town park; M30: Ostrava-Michálkovice, recultivated coal mine dump; M31: Ostrava-Petřkovice, Lanek National Nature Monument, oak-beech forest; M32: Ostrava-Svinov, Rezavka NR, deciduous forest; M33: Ostrava-Třebovice, town park; M34: Ostrava-Třebovice, Turkov Nature Monument, floodplain forest; M35: Pálava, Dolní Věstonice, mixed forest; M36: Podvihov near Opava, mixed forest; M37: Podyjí National Park (= NP), Hnanice, deciduous forest; M38: Podyjí NP, Lukov, deciduous forest; M39: Podyjí NP, Mašovice, Mločí údolí Valley, deciduous forest along brook; M40: Podyjí NP, Vranov nad Dyjí env., deciduous forest; M41: Polanka nad Odrou, pond dam with oak trees; M42: Polanka nad Odrou, Blücherův les, floodplain forest; M43: Přerov, floodplain forest; M44: Rychvald, garden; M45: Studénka, Kotvice NR, pond dam with oak trees; M46: Studénka, pond dam with hornbeam and oak trees; M47: Studénka, floodplain forest; M48: Studénka, Mokřady Pustějovského potoka NR, wetland with willows; M49: Studénka-Hukovice, Mokřady Liščího potoka NR, wet mixed forest; M50: Suchdol nad Odrou, floodplain forest; M51: Šilheřovice, Černý les NR, beech forest; M52: Štramberk, limestone hill; M53: Úvalno, mixed forest; M54: Vítkov-Podhradí, mixed forest.

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S1: Banská Štiavnica, mixed forest; S2: Horná Orava Mts., Nová Bystrica, alder growth along brook; S3: Oravské Veselé, alder growth in a spruce forest; S4: Polana Biosphere Reserve (= BR), Havranie skaly, mixed forest; S5: Polana BR, Hrochofská dolina Valley, mixed forest; S6: Polana BR, Hronček ponds, spruce forest; S7: Polana BR, Hrončecký grúň NNR, fir-beech forest; S8: Polana BR, Snohy, spruce forest; S9: Poloniny NP, Nová Sedlica, Stuzica NNR, fir-beech forest; S10: Poloniny NP, Nová Sedlica env., birch groves; S11: Poloniny NP, Stakčín, Hrúnok NR, deciduous forest; S12: Poloniny NP, Uličské Krivé, beech forest; S13: Tatras National Park, Lake Batizovské pleso, spruce forest; S14: Trstená, spruce forest; S15: Važec, meadows.



4. History of investigations

Many authors studied associations of Diptera with fungi in various parts of Europe (for a review see Jakovlev 1994), but also in Asia (e.g. Sasakawa 1979, Sasakawa & Ishizaki 1999) and North America (e.g. Kessel & Kessel 1939, Kessel et al. 1973, Pielou & Verma 1968). The old published data (e.g. Canzanelli 1941, Landrock 1940) are usually out-of-date due to advance in the taxonomy of both fungi and insects. The most comprehensive modern accounts were published by Buxton (1953 with Barnes, 1954, 1961) and Chandler (1978) covering the British Isles, Eisfelder (1955, 1956) for Germany, Hackman & Meinander (1979) for Finland, Krivosheina et al. (1986) for Russia, Jakovlev (1995) for Russian Karelia, Dely-Draskovits & Babos (1993) for Hungary. Jakovlev (1994, **Fig. 2**) provided the first compilation of all published Palearctic records of Diptera reared from fungi and myxomycetes.

There are numerous papers providing data on fungus hosts for a particular group or species of Diptera, e.g. Kurina (1992) and Ribeiro (1990) for fungus gnats (Sciaroidea), Disney & Evans (1999) for Phoridae, Papp (1972) for Sphaeroceridae and Asteiidae, etc. On the other hand, insect fauna of selected groups of fungi, mainly polypores, has also been investigated (e.g. Jonsell et al. 1999, 2001, Økland 1995, Økland & Hågvar 1994). Many papers are devoted primarily to beetles (e.g. Kaila et al. 1994, Kula et al. 1999, Thunes 1994). The hymenopteran parasitoids of fungicolous Diptera were studied mainly by Jakovlev & Tobias (1992), Kolarov & Bechev (1995) and Šedivý & Ševčík (2003). Some theoretical aspects of fungivory were discussed by Hanski (1989).

In the Czech Republic and Slovakia, most groups of fungicolous Diptera have been rather neglected up to the present. There are some old sporadic records of fungus hosts for several individual species, mainly fungus gnats, but they are usually outdated due to insufficient taxonomic knowledge. In the second half of the 20th century Petr Laštovka (1938 – 2005) was interested in rearing of insects from various species of fungi (cf. Laštovka 1972c). His results, however, remained mostly unpublished and only a few rearing records were published within the papers on the taxonomy and larval morphology of several genera of Mycetophilidae (Laštovka 1971, 1972a,b). Although Laštovka's manuscript remarks from the years 1958-1974 are now available to the author, they are of limited value, because host fungi were identified insufficiently, usually only to genus or family.

In 1998 the systematic study of Diptera living as larvae in fungi was started by the author. The results were successively published (Ševčík 2001a,b, 2003, 2004b,c, Šedivý & Ševčík 2003) and they are all summarized in the present volume.

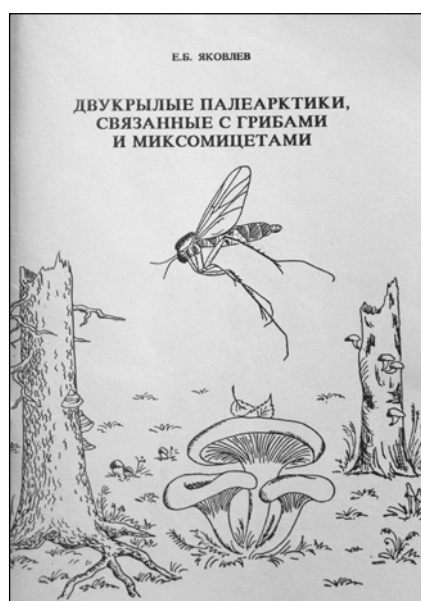


Fig. 2: Front cover of the book by Jakovlev (1994)

5. Results and discussion

5.1 Systematic list of Diptera species

Trichoceridae

A small family with 50 species in Europe and 29 species in the Czech Republic (Starý 2006). The adults can be found in shady and wet places, often in large numbers and they occur typically in spring and in autumn, sometimes also in winter. The larvae are mainly saprophagous, but several species regularly develop in fungi.

Trichocera hiemalis (De Geer, 1776)

Published record (Ševčík 2001a): M41: 29.10.1999/3.12.1999, 1/0, ex *Entoloma nidorosum*.

T. hiemalis (Fig. 3) is a polyphagous species recorded from many species of fungi, as well as from other decaying material.

Trichocera rufescens Edwards, 1921

Published records (Ševčík 2001a, 2004b,c): M51: 3.10.1999/5.11.1999, 0/1, ex *Lepiota aspera*; M39: 11.10.2003/2.-9.11.2003, 5/6, ex *Pluteus cervinus*; M40: 11.10.2003/2.-6.11.2003, 2/2, ex *Armillaria gallica*. S10: 13.10.2001/11.-15.11.2001, 5/1, ex *Armillaria cepistipes*.

This species has previously been recorded from *Hypoholoma sublateritium* by Buxton (1961). All these records are from soft agarics growing in autumn.



Fig. 3: *Trichocera hiemalis*

Limoniidae

More than 500 species of the family Limoniidae are known to occur in Europe, of which 285 were recorded from the Czech Republic (Starý 2006). The adults of Limoniidae are predominantly associated with moist environments where their larvae develop. They are usually found in low vegetation along streams, lakes and other water bodies, in swamps and marshes of various types, in damp forests, and similar habitats. Larvae occur in water, waterlogged soil, under damp leaf mould, in decaying wood and in fungi. They are phytosaprophagous (including saproxylic species) or predatory, exceptionally mycetophagous.

Achyrolimonia decemmaculata (Loew, 1873)

Published records (Ševčík 2001a, 2004b): M42: 10.10.1998/1.11.1998, 1/1, ex *Merulius tremellosus*; M42: 29.10.1999/23.-28.11.1999, 5/0, ex *Merulius tremellosus*. M38: 27.10.2003/30.12.2003, 0/1, ex *Phaeolus schweinitzii*.

New record: M31: 19.8.2005/1.9.2005, 1/2, ex *Bjerkandera adusta*.

All these 3 species of host fungi have rather inconspicuous fruit bodies covering the surface of dead tree trunks.

***Discobola parvispinula* (Alexander, 1947)**

New record: M37: 10.8.2006/2.9.2006, ex *Clavicornona pyxidata*.

Members of this genus are generally considered saproxylic, but there are several rearing records from fungi for *Discobola annulata* (Linnaeus, 1758). *Discobola parvispinula* is here for the first time recorded from a named species of fungus.

***Metalmnobia bifasciata* (Schrank, 1781)**

Published records (Ševčík 2001a, 2004c): M3: 24.7.1999/13.8.1999, 1/0, ex *Lactarius vellereus*; M21: 17.9.2000/11.10.1999, 0/1, ex *Boletus edulis*; S15: 26.9.1999/28.10.1999, 0/1, ex *Lyophyllum loricatum*. S10: 24.8.2001/23.9.2001, 0/1, ex *Russula nigricans*.

A common species with fungicolous and lignicolous larvae, known from many species of fungi. It apparently prefers, in contrast to the next species, terrestrial agarics and boletes.

***Metalmnobia quadrimaculata* (Linnaeus, 1761)**

Published records (Ševčík 2001a, 2004b): M5: 13.6.1999/1.-4.7.1999, 0/2, ex *Bjerkandera adusta*; M42: 28.7.1999/15.8.1999, 0/2, ex *Abortiporus biennis*; M8: 14.6.2002/8.7.2002, 1/0, ex *Bjerkandera adusta*.

New record: S7: 4.7.2006/23.7.2006, 2/1, ex *Bjerkandera adusta*.

This limoniid species is possibly associated with *Bjerkandera adusta*, but it was reared also from other species of fungi, as well as from decaying wood (Jakovlev 1994), probably due to the pupation of larvae there when the fungus has decomposed.

Pediciidae

A rather small family of 65 species in Europe, of which 38 were recorded from the Czech Republic (Starý 2006). Adult Pediciidae occupy similar habitats to Limoniidae and other Tipulomorpha, but most species prefer higher altitudes. They are chiefly found along rapidly flowing mountain streams. Larvae are mycetophagous (species of *Ula*) or predatory (other genera).

***Ula bolitophila* (Loew, 1869)**

Published records (Ševčík 2001a, 2004b,c): M8: 20.7.2000/11.8.2000, 0/1, ex *Laetiporus sulphureus*; M13: 4.9.1999/22.9.1999, 1/0, ex *Peziza micropus*; M42: 10.10.1998/25.10.1998, 1/0, ex *Laetiporus sulphureus*; M31: 18.8.2002/6.-9.9.2002, 3/1, ex *Bjerkandera adusta*; M31: 18.5.2003/22.-26.6.2003, 2/1, ex *Polyporus brumalis*; M31: 22.6.2003/18.-21.7.2003, 1/2, ex *Pleurotus pulmonarius*; M34: 6.10.2002/3.11.2002, 1/1, ex *Climacocystis borealis*; S9: 13.10.2001/4.-8.11.2001, 0/3, ex *Postia caesia*.

New records: M31: 19.8.2005/30.8.2005, 1/1, ex *Bjerkandera adusta*; S8: 14.7.2005/3.8.2005, 0/1, ex *B. adusta*; S7: 4.7.2006/4.8.2006, 0/1, ex *Polyporus badius*.

Ula bolitophila prefers lignicolous fungi (cf. Jakovlev 1994). It is an easily recognizable species of *Ula*, with characteristic wing markings.

***Ula mollissima* Haliday, 1833**

Published records (Ševčík 2001a, 2004b,c): M4: 24.9.2000/15.-16.10.2000, 15/6, ex *Polyporus squamosus*; M21: 17.9.2000/11.10.1999, 9/4, ex *Albatrellus ovinus*; M22: 25.9.1999/23.10.1999, 5/7, ex *Pleurocybella porrigens*; M8: 1.10.2003/6.-8.11.2003, 1/3, ex *Bondarzewia montana*; M31: 21.9.2002/18.-20.10.2002, 3/0, ex *Megacollybia platyphylla*; M31: 21.9.2002/25.10.2002, 1/1, ex *Grifola frondosa*; M11: 22.6.2003/21.7.2003, 1/1, ex *Pleurotus pulmonarius*; M48: 19.5.2002/21.-30.6.2002, 3/4, ex *P. squamosus*. S10: 21.8.2001/21.-23.9.2001, 4/1, ex *Hydnum repandum*; S10: 24.8.2001/23.9.2001, 1/0, ex *Russula nigricans*; S9: 13.10.2001/4.11.2001, 7/4, ex *H. repandum*.

New records: M46: 10.6.2001/11.7.2001, 1/0, ex *Polyporus badius*; S7: 4.7.2006/25.7.2006, 1/1, ex *Polyporus badius*; S10: 25.9.1999/20.10.1999, 1/2, ex *Lactarius scrobiculatus*.

A probably polycophagous species, recorded from more than 80 species of fungi (Jakovlev 1994). It appears to prefer wood-decaying fungi, but it also develops in terrestrial agarics.

***Ula sylvatica* (Meigen, 1818)**

Published records (Ševčík 2001a, 2004b,c): M3: 24.7.1999/13.8.1999, 3/2, ex *Russula cyanoxantha*; M13: 4.9.1999/22.-26.9.1999, 5/7, ex *Peziza micropus*; M21: 17.9.1999/15.-17.10.1999, 2/1, ex *Sarcodon imbricatus*; M21: 17.9.2000/9.10.2000, 10/0, ex *Russula paludosa*; M21: 17.9.2000/9.10.2000, 4/0, ex *Albatrellus ovinus*; M21: 17.9.2000/8.10.2000, 3/1, ex *Hydnum repandum*; M36: 23.7.2000/13.-14.8.2000, 3/0, ex *Paxillus involutus*; S2: 30.9.2000/19.-20.10.2000, 6/0, ex *Paxillus filamentosus*; S3: 1.10.2000/21.10.2000, 2/0, ex *Lactarius deterrimus*; M3: 15.8.2002/2.9.2002, 1/1, ex *Hygrophorus* sp.; M31: 22.6.2003/21.7.2003, 1/2, ex *Pleurotus pulmonarius*; M48: 19.5.2002/17.6.2002, 1/0, ex *Polyporus squamosus*. S10: 20.8.2001/12.9.2001, 1/1, ex *Tricholoma saponaceum*; S9: 13.10.2001/2.11.2001, 2/0, ex *Postia caesia*; S9: 13.10.2001/1.-4.11.2001, 5/2, ex *Hydnum repandum*; S10: 13.10.2001/1.11.2001, 2/0, ex *Pseudohydnum gelatinosum*.

New records: M11: 5.9.2004/26.9.2004, 3/0, ex *Lactarius rufus*; M51: 24.9.2006/14.10.2006, 1/0, ex *Armillaria gallica*; S5: 9.5.2006/7.6.2006, 1/6, ex *Trametes versicolor*; S10: 25.9.1999/20.10.1999, 1/3, ex *Lactarius scrobiculatus*.

This is a common species, recorded from more than 70 species of fungi belonging to various genera and families (cf. Jakovlev 1994). The larvae of *Ula* have rather long development in the fungus, usually 3 or 4 weeks, being the last insect group emerging from the sample, similarly to most fungivorous beetles.

Bolitophilidae

Bolitophilids are medium-sized flies (5-9 mm, **Fig. 4**) with slender body and long legs. The larvae are white, with head capsule dark, strongly sclerotized, bearing well developed short antennae (**Fig. 5**). They develop in soft or wood-decaying fungi and pupate in the fungus or in humose layer of soil. The pupa is free, without a web or cocoon. The adults occur mostly in the undergrowth of mixed forests especially in mountains, in shady places along streams. Some species aestivate and hibernate in caves. There are nearly 40 species in Europe, 17 species are known from the Czech Republic and 18 from Slovakia. The family comprises only one genus *Bolitophila* Meigen, 1818, including two subgenera with slightly different wing venation, *Bolitophila* s. str. and *Cliopisa* Enderlein, 1936.

All the species of Bolitophilidae, where the biology is known, have mycophagous larvae and often restricted to only one species, genus or family of fungi. A relatively large number of host fungi were recorded only in *B. cinerea* and *B. tenella*, but they usually develop in *Hypholoma* or *Lepiota*.

***Bolitophila* (*Bolitophila* s. str.) *cinerea* Meigen, 1818**

Published records (Ševčík 2001a, 2004b,c): M13: 9.10.1999/19.-22.10.1999, 12/4, ex *Hypholoma sublateritium*; M42: 10.10.1998/22.10.1998, 1/3, ex *Hypholoma fasciculare*; M40: 26.10.2003/ 14.11.2003, 1/2, ex *Hypholoma sublateritium*. S10: 13.10.2001/22.10.-23.11.2001, 5/3, ex *Armillaria cepistipes*.

New record: S8: 8.10.2005/20.10.2005, 3/3, ex *Pholiota squarrosa*.

Although most species of *Bolitophila* are oligophagous or even monophagous, this species has been recorded from more than 30 species of fungi, but only Agaricales.



Figs 4-5: *Bolitophila cinerea*. 4 – adult fly; 5 – larvae in *Hypholoma sublateritium*.

***Bolitophila (B.) tenella* Winnertz, 1863**

Published record (Ševčík 2001a): M8: 6.11.1999/19.-21.11.1999, 29/5, ex *Pholiota lenta*.

New record: S8: 1.10.2006/9.10.2006, 1/1, ex *Pholiota lubrica*.

An uncommon species, apparently preferring several species of *Pholiota*.

***Bolitophila (Cliopisa) bimaculata* Zetterstedt, 1838**

Published record (Ševčík 2001a): S15: 26.9.1999/3.-9.10.1999, 12/6, ex *Lyophyllum loricatum*.

B. bimaculata has been reared from several species of *Tricholoma* and *Lyophyllum* (cf. Jakovlev 1994).

Bolitophila (Cliopisa) sp.

New record: S8: 1.10.2006/9.-11.10.2006, 9/7, ex *Pholiota lubrica*.

A probably undescribed species, related to *B. bimaculata* and *B. hybrida*. It will be treated in a separate paper about this genus.

***Bolitophila (C.) hybrida* (Meigen, 1804)**

Published records (Ševčík 2001a): M36: 23.7.2000/13.-14.8.2000, 3/1, ex *Paxillus involutus*; S2: 1.10.2000/10.10.2000, 3/1, ex *Paxillus filamentosus*; S3: 30.9.2000/8.-10.10.2000, 24/13, ex *Paxillus filamentosus*.

B. hybrida is known to prefer *Paxillus involutus* and the closely related *P. filamentosus*.

***Bolitophila (C.) modesta* Lackschewitz, 1937**

Published record (Ševčík 2001a): M42: 25.9.2001/28.10.2001, 1/1, ex *Melanoleuca grammopodia*.

A rather rare species, known to develop in *Melanoleuca melaleuca* (Pers.) Murrill (cf. Hackman & Meinander 1979) and some other fungi, mainly from the family Tricholomataceae.

***Bolitophila (C.) occlusa* Edwards, 1913**

Published records (Ševčík 2001a, 2004c): B4: 23.10.1999/4.-16.11.1999, 4/4, ex *Postia caesia*; M7: 26.9.1998/10.10.1998, 1/0, ex *Postia caesia*; M42: 10.10.1998/ 28.10.1998, 1/0, ex *Postia tephroleuca*; S9: 13.10.2001/28.10.2001, 1/1, ex *Postia caesia*.

Postia (= *Tyromyces*, = *Oligoporus*) *caesia* is a typical host fungus for this species.

***Bolitophila (C.) pseudohybrida* Landrock, 1912**

Published records (Ševčík 2004c): S10: 13.10.2001/29.-30.10.2001, 2/0, ex *Lepista nuda*; S11: 15.10.2001/1.11.2001, 2/0, ex *Lepista nuda*.

Wood Blewit (*Lepista nuda*) is the usual fungus host of *B. pseudohybrida*.

***Bolitophila (C.) rectangulata* Lundström, 1913**

Published records (Ševčík 2001a, 2004b): M42: 26.5.1999/2.-8.6.1999, 9/2, ex *Laetiporus sulphureus*; M46: 25.8.1999/31.8.-4.9.1999, 18/11, ex *L. sulphureus*; M54: 20.6.1998/24.6.-13.7.1998, 6/5, ex *L. sulphureus*. M31: 18.5.2002/25.-28.5.2002, 9/8, ex *Laetiporus sulphureus*.

B. rectangulata has been repeatedly reared from *L. sulphureus* (cf. Jakovlev 1994, Kurina 1998) and is apparently confined to this fungus.

Ditomyiidae

A small family with 4 European species and all of them occur in the Czech and Slovak Republics. The larvae of *Ditomyia* Winnertz, 1846 are mycophagous, living in fruiting bodies of various tree fungi, where they pupate, those of *Symmerus* Walker, 1848 develop probably in rotting wood. The adults occur mostly in the undergrowth of deciduous or mixed forests, mainly in shady and wet places along streams. Of the two European species of *Ditomyia*, *D. fasciata* is a common and easily recognizable species with banded wings and abdomen (Fig. 6 and on the front cover), while the much rarer *D. macroptera* Winnertz, 1852, included in the Czech Red book of threatened animals (Ševčík 2005b), has the wings clear.

Ditomyia fasciata (Meigen, 1818)

Published records (Ševčík 2001a, 2004b,c): B5: 23.10.1999/24.10.-9.11.1999, 14/9, ex *Trametes versicolor*; M8: 6.11.1999/13.11.1999, 1/0, ex *T. versicolor*; M42: 26.5.1999/12.-14.6.1999, 4/3, ex *Polyporus badius*; M42: 26.6.1999/9.7.1999, 0/1, ex *B. adusta*; M42: 28.7.1999/10.8.1999, 1/2, ex *Abortiporus biennis*; M42: 29.10.1999/5.-21.11.2000, 6/4, ex *Inonotus radiatus*; M42: 22.10.2000/10.11.2000, 8/5, ex *I. radiatus*; M53: 26.9.1999/11.10.1999, 2/1, ex *T. versicolor*; M18: 9.8.2002/13.8.2002, 1/0, ex *Stereum hirsutum*; M31: 1.6.2002/9.-11.6.2002, 4/1, ex *B. adusta*; M34: 6.10.2002/12.-15.10.2002, 1/1, ex *Climacocystis borealis*; M38: 27.10.2003/22.11.-8.12.2003, 8/7, ex *I. radiatus*; M40: 11.10.2003/26.11.2003, 0/1, ex *T. versicolor*; M40: 26.10.2003/8.12.2003, 1/0, ex *B. adusta*; M48: 19.5.2002/1.-6.6.2002, 1/0, ex *Polyporus squamosus*; M20: 10.6.2001/17.6.-3.7.2001, 3/2, ex *Polyporus badius*. S10: 21.8.2001/26.8.2001, 0/1, ex *Polyporus varius*; S10: 14.10.2001/6.11.2001, 1/0, ex *T. versicolor*; S11: 15.10.2001/3.-7.11.2001, 3/2, ex *B. adusta*.

New records: M22: 1.8.2005/15.-18.8.2005, 5/6, ex *Trametes versicolor*; S5: 9.5.2006/28.5.2006, 1/1, ex *T. versicolor*.

A common oligophagous species, restricted to polypores. *Trametes versicolor* and *Bjerkandera adusta* are its most frequent fungus hosts.

Keroplastidae

A morphologically diverse group of fungus gnats (Sciaroidea) with about 100 species in Europe, formerly included in the Mycetophilidae. Many species of the subfamily Keroplastinae have the antennae laterally flattened and most Macrocerinae have the antennae very long (in some species several times longer than body). Also mouthparts are in several genera elongated. Wings are often with dark markings. The larvae are predaceous or mycophagous, usually associated with wood-decaying fungi. The larvae of *Keroplastus* Bosc, 1792 and some other genera are known for their bioluminescence. Adults occur in the undergrowth of forests, especially in shaded places alongside streams and on tree trunks, but also in meadow and steppe habitats.

The larvae of *Keroplastus* are relatively large (up to 30 mm), usually larger than the adults. They live individually on the lower side of fruit bodies of various polypores in typical mucilaginous flat webs (Fig. 7), where they feed on fungal spores or they are possibly carnivorous. There are, however, only a few precisely documented rearing records of Keroplastidae from named fungi in the literature and the biology of numerous species is still undocumented.



Figs 6-7: 6 – *Ditomyia fasciata*, adult fly; 7 – larvae of *Keroplatus testaceus*.

***Keroplatus testaceus* (Dalman, 1818)**

Published records (Ševčík 2001a, 2004b,c): M42: 5.9.1999/17.9.1999, 1/0, ex *Polyporus badius*; M31: 15.6.2002/25.6.2002, 1/0, ex *Trametes gibbosa*; M31: 22.6.2003/6.7.2003, 1/0, ex *Hapalopilus nidulans*; M31: 6.7.2003/18.7.2003, 1/0, ex *Stereum hirsutum*. S10: 21.8.2001/8.9.2001, 0/1, ex *T. gibbosa*.

New records: S5: 15.7.2005/27.7.2005, 1/0, ex *Pleurotus pulmonarius*.

The larvae of this species were recorded on the surface of various lignicolous fungi, mainly polypores, but also on the surface of decaying wood and in one case on the sporophore of *Russula* (cf. Jakovlev 1994). *Pleurotus* is here recorded as a new host fungus.

***Keroplatus tuvensis* A. Zaitzev, 1991**

Published record (Ševčík 2001a): M46: 10.6.2000/20.6.2000, 1/0, ex *Polyporus varius*.

This species was recently separated from the former species, differing in small details on the male terminalia. It is still the only record of *K. tuvensis* from a named species of fungi.

Mycetophilidae

Fungus gnats (Mycetophilidae) are a species-rich group of insects with nearly 1000 species in Europe and some 600 species in the Czech and Slovak Republics. Many species are still undescribed or known only from a single locality. The typical features of mycetophilids are hump-backed thorax, long coxae and legs usually with numerous bristles. The larvae are mainly mycophagous, feeding on the mycelia or fruit bodies of various fungi or myxomycetes, but the biology of many species still remains unknown. The adults occur in the undergrowth of forests and other habitats, especially in shaded places alongside streams. They are particularly common in cavities under tree roots and overhanging stream banks. Several species aestivate or hibernate in caves.

***Leptomorphus forcipatus* Landrock, 1918**

Published records (Ševčík 2004c, Zaitzev & Ševčík 2003): M50: 24.7.2002/30.7.2002, 1/0 ex *Stereum subtomentosum*; S10: 24.8.2001/26.8.2001, 1/1, ex *Stereum hirsutum*.

This species was reinstated as valid by Zaitzev & Ševčík (2003). They also designated a lectotype, which comes from Slovakia. Larvae of this species live on the lower side of fruit bodies of *Stereum* and *Trichaptum* (cf. Jakovlev 1994). The adults were observed to copulate soon after emerging from the pupae (**Fig. 8**).

***Sciophila antiqua* Chandler, 1987**

New record: M31: 22.6.2003/6.7.2003, 1/0, ex *Pleurotus pulmonarius*.

The larvae of *Sciophila* Meigen, 1818 build a typical silk web on the surface of the fungus, in which they live and pupate. They probably feed on spores. Komonen et al. (2001) reared this rare species from the polypore *Amylocystis lapponica* growing on Spruce *Picea abies*, but they misidentified it as *Sciophila hebes* Johannsen (see Falk & Chandler 2005).



Fig. 8: Mating adults of *Leptomorphus forcipatus*.

***Sciophila baltica* Zaitzev, 1982**

Published records (Ševčík 2004c, 2005a): M21: 17.9.2000/17.10.2000, 1/1, ex *Hydnum repandum*; S9: 13.10.2001/25.-29.10.2001, 46/21, ex *Hydnum repandum*.

Association of *S. baltica* with *Hydnum repandum* has not yet been recorded in the literature although several other species of *Sciophila* are known to develop in this fungus, e.g. *S. varia* (see below). The larvae of *Sciophila* were common in both the above mentioned samples and they occurred also in burrows inside the fruit body.

***Sciophila buxtoni* Freeman, 1956**

Published records (Ševčík 2003): M53: 26.9.1999/10.10.1999, 1/0, ex *Trametes versicolor*; M10: 20.7.2000/6.-15.8.2000, 2/4, ex *Fomitopsis pinicola*.

This species has been reared from several species of polypores, including both the above species (cf. Jakovlev 1994).

***Sciophila hirta* Meigen, 1818**

New record: M38 : 27.10.2003/28.11.2003, 1/0, ex *Inonotus radiatus*.

A relatively common species, known from numerous fungus hosts (Jakovlev 1994).

***Sciophila lutea* Macquart, 1826**

Published record (Ševčík 2004c): S10: 13.10.2001/6.11.2001, 1/0, ex *Lepista nuda*.

New records: M45: 1.8.1999/16.8.1999, 1/0, ex *Russula luteotacta*; M45: 9.9.1999/ 29.9.1999, 1/0, ex *Lactarius acerrimus*; M10: 27.9.2004/16.10.2004, 1/1, ex *Peziza badia*.

Also this species was previously reared from a number of host fungi (Jakovlev 1994).

***Sciophila plurisetosa* Edwards, 1921**

Published record (Ševčík 2005a): M30: 11.7.2003/24.7.2003, 1/0, ex *Auricularia auricula-judae*.

This species has only been reared previously from *Hydnum repandum*, together with *S. varia* (Chandler 1987).

***Sciophila pseudoflexuosa* Kurina, 1991**

Published records (Ševčík 2005a): M3: 24.7.1999/9.-18.8.1999, 3/1, ex *Lactarius vellereus*; M45: 9.9.1999/29.9.1999, 5/6, ex *Lactarius acerrimus*; M21: 17.9.2000/6.10.2000, 2/0, ex *Albatrellus ovinus*.

New record: M: 5.9.2004/26.9.2004, 1/3, ex *Lactarius pilatii*.

This species apparently prefers *Lactarius*. The type material was reared from *Lactarius helvus* (cf. Kurina 1991).

***Sciophila rufa* Meigen, 1830**

Published record (Ševčík 2003): B4: Ulrichov, 23.7.2002, 2/0, ex *Fomes fomentarius*.

Larvae are probably specific to the bracket fungus *Fomes fomentarius*, because no other host fungus is known (cf. Jakovlev 1994, Falk & Chandler 2005).

***Sciophila varia* (Winnertz, 1863)**

Published record (Šedivý & Ševčík 2003): M21: 17.9.2000/30.9.-2.10.2000, 6/10, ex *Hydnum repandum*.

The larvae in this sample were parasitised by the ichneumonid *Hyperacmus crassicornis*. *S. varia* has been reared several times from *Hydnum repandum* (cf. Chandler 1987, Kurina 1994), but also from other species of fungi (Jakovlev 1994).

***Docosia gilvipes* (Walker, 1856)**

Published records (Ševčík 2004c, Laštovka & Ševčík 2006): M46: 9.9.1999/29.9.1999, 0/1, ex *Tricholoma sejunctum*; M9: 15.8.2002/29.8.2002, 1/0, ex *Hygrophorus* sp.; M11: 5.9.2004/26.9.2004, 0/1, ex *Cortinarius croceoconus*; M11: 5.9.2004/21.9.2004, 1/0, ex *Lactarius rufus*; M10: 27.9.2004/ 13.10.2004, 1/1, ex *Peziza badia*. S10: 13.10.2001/30.10.2001, 1/0, ex *Lepista nuda*. S15: 19.10.2001/ 13.11.2001, 0/2, ex *Cortinarius cumatilis*.

A polymycophagous species, known to develop in more than 40 species of fungi, mainly agarics (Jakovlev 1994, Kurina 1994).

***Leia bimaculata* (Meigen, 1804)**

Published records (Ševčík 2004c): S10: 21.8.2001/13.9.2001, 0/1, ex *Lactarius volemus*; S10: 22.8.2001/7.-8.9.2001, 1/2, ex *Cantharellus amethysteus*.

New records: M45: 9.9.1999/29.9.1999, 0/1, ex *Lactarius acerrimus*; M46: 3.8.2000/21.8.2000, 1/0, ex *Amanita pantherina*.

One of the commonest species of the genus. It has been recorded from more than 10 genera of fungi (Jakovlev 1994).

***Leia crucigera* Zetterstedt, 1838**

Published record (Ševčík 2004c): S10: 8.5.2002/4.6.2002, 0/1, ex *Lentinus tigrinus*.

This is the only record of this species from a named fungus.

***Rondaniella dimidiata* (Meigen, 1804)**

Published records (Ševčík 2004c): S9: 21.8.2001/4.-8.9.2001, 4/2, ex *Ramaria bataillei*; S10: 23.8.2001/9.-13.9.2001, 2/1, ex *Ramaria bataillei*; S10: 13.10.2001/8.-13.11.2001, 4/0, ex *Lepista nuda*; S10: 14.10.2001/19.11.2001, 0/1, ex *Trametes versicolor*.

New record: S15: 25.9.1999/26.10.1999, 1/0, ex *Lactarius scrobiculatus*.

R. dimidiata has been reared from a variety of fungus hosts (Jakovlev 1994).

***Dynatosoma fuscicorne* (Meigen, 1818)**

Published records (Ševčík 2003): M31: 24.4.1999/8.-12.5.1999, 1/5, ex *Piptoporus betulinus*; M5: 13.6.1999/27.6.1999, 1/0, ex *Bjerkandera adusta*; M34: 6.10.2002/27.10.-3.11.2002, 1/1, ex *Climacocystis borealis*.

New records: M46: 10.6.2000/13.7.2000, 1/0, ex *Polyporus varius*; M42: 22.10.2000/14.-30.11.2000, 3/2, ex *Inonotus radiatus*; M38: 27.10.2003/27.11.2003, 1/0, ex *Inonotus radiatus*.

D. fuscicorne is the commonest European species of *Dynatosoma* Winnertz, 1863. The larvae of all species in this genus, where the biology is known, develop in polypores. Altogether 18 species of polypores are known as larval food of *D. fuscicorne* (cf. Jakovlev 1994). Laštovka (1972a) reared also the rarer species *D. thoracicum* (Zetterstedt, 1838) from *Postia caesia*. This is the only known fungus host reported for this species in the literature, but it has not yet been confirmed by the author. It is also possible that Laštovka's record refer to the following species, which is very similar to *D. thoracicum* (= *D. rufithorax* Strobl, 1895 of Laštovka 1972a).

***Dynatosoma norwegiense* Zaitzev & Økland, 1994**

Published record (Ševčík 2004c): S10: 24.8.2001/9.-13.9.2001, 1/4, ex *Tyromyces chioneus*.

This is the only record of the biology of this recently described species.

***Mycetophila adumbrata* Mik, 1884**

Published record (Ševčík et al. 2005): M39: 24.7.2005/31.7.-2.8.2005, 1/5, ex *Lycogala epidendrum*.

This rare species has already been reared from unnamed myxomycetes by Krivosheina et al. (1986) and thus belongs to a distinct ecological group within the genus, together with *Mycetophila vittipes* Zetterstedt, 1852, that was reared from *Arcyria* spp. by Buxton (1954). Also both European species of *Platurocypta* Enderlein are known to develop in myxomycetes (Buxton 1954, Kinel & Noskiewicz 1931, Laštovka 1972a). The larvae of *M. adumbrata* develop in rather dry stages of aethalia (**Fig. 9**) and pupate inside them.

***Mycetophila alea* Laffoon, 1965**

Published records (Ševčík 2004c, Šedivý & Ševčík 2003): M54: 5.9.1998/12.9.1998, 5/3, ex *Russula nigricans*; M16: 25.7.2000/30.7.2000, 1/4, ex *R. nigricans*; S10: 24.8.2001/29.-30.8.2001, 4/6, ex *R. nigricans*.

New records: M3: 24.7.1999/30.7.1999, 7/8, ex *Russula nigricans*; S5: 30.9.2006/8.10.2006, 2/1, ex *Lactarius piperatus*.

Russula nigricans is a well known host of this oligophagous and common species. Occasionally it develops also in other fungi, such as *Lactarius* and other genera. The larvae were parasitised by ichneumonids *Aperipleptus albipalpus* and *A. microspilus* (see Šedivý & Ševčík 2003).

***Mycetophila attonsa* Laffoon, 1965**

Published record (Ševčík 2001b): M10: 20.7.2000/3.8.2000, 2/0, ex *Fomitopsis pinicola*.

A rare mountain species with Holarctic distribution. It was reared from the common polypore *F. pinicola* both in North America and in Europe (Ševčík 2001b). Another Holarctic species, *Mycetophila laeta*, is also associated with this fungus.

***Mycetophila bialorussica* Dziedzicki, 1884**

Published record (Ševčík 2004a): M21: 13.5.2001/19.-24.5.2001, 7/14, ex *Polyporus brumalis*.

New records: S5: 30.9.2006/8.10.2006, 5/6, ex *Polyporus brumalis*.

This species appears to be specific to *Polyporus brumalis* (**Fig. 10**), but it may well be associated also with other small polypores. These are the only available rearing records.

***Mycetophila blanda* Winnertz, 1863**

New records: M21: 17.9.1999/23.-28.9.2000, 9/8, ex *Lactarius deterrimus*; M21: 17.9.1999/24.-28.9.2000, 5/3, ex *Lactarius salmonicolor*; S3: 1.10.2000/10.10.2000, 8/5, ex *Lactarius deterrimus*.

An oligophagous species associated mainly with *Lactarius deliciosus* group, but also with other species of *Lactarius*. There are some dubious records from *Lentinus* and *Russula*, which need confirmation (cf. Dely-Draskovits 1974).

***Mycetophila cingulum* Meigen, 1830**

Published records (Ševčík 2003): M31: 10.10.2001/18.10.2001, 6/5, ex *Grifola frondosa*; M48: 19.5.2002/29.5.2002, 0/1, ex *Polyporus squamosus*; M31: 21.9.2002/30.9.-3.10.2002, 8/8, ex *Grifola frondosa*.

New records: M46: 25.8.1999/2.9.1999, 2/4, ex *Polyporus squamosus*.

Another oligophagous species, associated with large polypores. These are the only reliable records of *M. cingulum* from *G. frondosa*; the other literature sources (cf. Jakovlev 1994) refer only to *Polyporus squamosus*, except Chandler (1993), who observed it assembling in numbers on *Grifola frondosa*.

***Mycetophila dentata* Lundström, 1913**

New record: M31: 22.6.2003/1.7.2003, 6/5, ex *Pleurotus pulmonarius*.

This species was reared from the same sample with *Mycetophila luctuosa*. Jakovlev (1994) listed the following hosts for *M. dentata*: *Piptoporus betulinus*, *Leccinum scabrum* and *Mycena* sp.

***Mycetophila distigma* Meigen, 1830**

Published record (Ševčík 2004a): M42: 10.10.1998/25.10.1998, 1/1, ex *Bjerkandera adusta*.

This is the only known fungus host of this uncommon species.

***Mycetophila estonica* Kurina, 1992**

New records: M21: 17.9.1999/28.9.1999, 2/1, ex *Lactarius deterrimus*; M21: 17.9.1999/28.9.1999, 1/0, ex *Lactarius salmonicolor*.

A rare, recently described species, new for the Czech Republic. It is closely related to *Mycetophila blanda*, which also develops in *Lactarius* spp. and to *M. signatoides*, associated with Boletaceae. Kurina (1992) reared the type material from *Lactarius deterrimus*.

***Mycetophila evanida* Laštovka, 1972**

Published record (Šedivý & Ševčík 2003): M46: 25.8.1999/31.8.-4.9.1999, 6/4, ex *Russula luteotacta*.

New records: M21: 17.9.1999/28.9.1999, 1/1, ex *Lactarius deterrimus*. M12: 19.7.2000/30.7.2000, 5/1, ex *Lactarius fulvissimus*; M32: 2.10.2003/14.10.2003, 3/2, ex *Hebeloma sacchariolens*.

This species belongs to the *M. ruficollis* group of very similar species, differing only in small details on the male terminalia. It is thus possible that some literature records may be based on misidentification. Laštovka (1972b) reared this species from *Lactarius rufus*.

***Mycetophila finlandica* Edwards, 1913**

Published record (Šedivý & Ševčík 2003): M: 17.9.2000/8.10.2000, 3/2, ex *Tricholomopsis decora*.

The association of *M. finlandica* with *Tricholomopsis rutilans* has been confirmed by several authors (Jakovlev 1994). *T. decora* is closely related.

***Mycetophila forcipata* Lundström, 1913**

Published record (Ševčík 2004c): S10: 14.10.2001/25.-30.10.2001, 3/8, ex *Piptoporus betulinus*.

An oligophagous species, hitherto reared repeatedly from *P. betulinus* and once from *Polyporus squamosus* (Jakovlev 1994).



Figs 9-10: **9** – *Mycetophila adumbrata*, larvae in *Lycogala epidendrum*; **10** – *Mycetophila bialorussica*, larvae in *Polyporus brumalis*.

***Mycetophila fungorum* (De Geer, 1776)**

Published records (Šedivý & Ševčík 2003, Ševčík 2001a, 2004c): M15: 11.8.2000/19.8.2000, 1/0, ex *Amanita muscaria*; S10: 14.10.2001/23.-24.10.2001, 10/8, ex *Amanita muscaria*; S10: 10.5.2002/ 23.5.2002, 2/4, ex *Lentinus tigrinus*.

New records (1998 – 2006, only host fungi listed): *Russula cyanoxantha* (2 samples), *Boletus calopus* (2 samples), *Boletus chrysenteron* (4 samples), *Agrocybe praecox*, *Stropharia rugosoannulata*, *Polyporus ciliatus*, *Entoloma clypeatum* (3 samples), *Boletus impolitus* (3 samples), *Russula luteotacta*, *Russula carpini*, *Amanita rubescens* (3 samples), *Russula virescens*, *Macrolepiota procera*, *Psathyrella candolleana* (2 samples), *Russula pectinata*, *Boletus rubellus*, *Pluteus cervinus*, *Chlorophyllum rhacodes*, *Amanita pantherina*, *Lactarius salmonicolor*, *Lepiota aspera*, *Pleurotus ostreatus*, *Collybia asema*, *Hebeloma crustuliniforme*, *Entoloma* sp., *Cortinarius amenolens*, *Suillus granulatus*, *Amanita spissa*, *Boletus edulis*, *Suillus luteus*, *Suillus collinitus*, *Megacollybia platyphylla*, *Hygrophorus chrysodon*, *Tricholoma populinum*, *Armillaria gallica*, *Boletus subtomentosus*, *Collybia* sp., *Russula pulchella*.

A common and polymycophagous species, reared by this author from 42 species of fungi, most frequently *Russula* spp. and other agarics. It often occurs together with other polyphagous mycetophilids, such as *Allodia ornatcollis*.

***Mycetophila idonea* Laštovka, 1972**

Published record (Ševčík 2004c): S10: 10.5.2002/23.5.2002, 2/3, ex *Lentinus tigrinus*.

A member of the *M. ruficollis* species group, known from many species of fungi.

***Mycetophila ichneumonea* Say, 1823**

New record: M5: 13.6.1999/24.6.1999, 3/2, ex *Collybia dryophila*.

Another member of the *M. ruficollis* group, also known from many species of fungi. Laštovka (1971) described the last instar of the larvae reared from *Lactarius rufus*, *Rhodopaxillus nudus* and *Stropharia aeruginosa*. He also reared the proctotrupoid parasitoid *Cryptoserphus aculeator*.

***Mycetophila laeta* Walker, 1848**

Published record (Ševčík 2001b): M10: 20.7.2000/28.7.2000, 1/0, ex *Fomitopsis pinicola*.

New record: M51: 26.8.1998/4.-5.9.1998, 2/0, ex *Fomitopsis pinicola*.

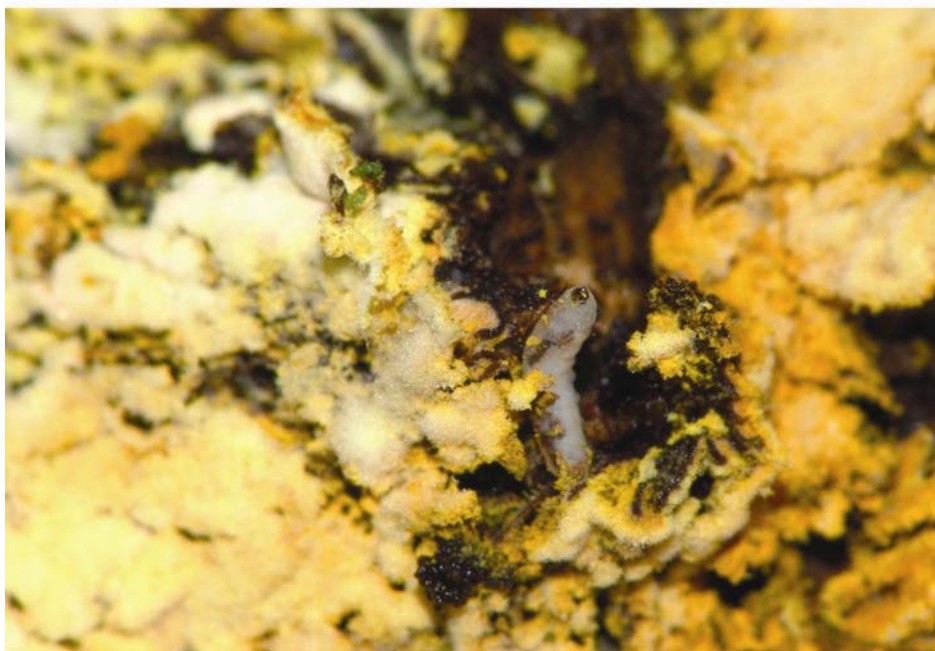
The larvae of this uncommon species live in the young fruit bodies of the common bracket fungus *Fomitopsis pinicola* growing on *Picea abies*. There is a record from *Polyporus* sp. by Laštovka (1966), but this name was used in the wide sense to indicate a polypore without closer determination, so it may well be *F. pinicola*. Kurina (1991), however, reared *M. laeta* from *Phellinus igniarius*.

***Mycetophila luctuosa* Meigen, 1830**

Published record (Ševčík 2004c): S10: 8.5.2002/18.-19.5.2002, 9/7, ex *Lentinus tigrinus*.

New records: M31: 22.6.2003/28.6.-1.7.2003, 11/11, ex *Pleurotus pulmonarius*; M35: 9.6.2004/19.6.2004, 1/4, ex *Pleurotus cornucopiae*; M11: 5.9.2004/15.9.2004, 1/2, ex *Lactarius pilatii*.

This species develops in terrestrial agarics of the genera *Lactarius* and *Russula* (cf. Jakovlev 1994), but also in polypores and other lignicolous fungi.



Figs 11-12: 11 – *Mycetophila ruficollis*, adults on *Armillaria gallica*; 12 – *Mycetophila signatoides*, larva in *Paxillus involutus* covered by *Hypomyces chrysospermus*.

***Mycetophila marginata* Winnertz, 1863**

New record: M22: 25.9.1999/4.-13.10.1999, 1/4, ex *Pleurocybella porrigens*.

Only a few rearing records are available for this common fungus gnat. Most records are from lignicolous fungi.

***Mycetophila mohilevensis* Dzedzicki, 1884**

Published record (Ševčík 2004c): S10: 24.8.2001/6.9.2001, 1/1, ex *Tyromyces chioneus*.

This is the only record of the biology of this rare species.

***Mycetophila morosa* Winnertz, 1863**

New record: S5: 9.5.2006/17.5.2006, 2/0, ex *Trametes versicolor*.

This is the first record of host fungus for this rare species.

***Mycetophila ornata* Stephens, 1829**

Published record (Šedivý & Ševčík 2003): M21: 17.9.2000/2.10.2000, 2/0, ex *Bondarzewia montana*.

New record: M21: 2.10.2003/19.10.2003, 3/0, ex *Bondarzewia montana*.

This species was recorded from several species of polypores (Jakovlev 1994). Laštovka (1971) reared it from *Meripilus giganteus* and described the last instar of the larvae. There is, however, stated in his manuscript remarks from 1966 that it was “? *Grifola gigantea* on *Picea abies*”. As this fungus (*Meripilus* /= *Grifola*/ *giganteus*) grows almost exclusively on beech (*Fagus sylvatica*), it is possible that this record actually refers to the little known fungus *Bondarzewia montana*. Šedivý & Ševčík (2003) reported for *M. ornata* ichneumonid parasitoid *Proclitus praetor*.

***Mycetophila ruficollis* Meigen, 1818**

New records: M51: 27.7.1998/5.-8.8.1998, 2/1, 15.8.1998/24.8.1998, 1/2, ex *Pholiota squarrosa*; M42: 10.9.1998/18.-20.9.1998, 22/17, ex *Mycena haematopus*; M42: 26.5.1999/5.6.1999, 1/3, 5.9.1999/ 13.9.1999, 1/2, ex *Mycena galericulata*; M3: 24.7.1999/31.7.1999, 2/2, ex *Tricholomopsis rutilans*; M: 4.6.2000/10.6.2000, 1/1, ex *Crepidotus mollis*; M31: 18.5.2003/28.-30.5.2003, 6/2, ex *Mycena galericulata*.

This species apparently prefers soft lignicolous agarics, such as *Mycena*. It was also observed by the author on *Armillaria* (see Fig. 11), without successful rearing confirmation. Ribeiro (1990) surprisingly listed several species of *Russula* and *Lactarius*, which are typical host fungi for other species of the *M. ruficollis* group. Considering difficult identification, these records possibly refer to the entire species group, rather than *M. ruficollis* s. str. or they refer to *M. britannica* Laštovka & Kidd, 1975, which is the commonest species of the *ruficollis* group in southern Europe and the Mediterranean region generally.

***Mycetophila signatoides* Dzedzicki, 1884**

New records: M51: 21.8.1999/31.8.-1.9.1999, 6/9, ex *Boletus chrysenteron*; M: 25.8.1999/ 6.9.1999, 1/1, ex *Boletus reticulatus*; M: 8.9.1999/18.9.1999, 1/2, ex *Boletus aereus*; M51: 24.9.2006/ 1.10.2006, 3/1, ex *Paxillus involutus*; S2: 1.10.2000/11.10.2000, 1/0, ex *Paxillus filamentosus*.

This species is specific to Boletaceae and the related family Paxillaceae. Fig. 12 shows the larva in the gills of *Paxillus involutus* covered by the imperfect stadium of the ascomycete fungus *Hypomyces chrysospermus*.

***Mycetophila spectabilis* Winnertz, 1863**

New record: M35: 9.6.2004/19.-22.6.2004, 4/2, ex *Pleurotus cornucopiae*.

This species has already been reared from *Pleurotus* by Dely-Draskovits (1974). There are also several records from other agarics from the families Tricholomataceae, Boletaceae and Russulaceae (Jakovlev 1994).

***Mycetophila strigata* Staeger, 1840**

Published record (Ševčík 2004a): M23: 8.6.2002/23.-25.6.2002, 3/0, ex *Calocybe gambosa*.

This is still the only known host fungus of this uncommon species.

***Mycetophila strigatoides* (Landrock, 1927)**

Published records (Ševčík 2001b, 2004c): M30: 9.5.1999/20.5.1999, 1/5, ex *Polyporus ciliatus*; S10: 24.8.2001/30.8.-3.9.2001, 6/8, ex *Polyporus melanopus*; S10: 10.5.2002/19.-23.5.2002, 6/9, ex *Lentinus tigrinus*; S10: 11.5.2002/25.5.2002, 0/1, ex *Polyporus ciliatus*.

This species is principally associated with *Polyporus*, but there are some other rearing records from unnamed species of *Trametes*, *Polyporus* and *Russula* (cf. Jakovlev 1994), which need confirmation, especially in the case of *Russula*.

***Mycetophila strobli* Laštovka, 1972**

Published records (Ševčík 2004c): S10: 21.8.2001/30.8.3001, 2/0, ex *Lactarius volemus*; S10: 24.8.2001/2.9.2001, 2/0, ex *Clitocybe odora*.

New records: M: 24.7.1999/2.8.1999, 2/5, ex *Lactarius vellereus*; S10: 25.9.1999/9.10.1999, 2/2, ex *Lactarius scrobiculatus*; M: 2.10.2000/17.10.2000, 3/3, ex *Lactarius rufus*; M31: 9.9.2002/21.9.2002, 1/2, ex *Lactarius decipiens*; M: 5.9.2004/18.9.2004, 1/2, ex *Lactarius rufus*; M: 5.9.2004/15.9.2004, 8/5, ex *Lactarius pilatii*.

This species from the *ruficollis* group prefers *Lactarius* and *Russula*.

***Mycetophila trinotata* Staeger, 1840**

Published records (Ševčík 2003, Ševčík et al. 2005): M5: 13.6.1999/21.6.1999, 2/1, ex *Bjerkandera adusta*; M40: 26.10.2003/8.11.2003, 2/0, ex *Bjerkandera adusta*.

New records: M53: 26.9.1999/3.-7.10.1999, 2/3, ex *B. adusta*; M31: 13.10.2004/22.10.2004, 1/1, ex *B. adusta*; M51: 24.9.2006/7.10.2006, 0/1, ex *B. adusta*.

M. trinotata appears to be specific to the common fungus *Bjerkandera adusta*, although there are some dubious records from other polypores (cf. Jakovlev 1994).

***Phronia siebeckii* Dzeidzicki, 1889**

New record: M10: 27.9.2004/10.10.2004, 2/1, ex *Calocera viscosa*.

This confirms the association with this fungus, previously recorded by Buxton (1961).

***Trichonta icenica* Edwards, 1925**

New record: M10: 27.9.2004/5.10.2004, 1/2, ex *Calocera viscosa*.

This is the first known fungus host for this species. The biology of *Trichonta* Winnertz, 1863 is generally poorly known, but there is a record of *Trichonta apicalis* Strobl, 1898 from *Calocera cornea* (see Buxton 1961).

***Trichonta* sp. 1**

Published record (Ševčík 2004c): S10: 13.10.2001/28.-29.10.2001, 0/2, ex *Pseudohydnum gelatinosum*.

Unfortunately only females emerged from this sample, partially due to strong parasitism by a proctotrupoid wasp of the genus *Aclista* Foerster, 1856 (Hymenoptera: Diapriidae). The reliable identification of the members of this genus is based on the structure of the male terminalia.

***Trichonta* sp. 2**

New record: M37: 23.7.2005/4.8.2005, 1/2, ex *Clavicornia pyxidata*.

A probably undescribed species, but further material is needed for description.

***Allodia* (*Allodia* s. str.) *anglofennica* Edwards, 1921**

New record: M21: 8.5.1999/22.5.1999, 1/0, ex *Conocybe aporos*.

Three species of *Allodia* s. str. emerged from this sample. Host fungi of this uncommon species are little known, there are only several previous records from *Collybia*, *Entoloma*, *Hebeloma*, *Inocybe*, *Suillus* and *Peziza* (cf. Jakovlev 1994).

***Allodia* (*A.*) *lugens* (Wiedemann, 1817)**

Published record (Ševčík 2004c): S11: 15.10.2001/31.10.2001, 1/0, ex *Stropharia aeruginosa*.

New records: B5: 23.10.1999/9.11.1999, 3/2, ex *Collybia asema*; B4: 23.10.1999/4.11.1999, 1/0, ex *Collybia asema*; S3: 29.10.2000/14.-16.11.2000, 4/1, ex *Galerina marginata*; S6: 9.10.2006/22.10.2006, 1/0, ex *Collybia asema*.

A relatively common species, known from many species of fungi (Jakovlev 1994). It appears to prefer small agarics growing in autumn.

***Allodia* (*A.*) *ornaticollis* (Meigen, 1818)**

New records: B5: 23.10.1999/5.11.1999, 1/2, ex *Collybia asema*; M42: 10.9.1998/19.9.1998, 2/7, ex *Pluteus cervinus*; M46: 10.4.1999/18.-20.4.1999, 5/3, ex *Nolanea verna*, M30: 24.4.1999/3.5.1999, 10/4, ex *Cortinarius romagnesii*; M21: 8.5.1999/17.5.1999, 2/2, ex *Conocybe aporos*; M53: 27.6.1999/5.7.1999, 2/1, ex *Mycena pura*; M46: 25.8.1999/2.9.1999, 1/0, ex *Psathyrella candolleana*; M42: 5.9.1999/13.9.1999, 1/0, ex *Mycena galericulata*; M46: 9.9.1999/16.9.1999, 6/3, ex *Inocybe geophylla*; M53: 26.9.1999/3.-7.10.1999, 5/7, ex *Crepidotus mollis*; M51: 3.10.1999/14.10.1999, 1/0, ex *Marasmius alliaceus*; M46: 24.10.1999/5.11.1999, 1/1, ex *Hebeloma crustuliniforme*; M41: 3.8.2000/10.8.2000, 2/3, ex *Russula luteotacta*; M21: 5.5.2001/20.5.2001, 1/0, ex *Entoloma hirtipes*; M8: 26.9.2001/6.10.2001, 4/0, ex *Agrocybe erebia*.

A common species, which develops mainly in small agarics.

***Allodia* (*A.*) *zaitzevi* Kurina, 1998**

New records: M21: 8.5.1999/22.5.1999, 1/0, ex *Conocybe aporos*; M21: 17.9.2000/26.9.2000, 1/1, ex *Russula* sp.; S10: 19.10.2001/6.11.2001, 2/1, ex *Cortinarius cumatilis*; S6: 9.10.2006/22.10.2006, 1/0, ex *Collybia asema*.

A recently distinguished species from the *A. ornaticollis* group, previously confused with *A. pyxidiformis* Zaitzev, 1983 or true *A. ornaticollis*. Jakovlev (1994) listed several species of *Boletus*, *Amanita*, *Russula* and other fungi for *A. pyxidiformis*.

***Allodia* (*Brachycampta*) *alternans* (Zetterstedt, 1838)**

New record: M20: 2.6.2006/17.6.2006, 2/0, ex *Collybia oclor*.

This species is known from both ascomycetes and various agarics (Jakovlev 1994). *Collybia* is a new host record.

***Allodia (B.) barbata* (Lundström, 1909)**

New records: M51: 1.5.1999/10.-14.5.1999, 19/14, ex *Peziza micropus*; M41: 3.5.2006/14.-17.5.2006, 6/8, ex *Peziza micropus*.

Members of the subgenus *Brachycampta* are known to develop in the ascomycete cup fungi. Also *A. sylvatica* and *A. foliifera* are specific to *Peziza* (see below).

***Allodia (B.) czernyi* (Landrock, 1912)**

New records: M16: 25.7.2000/11.8.2000, 1/6, ex *Tricholoma sulphureum*; M11: 5.9.2004/21.9.2004, 2/1, ex *Cortinarius croceoconus*; S3: 1.10.2000/16.10.2000, 1/0, ex *Dermocybe cinnamomeoluteus*.

This uncommon species (new to Slovakia) has been reared from several soft agarics (Jakovlev 1994). *Tricholoma* is a new host record.

***Allodia (B.) foliifera* (Strobl, 1910)**

Published record (Šedivý & Ševčík 2003): M13: 4.9.1999/19.9.1999, 3/1, ex *Peziza micropus*.

Buxton (1961) reared this species from *Peziza repanda* and Jakovlev (1994) from *Peziza* sp. These records were published under the misidentified name *A. triangularis* (Strobl, 1895). Šedivý & Ševčík (2003) reported from this sample the ichneumonid parasitoid *Plectiscidea cinctula*.

***Allodia (B.) grata* (Meigen, 1830)**

Published record (Ševčík 2001a, Ševčík 2003): 20/03 ex *Fistulina hepatica*;

New records: M45: 25.8.1999/7.9.1999, 3/2, ex *Leccinum scabrum*; M33: 22.5.1999/4.6.1999, 2/0, ex *Calocybe gambosa*; M1: 29.5.1999/11.6.1999, 1/0, ex *Boletus impolitus*; M51: 3.10.1999/20.10.1999, 3/2, ex *Lepiota aspera*; M41: 3.8.2000/12.8.2000, 4/5, ex *Amanita pantherina*; M48: 4.5.2002/19.5.2002, 2/3, ex *Entoloma clypeatum*; M31: 9.9.2002/22.9.2002, 2/4, ex *Russula rigida*; M31: 21.9.2002/7.10.2002, 2/3, ex *Megacollybia platyphylla*; M31: 18.5.2003/3.6.2003, 1/0, ex *Mycena galericulata*, M31: 6.7.2003/17.7.2003, 2/4, ex *Pluteus cervinus*.

A relatively common species, reported from more than 40 species of agarics.

***Allodia (B.) silvatica* (Landrock, 1912)**

New records: M46: 9.9.1999/23.-25.9.1999, 2/0, ex *Peziza* sp.; M10: 27.9.2004/10.-13.10.2004, 1/5, ex *Peziza badia*.

This species is specific to ascomycetes, mainly to the cup fungi of the genus *Peziza*. Buxton (1961) reared it from *Peziza repanda*. Jakovlev (1994) summarizes records from other ascomycetes.

***Allodiopsis gracai* Ševčík & Papp, 2003**

Published record (Ševčík & Papp 2003): M30: 9.7.2000/23.7.2000, 1/2, ex *Lycoperdon perlatum*.

A rare species recently described from the Czech Republic and Hungary and subsequently recorded in Slovakia (Ševčík 2004a) and Finland (Jakovlev et al. 2006). The record by Jakovlev (1994) of *Allodiopsis pseudodomestica* (Lackschewitz, 1937) from *Lycoperdon perlatum* may refer to *A. gracai*, because these two similar species had not been distinguished at that time.

***Allodiopsis rustica* (Meigen, 1830)**

Published record (Ševčík 2004c): S11: 15.10.2001/3.11.2001, 1/1, ex *Lepista nuda*.

New records: B1: 16.10.1999/9.-11.11.1999, 3/0, ex *Clitocybe inversa*; B5: 23.10.1999/11.11.1999, 1/2, ex *Collybia asema*; M36: 6.11.1999/1.12.1999, 3/1, ex *Lepista nuda*; M51: 14.10.2000/1.12.2000, 1/1, ex *Lepista nuda*; M14k: 2.10.2003/24.10.2003, 3/2, ex *Limacella guttata*; S5: 30.9.2006/21.10.2006, 1/2, ex *Clitocybe nebularis*.

The larvae of this common fungus gnat develop in fruit bodies of *Clitocybe* and *Lepista*. The mature larvae aggregate in the swollen basal part of the stem and eventually pupate in the soil.

***Anatella lenis* Dziedzicki, 1923**

New record: M42: 29.10.1999/12.-20.11.1999, 8/4, ex *Ascocoryne sarcoides*.

The only previous rearing record is from *Exidia glandulosa* (cf. Jakovlev 1994). Chandler (1993) reported the rearing by R.E. Evans of another species of the genus, *A. flavomaculata* Edwards, 1925, from *Cudoniella acicularis* (Bull.) Schroet.

***Brachypeza armata* Winnertz, 1863**

Published record (Ševčík 2004a): M51: 3.10.1999/19.10.1999, 4/3, ex *Pleurotus pulmonarius*.

New records: M51: 16.6.1998/28.6.-7.7.1998, 4/3 ex *Pleurotus pulmonarius*; M51: 30.5.1999/12.6.1999, 1/2, ex *P. pulmonarius*; M35: 9.6.2004/19.6.2004, 1/1, ex *Pleurotus cornucopiae*.

All species of *Brachypeza* Winnertz, 1863 are oligophagous and restricted to *Pleurotus*, although there are sporadic records from other fungi (Jakovlev 1994).

***Brachypeza bisignata* Winnertz, 1863**

Published records (Ševčík 2004a): M51: 3.10.1999/19.10.1999, 2/3, ex *Pleurotus pulmonarius*; M17: 15.5.2003/28.-30.5.2003, 5/3, ex *Pleurotus pulmonarius*.

New record: M51: 17.5.1998/30.5.1998, 4/1, ex *Pleurotus pulmonarius*.

This species is associated with *Pleurotus*, but there are also records from *Clitocybe* and *Lycoperdon* (see Jakovlev 1994).

***Brachypeza radiata* Jenkinson, 1908**

New record: M35: 9.6.2004/19.6.2004, 1/1, 2/04 ex *Pleurotus cornucopiae*.

The larvae of this rare species also live in *Pleurotus* spp. (see Fig. 13), as the previous species. Kurina (1992) surprisingly reared one male of *B. radiata* from *Armillaria mellea*.

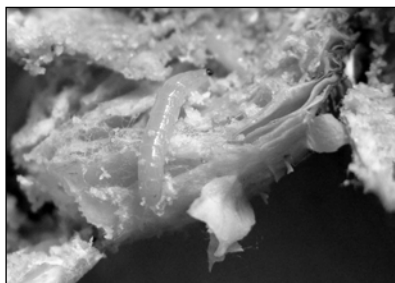


Fig. 13: Larva of *B. radiata* in *P. cornucopiae*

***Cordyla brevicornis* (Steger, 1840)**

New records: M54: 5.9.1998/12.9.1998, 5/10, ex *Amanita rubescens*; M41: 29.5.1999/6.6.1999, 1/1, ex *Russula grisea*; M41: 16.6.1999/25.6.1999, 2/20, ex *Boletus impolitus*; M51: 21.8.1999/29.8.1999, 1/0, ex *Amanita spissa*; M45: 25.8.1999/31.8.1999, 5/4, ex *Boletus reticulatus*; M46: 9.9.1999/16.9.1999, 2/2, ex *Amanita pantherina*; M16: 25.7.2000/1.8.2000, 2/4, ex *Boletus edulis*; M21: 17.9.2000/28.9.2000, 3/0, ex *Russula cyanoxantha*; M14: 27.5.2001/3.6.2001, 2/5, ex *Boletus reticulatus*; M23: 25.9.2001/6.10.2001, 5/1, ex *Rozites caperata*.

The larvae of this species typically develop in the stipe of the fruit body of various species from the families Amanitaceae, Boletaceae and Russulaceae.

***Cordyla fusca* Meigen, 1804**

New records: M21: 9.8.1998/18.9.1998, 4/5, ex *Russula* sp.; M21: 17.9.2000/24.-26.9.2000, 4/11, ex *Russula* sp.

This species prefers *Russula*, but it has been reared also from other fungi, e.g. *Boletus edulis*.

***Cordyla murina* Winnertz, 1863**

New records: S10: 19.10.2001/31.10.-2.11.2001, 2/3, ex *Gomphidius glutinosus*; S10: 19.10.2001/30.-31.10.2001, 1/1, ex *Suillus luteus*.

There are only a few rearing records for this species. Eisfelder (1955) reared it from *Lactarius torminosus* and Dely-Draskovits (1974) from *Leucopaxillus* and *Boletus*. *Gomphidius* and *Suillus* are new rearing records.

***Cordyla nitidula* Edwards, 1925**

New records: M21: 9.8.1998/18.9.1998, 4/5, ex *Russula* sp.; M3: 24.7.1999/30.7.1999, 2/0, ex *Russula cyanoxantha*; M51: 21.8.1999/30.8.1999, 3/0, ex *Russula violeipes*; M30: 9.7.2000/15.-18.7.2000, 1/3 ex *Russula amoenicolor*.

Most rearing records of this species are from *Russula* spp. (cf. Jakovlev 1994)

***Exechia bicincta* (Staeger, 1840)**

Published record (Šedivý & Ševčík 2003): M46: 9.9.1999/17.9.1999, 3/4, ex *Mycena galericulata*.

New records: M45: 25.8.1999/31.8.1999, 2/5, ex *Boletus impolitus*; M23: 2.9.2000/13.9.2000, 4/3, ex *Russula violeipes*; M21: 17.9.2000/25.9.2000, 1/0, ex *Boletellus pruinatus*; M24: 11.7.2004/18.7.2004, 5/5, ex *Boletus subtomentosus*.

Mycena galericulata has previously been known as a host fungus for this species (Dely-Draskovits 1974), the other records are new. Jakovlev (1994) listed 10 species of fungi from various genera for this *Exechia* species.

***Exechia confinis* Winnertz, 1863**

New record: M36: 23.7.2000/30.7.2000, 1/0, ex *Paxillus involutus*.

An uncommon species, probably specific to *Paxillus*. It was recorded from this fungus by Hackman & Meinander (1979) and Jakovlev (1994, 1995).

***Exechia dorsalis* (Staeger, 1840)**

New record: M10: 27.9.2004/10.10.2004, 1/0, ex *Laccaria amethystina*.

This species has been recorded from many agarics, mainly Tricholomataceae.

***Exechia fusca* (Meigen, 1804)**

New records: M21: 8.5.1999/18.5.1999, 1/0, ex *Conocybe aporos*; M3: 27.6.1999/5.7.1999, 1/0, ex *Russula carpini*; M51: 21.8.1999/29.8.1999, 1/0, ex *Amanita spissa*; M3: 26.9.1999/3.10.1999, 1/2, ex *Mycena polygramma*; M32: 10.10.1999/29.10.1999, 3/1, ex *Leucoagaricus pudicus*; B3: 23.10.1999/4.11.1999, 1/0, ex *Collybia asema*; B5: 23.10.1999/1.11.1999, 1/0, ex *Hygrophoropsis aurantiaca*; M46: 24.10.1999/4.11.1999, 1/0, ex *Hebeloma crustuliniforme*; M8: 6.11.1999/19.11.1999, 1/2, ex *Psilocybe bohemica*; M36: 6.11.1999/19.11.1999, 1/0, ex *Macrolepiota procera*; M8: 26.9.2001/ 6.10.2001, 5/2, ex *Agrocybe erebia*; M11: 7.6.2004/16.6.2004, 1/2, ex *Entoloma cetratum*; M11: 26.6.2004/5.7.2004, 1/0, ex *Galerina paludosa*; M11: 5.9.2004/19.9.2004, 1/0, ex *Russula griseascens*.

A common and polyphagous species, with a preference for soft agarics. Most of these samples were collected rather late in the year.

***Exechia lundstroemi* Landrock, 1923**

New records: B2: 28.7.2000/4.-6.8.2000, 2/0, ex *Boletus badius*; M21: 17.9.2000/27.-28.9.2000, 18/14, ex *Albatrellus ovinus*; M23: 25.9.2001/3.10.2001, 1/3, ex *Gomphidius glutinosus*.

A rare species, new for the Czech Republic, similar to *Exechia cornuta* Lundström, 1914. There is also one male of *E. lundstroemi* in the Landrock collection (Moravian museum, Brno) from Adamstal (= Adamov near Brno). Six species of host fungi are listed for this species by Jakovlev (1994). New host records.

***Exechia macula* Chandler, 2001
= *E. maculipennis* Stannius, 1831**

New record: B6: 5.7.2004/11.7.2004, 2/1, ex *Agaricus* sp.

Three other species of agarics are recorded by Jakovlev (1994) for this species.

***Exechia repanda* Johannsen, 1912**

New record: S10: 26.9.1999/9.10.1999, 1/2, ex *Lyophyllum loricatum*.

Several species of agarics are listed in Jakovlev (1994) for this species, which is new to Slovakia. *Lyophyllum* is a new host record.

***Exechia repandoides* Caspers, 1984**

Published record (Ševčík 2004a): M46: 9.9.1999/16.9.1999, 1/0, ex *Cortinarius* sp.

New record: M: 9.9.1999/17.9.1999, 1/0, ex *Tricholoma sejunctum*.

These are the only records of host fungi for this recently separated species.

***Exechia separata* Lundström, 1912**

New record: S10: 19.10.2001/30.-31.10.2001, 3/0, ex *Gomphidius glutinosus*.

This species is known from a number of host fungi, including *G. glutinosus* (see Jakovlev 1994).

***Exechia seriata* (Meigen, 1830)**

New records: M51: 15.8.1998/22.8.1999, 1/1, ex *Russula violeipes*; M: 16.6.1999/23.-26.6.1999, 1/2, ex *R. luteotacta*; M: 3.8.2000/10.8.2000, 1/0, ex *R. luteotacta*; M11: 5.9.2004/12.9.2004, 1/0, ex *R. grisescens*.

This species of *Exechia* prefers *Russula*, but there are several records from other fungi.

***Exechia spinuligera* Lundström, 1912**

New record: M30: 24.4.1999/2.5.1999, 1/2, ex *Cortinarius romagnesii*.

This rare fungus grows early in spring on recultivated mine dumps in the industrial town of Ostrava. These dumps form specific habitat with peculiar communities of fungi. New host record.

***Exechiopsis fimbriata* (Lundström, 1909)**

New record: M42: 29.10.1999/9.11.1999, ex *Laccaria laccata*.

The larvae of *Exechiopsis* live individually in the stem of small agarics, such as *Laccaria*. This confirms the association of *E. fimbriata* with *L. laccata* recorded by Kurina (1991).

***Exechiopsis intersecta* (Meigen, 1818)**

New record: M40: 11.10.2003/24.10.2003, 2/2, ex *Mycena* sp.

The only previous rearing record was from *Tricholoma saponaceum* (cf. Chandler 1978).

***Rymosia bifida* Edwards, 1925**

New record: M46: 9.9.1999/16.9.1999, 1/1, ex *Inocybe geophylla*.

Previously reared from *Psathyrella spadicea* and *Inocybe lacera* by Jakovlev (1994).

***Rymosia virens* Dzedzicki, 1910**

New record: M30: 22.5.1999/1.6.1999, 1/0, ex *Cortinarius romagnesii*.

The only previous rearing record is from *Laccaria amethystina* (cf. Jakovlev 1994).

***Tarnania tarnanii* (Dzedzicki, 1910)**

New record: M21: 17.9.2000/28.9.2000, 1/0, ex *Ramaria* sp.

An uncommon species, known from many species of agarics, e.g. *Hygrophorus*, *Tricholoma*, *Armillaria*, *Hebeloma* and *Cortinarius* (cf. Jakovlev 1994). New host record.

Sciaridae

A species-rich family of small black midges with uniform appearance. There are about 500 described species in Europe, but additional species are described every year. The Czech and Slovak fauna is little known, because of the lack of expertise in home institutions and only occasional samples of sciarids have been studied by foreign specialists. The larvae of most Sciaridae are typical soil inhabitants, where they feed on various decaying plant material. A well known pest in greenhouses and households is the cosmopolitan and synanthropic *Bradysia ocellaris* (Comstock, 1882). This species was common also in the soil used by the author for rearing, but no association with fungi in these samples is supposed. The following two species are considered mycophagous.

***Lycoriella ingenua* (Dufour, 1834)**

Published record (Ševčík 2004b): M40: 11.10.2003/9.11.2003, 1/0, ex *Bjerkandera adusta*.

A fungicolous species, also known under the junior synonyms *Lycoriella solani* (Winnertz, 1871) and *L. mali* (Fitsch, 1863).

***Scatopsciara neglecta* Menzel & Möhrig, 1998**

Published record (Ševčík 2001a): M42: 10.10.1998/31.10.1998, 2/0, ex *Merulius tremellosus*.

This species has been confused with the closely related *Scatopsciara pusilla* (Meigen, 1818), which was recorded from *Ganoderma applanatum*. This record may suggest the association with wood-decaying fungi.

Cecidomyiidae

A species-rich family of minute and fragile midges. Altogether 1700 species are known to occur in Europe and some 550 species in Czech Republic. Larvae are phytophagous, mycophagous, saprophagous or zoophagous. Many phytophagous larvae are gall makers inducing galls on various plants. Zoophagous larvae are predators of other gall midges, aphids, mites, coccids, or other small arthropods (Skuhravá 2006).

Mycophagous, saprophagous and some of the zoophagous larvae are associated with various fungi. They live usually in mould cover on the surface of the fruit body. Altogether 11 species of Cecidomyiidae, reared by the author from fungi, are recorded below. Several additional species from the author's samples still remain undetermined and will be treated in a separate publication. A further species, *Mycophila fungicola* Felt, 1911, is recorded by Skuhravá (2004) from Slovakia (Senec near Bratislava, ex *Pleurotus ostreatus*).

***Camptodiplosis auriculariae* Buxton & Barnes, 1953**

Published records (Ševčík 2004b): M12: 11.7.2003/25.-29.7.2003, 14/8, ex *Auricularia auricula-judae*; M39: 11.10.2003/23.-27.12.2003, 6/1, ex *A. auricula-judae*; M49: 24.7.2002/6.-25.8.2002, 5/9, ex *A. auricula-judae*.

These are the first records of this species (Fig. 14) after the description. Chandler (in litt.) reared this species from the same fungus collected at Windsor Forest, Berkshire, England. Larvae (Fig. 15) can be observed within the fungus tissue as this is translucent. They are pink or orange coloured and, according to Buxton & Barnes (1953), they are capable of jumping.

***Camptodiplosis boleti* (Kieffer, 1901)**

Published records (Ševčík 2001a, 2004b,c): M13: 24.9.1998/4.10.1998, 0/1, ex *Meripilus giganteus*; M42: 26.5.1999/4.6.1999, 14/6, ex *Laetiporus sulphureus*; M42: 26.5.1999/7.6.1999, 10/7, ex *Polyporus badius*; M54: 20.6.1998/29.6.-1.7.1998, 5/2, ex *Laetiporus sulphureus*. M1: 26.9.2003/7.10.2003, 1/1, ex *Lentinus tigrinus*; M31: 10.10.2001/8.-17.11.2001, 3/1, ex *Grifola frondosa*; M31: 15.6.2002/27.6.-1.7.2002, 1/1, ex *Trametes gibbosa*; M31: 6.8.2003/16.-17.8.2003, 14/23, ex *Fistulina hepatica*; S1: 3.9.2003/16.9.2003, 0/1, ex *Fomitopsis pinicola*; S1: 3.9.2003/18.9.2003, 1/2, ex *Pycnoporus cinnabarinus*. S10: 21.8.2001/11.9.2001, 3/5, ex *Trametes gibbosa*; S10: 24.8.2001/4.9.2001, 1/0, ex *Polyporus melanopus*.

New record: S7: 4.7.2006/4.8.2006, 1/1, ex *Polyporus badius*.

A common mycophagous species associated with polypores (cf. Jakovlev 1994, Ševčík 2003).

***Lestodiplosis inermis* Kieffer, 1912**

Published records (Ševčík 2004c): S9: 21.8./10.9.2001, 1/0, ex *Collybia confluens*.

A presumably zoophagous species, which has hitherto been known only from France (Skuhravá, pers. comm.).

***Lestodiplosis polypori* (H. Loew, 1850)**

Published records (Ševčík 2001a, 2004b,c): M13: 24.9.1998/4.-10.10.1998, 1/1, ex *Meripilus giganteus*; M16: 25.7.2000/4.-11.8.2000, 1/1, ex *Postia stiptica*; M21: 17.9.2000/11.10.2000, 2/0, ex *Albatrellus confluens*; M42: 29.10.1999/7.12.1999, 0/1, ex *Inonotus radiatus*; M46: 10.6.2000/20.-28.6.2000, 0/3, ex *Bjerkandera adusta*; M50: 27.5.2000/9.-12.6.2000, 4/5, ex *Trametes hirsute*; M31: 15.6.2002/27.-30.6.2002, 4/4, ex *T. gibbosa*; M31: 22.6.2003/6.7.2003, 1/0, ex *Hapalopilus nidulans*; M31: 6.7.2003/19.7.2003, 0/3, ex *Antrodiella romellii*; M31: 6.8.2003/28.8.-9.9.2003, 1/1, ex *Ganoderma applanatum*; M39: 11.10.2003/12.12.2003, 0/1, ex *B. adusta*; M40: 26.10.2003/12.12.2003, 0/2, ex *T. versicolor*; M48: 19.5.2002/2.6.2002, 0/1, ex *Polyporus squamosus*; M52: 14.6.2003/26.6.-10.7.2003, 5/2, ex *T. versicolor*. S10: 21.8.2001/3.9.2001, 0/1, ex *Hydnum repandum*; S10: 21.8.2001/11.9.2001, 1/1, ex *Trametes gibbosa*; S10: 24.8.2001/4.-10.9.2001, 2/4, ex *Polyporus melanopus*; S9: 21.8.2001/15.-16.9.2001, 0/2, ex *Hericiium cirrhatum*; S10: 14.10.2001/16.11.2001, 0/1, ex *B. adusta*; S11: 11.5.2002/24.-28.5.2002, 8/10, ex *Trametes versicolor*.



Figs 14-15: *Camptodiplosis auriculariae*. 14 – male and female; 15 – larvae in *Auricularia auricula-judae*.

L. polypori is one of the commonest gall-midge species associated with wood-decaying fungi (cf. Økland 1995, Ševčík 2003). It is, however, predaceous, attacking the other species living in fungi (Skuhrová, pers. comm.).

***Heteropeza pygmaea* Winnertz, 1846**

Published record (Ševčík 2004b): M17: 15.5.2003/14.-20.6.2003, 0/17, ex *Pleurotus pulmonarius*.

This is a characteristic species with reduced wing venation (Fig. 16). Skuhrová (2004) recently recorded this species also from *P. pulmonarius*. It was previously reared only from *Daldinia* sp. (Hingley 1971) and cultivated mushrooms (Wyatt 1964, Hussey 1962 and earlier literature on control of mushroom pests).



Fig. 16: Female of *Heteropeza pygmaea*

***Monardia (Trichopterymyia) modesta* (Williston, 1896)**

Published record (Ševčík 2001a): M4: 24.9.2000/5.-18.11.2000, 4/2, ex *Hericium alpestre*.

This is the only information about the biology of this cosmopolitan species.

***Peromyia fungicola* (Kieffer, 1898)**

Published records (Ševčík 2001a, 2004b,c): M21: 17.9.2000/30.9.-3.10.2000, 2/7, ex *Ramaria* sp. M39: 11.10.2003/30.10.2003, 2/0, ex *A. auricula-judae*; M48: 19.5.2002/1.-2.6.2002, 4/3, ex *Polyporus squamosus* (erroneously recorded by Skuhrová 2004 as *Polyporus mori*). S10: 21.8./31.8.2001, 1/3, ex *Russula alutacea*.

New record: S5: 30.9.2006/8.10.2006, 2/1, ex *Lactarius piperatus*.

This species belongs to the subfamily Lestremiinae. It is known from various species of fungi. Jaschhof (1998) listed the following host fungi: *Lactarius piperatus*, *Grifola frondosa* and *Hygrophorus camarophyllus*. Probably polymycophagous species.

***Spaniocera squamigera* Winnertz, 1863**

Published record (Ševčík 2001a): S2: 1.10.2000/31.10.2000, 1/0, ex *Paxillus filamentosus*.

A mainly phytosaprophagous species. This is the only record from a fungus.

***Stomatosema nemorum* Kieffer, 1904**

Published record (Ševčík 2004b): M31: 9.9.2002/26.-30.9.2002, 2/6, ex *Lactarius decipiens* (covered with mould).

This is the only information about the biology of this species.

***Tricholaba trifolii* Rübsaamen, 1917**

Published record (Ševčík 2004c): S10: 24.8./15.9.2001, 0/1, ex *Russula nigricans*.

A mainly phytosaprophagous species, this is the only record from fungi.

***Winnertzia lugubris* (Winnertz, 1853)**

Published record (Ševčík 2004b): M8: 14.6.2002/6.-8.7.2002, 2/0, ex *Bjerkandera adusta*; M31: 18.5.2003/12.-24.6.2003, 2/3, ex *Bjerkandera adusta*.

It has previously been reared from *Trametes versicolor* and *Fomitopsis pinicola* (cf. Jakovlev 1994).

Psychodidae

Small flies (1-5 mm, so-called moth flies) thickly clothed with greyish hairs and scales, with typical broad lancet-shaped wings laid roof-like on the abdomen, giving them the overall moth-like appearance. The larvae of non-biting moth flies are mainly semi-aquatic and they feed on various decaying organic matter. Almost 500 species are known to occur in Europe and 148 of them in the Czech Republic (Ježek 2006). Three species are regularly associated with fungi.

Chodopsycha buxtoni (Withers, 1988)

Published records (Ševčík 2001a, 2004b,c): M51: 30.5.1999/6.-11.6.1999, 10/10, ex *Pluteus cervinus*; M51: 3.7.1999/10.-12.7.1999, 2/3, ex *Amanita rubescens*; M12: 11.7.2003/18.-21.7.2003, 1/1, ex *Ramaria* sp. S10: 21.8.2001/26.-27.8.2001, 2/1, ex *Hydnum repandum*; S10: 21.8.2001/28.-31.8.2001, 3/1, ex *Amanita spissa*; S10: 21.8.2001/29.8.2001, 4/1, ex *Leccinum quercinum*.

This species was recently separated from the following species and appears to be polymycophagous. Withers (1988) recorded it from *Boletus* sp.

Chodopsycha lobata (Tonnoir, 1940)

Published records (Ševčík 2001a, 2004b,c): M2: 5.8.2000/14.8.2000, 2/0, ex *Amanita phalloides*; M13: 4.9.1999/14.9.1999, 8/4, ex *Amanita rubescens*; M21: 17.9.2000/27.9.2000, 8/3, ex *Amanita spissa*; M21: 17.9.2000/27.9.2000, 8/3, ex *Albatrellus ovinus*; M51: 10.10.2000/21.10.2000, 1/1, ex *Armillaria gallica*; M9: 15.8.2002/23.-25.8.2002, 8/22, ex *Hygrophorus* sp.; M12: 11.7.2003/18.-21.7.2003, 1/0, ex *Ramaria* sp. (decaying). S10: 21.8.2001/28.-31.8.2001, 2/0, ex *Lactarius volemus*; S10: 21.8.2001/28.-31.8.2001, 1/0, ex *Amanita spissa*.

New records: S5: 30.9.2006/8.10.2006, 2/2, ex *Sarcodon imbricatus*; S5: 30.9.2006/8.10.2006, 2/2, ex *Boletus chrysenteron*.

A common European species, known from many fungus species (Jakovlev 1994), usually in decaying fruiting bodies.

Psychomora vanharai Ježek, 1995

Published records (Ševčík 2001a, 2004b,c): M2: 5.8.2000/14.8.2000, 2/0, ex *Amanita phalloides*; M31: 22.6.2003/4.7.2003, 1/0, ex *Pleurotus pulmonarius*. S10: 21.8.2001/28.-31.8.2001, 7/2, ex *Lactarius volemus*; S10: ex *Hydnum repandum*.

Fungicolous larvae of this family develop mainly in decaying fruiting bodies of fungi. The biology of the recently described *P. vanharai* has not been previously recorded.

Anisopodidae

Window gnats (Anisopodidae) are medium-sized (5-10 mm) insects with elongated body and legs. Wings have a characteristic pattern of dark markings. The larvae are found in various decaying organic material, e.g. stems and roots of umbelliferous plants (Hancock 1989). Only two species (*Sylvicola cinctus* and *S. fenestralis*) have been reared also from fungi. The adults occur mainly in forest habitats, but frequently also in gardens or on windows; they feed on nectar and other liquids. Altogether 7 species are known to occur in Europe, 5 of them are known from the Czech Republic and 6 from Slovakia.

Sylvicola cinctus (Fabricius, 1787)

Published record (Ševčík 2001a): M4: 24.9.2000/15.-16.10.2000, 1/1, ex *Polyporus squamosus*.

Larvae of this species are found in a variety of rotting vegetable matter, especially roots of umbelliferous plants (Hancock 1989) and at sap runs from trees. There are also sporadic records from fungi, which do not appear to be typical breeding material for flies from this family. *S. cinctus* has been often confused with the less frequently recorded *S. fenestralis* (Scopoli, 1763).

Chironomidae

A species-rich family with a diverse life history. Most of the species have aquatic larvae, but there are also groups of terrestrial species, which develop in soil or various plant materials, and several species are carnivorous or parasitic. Five species from 4 genera have been recorded from fungi (see Jakovlev 1994).

The species composition of the chironomid fauna in both the Czech and Slovak Republics is rather poorly known and most data concern the aquatic larvae and pupal exuviae. The terrestrial species are particularly little known and further research is needed. Some 200 species of chironomids have so far been reported from the Czech Republic, which represent probably only a third of the real number of species.

Bryophaenocladus sp.

Published record (Ševčík 2004c): S12: 23.8.2001/5.-30.9.2001, 11/9, ex *Trichaptum biforme*.

A probably new species (**Fig. 17**), which will be described elsewhere. Its larvae were common in the fruit body of *Trichaptum biforme*, growing on a beech branch lying on the ground. The larvae are apparently mycophagous and feed within the fungal tissue (**Fig. 18**). Two other species of *Bryophaenocladus* Thienemann, 1934 were recorded from fungi by Jakovlev (1994). *B. ictericus* (Meigen, 1818) was recorded by Buxton (1961, as *Eudactylocladius icterica*). The fungus name *Xylosphaera* used in Chandler (1978) is a synonym of *Xylaria* [the current name] used by Buxton and refers to the same record, although listed separately by Jakovlev (1994).



Fig. 17: *Bryophaenocladus* sp.

Ceratopogonidae

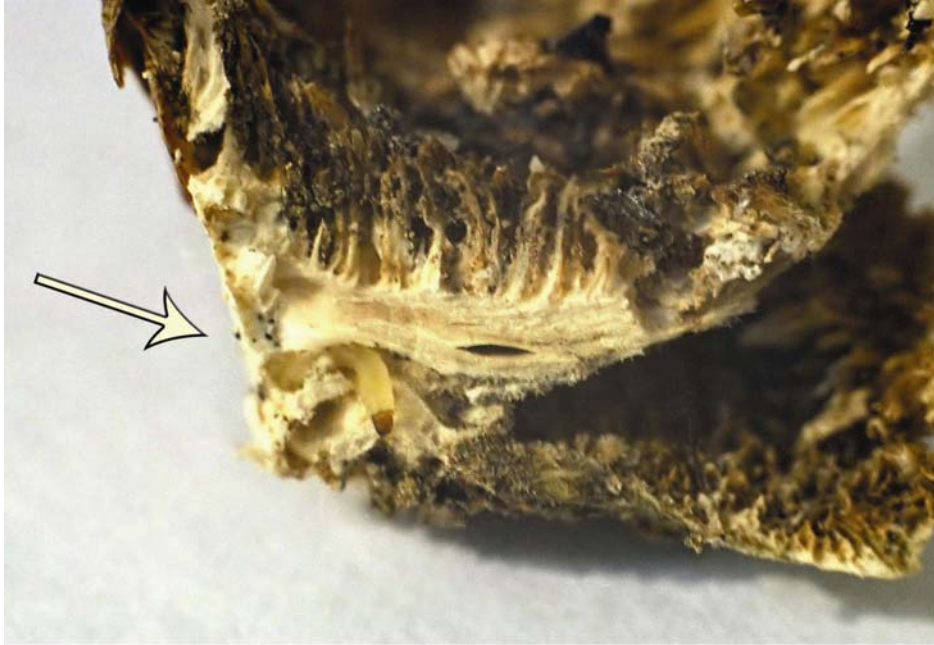
This family comprises relatively small midges with diverse biology. Many species have ectoparasitic blood-sucking females while males are usually nectar feeders. Species both with aquatic and terrestrial larvae are included. Ten species belonging to the genera *Culicoides* and *Forcipomyia* have so far been recorded from fungi (Jakovlev 1994).

Almost 600 species of ceratopogonids are known from Europe and some 200 species have been ascertained in the Czech Republic.

Atrichopogon rostratus (Winnertz, 1852)

Published record (Ševčík 2001a): M3: 24.7.1999/10.8.1999, 0/1, ex *Russula cyanoxantha*.

Jakovlev (1994) did not include the genus *Atrichopogon* among fungivorous Ceratopogonidae.



Figs 18-19: 18 – larva of *Bryophaenocladus* sp. in *Trichaptum bifforme*; 19 – mine dumps in various stages of succession represent suitable habitat for fungicolous Diptera.

***Culicoides scoticus* Downes & Kettle, 1952**

Published records (Ševčík 2001a, 2004b,c): B2: 28.7.2000/18.8.2000, 1/0, ex *Boletus badius*; M3: 24.7.1999/10.8.1999, 1/1, ex *Russula cyanoxantha*; M16: 25.7.2000/12.8.2000, 1/1, ex *Russula nigricans*; M21: 17.9.2000/6.10.2000, 2/4, ex *Albatrellus ovinus*; M53: 26.9.1999/17.10.1999, 5/1, ex *Bjerkandera adusta*; S3: 1.10.2000/19.10.2000, 1/0, ex *Lactarius deterrimus*; M3: 15.8.2002/28.8.2002, 4/0, ex *Lactarius* sp. S15: 25.9.1999/20.10.1999, 1/2, ex *L. scrobiculatus*; S10: 21.8.2001/4.-9.9.2001, 5/0, ex *Lactarius volemus*; S10: 22.8.2001/9.-16.9.2001, 16/16, ex *Cantharellus cibarius*; S10: 24.8.2001/ 12.9.2001, 1/0, ex *Russula aeruginea*.

New records: B2: 28.7.2000/18.8.2000, 3/1, ex *Boletus pinophilus*; M21: 17.9.2000/8.10.2000, 1/0, ex *Amanita spissa*; M21: 17.9.2000/7.10.2000, 0/7, ex *B. montana*; M11: 5.9.2004/26.9.2004, 1/1, ex *Lactarius rufus*; M11: 5.9.2004/23.9.2004, 2/7, ex *Lactarius pilatii*; M51: 24.9.2006/10.10.2006, 8/7, ex *Armillaria gallica*. S7: 4.7.2006/4.8.2006, 3/4, ex *Polyporus badius*; S8: 1.10.2006/18.10.2006, 2/0, ex *A. ostoyae*.

The most frequent species of Ceratopogonidae in fungi, apparently polymycophagous. It has been recorded from more than 20 species of fungi.

***Forcipomyia bipunctata* (Linnaeus, 1767)**

New record: S7: 4.7.2006/ 23.7.2006, 1/1, ex *Polyporus badius*.

There is only one previous record from a named fungus (*Phellinus gilvus*, see Jakovlev 1994).

***Forcipomyia nigra* (Winnertz, 1852)**

Published records (Ševčík 2004b,c): M12: 11.7.2003/24.-25.7.2003, 3/1, ex *Polyporus badius*. S10: 24.8.2001/13.9.2001, 1/0, ex *Tyromyces chioneus*.

This species has previously been reared from *Entoloma clypeatum*, and also found in decaying plants and under the bark of deciduous trees (Jakovlev 1994). The records from Moravia and Slovakia suggest a possible association with wood-decaying fungi.

Hybotidae

This family has formerly been included in the Empididae and comprises in this restricted form some 200 species in the Czech Republic. Larvae live in soil, decaying wood or in excrement and they are predators. Findings in fungi are exceptional.

***Ocydromia glabricula* (Fallén, 1816)**

Published record (Ševčík 2004b): M31: 1.6.2002/27.6.2002, 1/0, ex *Bjerkandera adusta*.

Larvae of this species are predaceous, hitherto not recorded from fungi.

Platyezidae

Platyezids, or flat-footed flies, are a group of small to medium-sized (5-8 mm) brachycerous flies with relatively short body, broad head and typically enlarged tarsi on hind legs. The males are usually velvet black while females are often more brightly coloured, at least with grey or yellow bands on the abdomen (**Fig. 20**). The larvae of most genera are typical mycobionts and are usually restricted to one or a few fungus hosts. The family was recently reviewed in the monograph by Chandler (2001). There are 43 species recorded from Europe and more than 30 species occur in the Czech Republic.



Figs 20-21: *Protoclythia modesta*. 20 – female on *Armillaria gallica*; 21 – larvae in host fungus.

***Agathomyia antennata* (Zetterstedt, 1819)**

Published records (Ševčík 2001a, 2004b,c): M5: 13.6.1999/2.-4.7.1999, 4/4, ex *Bjerkandera adusta*; M42: 26.6.1999/18.7.1999, 2/4, ex *B. adusta*; M46: 10.6.2000/28.6.-6.7.2000, 3/1, ex *B. adusta*; M47: 10.6.2000/28.6.-8.7.2000, 1/1, ex *B. adusta*. M31: 1.6.2002/18.6.2002, 1/0, ex *B. adusta*; M31: 18.8.2002/6.-9.9.2002, 1/2, ex *B. adusta*; M37: 10.7.2004/8.8.2004, 3/0, ex *B. adusta*.

New records: M31: 19.8.2005/1.9.2005, 1/0, ex *B. adusta*; S8: 14.7.2005/3.8.2005, 1/0, ex *B. adusta*.

This is the only reliably known fungus host for this species and no other species of Platypezidae has been reared from this fungus by the author. Laštovka's old record from *Trametes versicolor*, published by Vaňhara (1984), is most probably based on misidentification of the host fungus, considering the fact that the fruit bodies of *B. adusta* are similar to the highly variable *T. versicolor*. In Laštovka's manuscript remarks from June 1960 there is written under this record only: "Polyporaceae gen. sp."

***Bolopus furcatus* (Fallén, 1826)**

Published records (Ševčík 2001a, 2004b,c): M4: 24.9.2000/3.11.2000, 1/0, ex *Polyporus squamosus*; M48: 19.5.2002/16.6.2002, 1/0, ex *P. squamosus*. S9: 9.5.2002, females ovipositing on *P. squamosus*.

These are confirmations of its association with the only known fungus host. Tollet (1958) first stated *P. squamosus* as the larval habitat for *Bolopus furcatus*.

***Lindneromyia dorsalis* (Meigen, 1804)**

Published record (Ševčík 2004b): M28: 17.6.2002/1.-6.7.2002, 2/3, ex *Agaricus bitorquis*.

This species has been several times reared from various species of *Agaricus*, including *A. bitorquis* (cf. Dely-Draskovits & Babos 1993, Chandler 2001).

***Paraplatypeza atra* (Meigen, 1804)**

Published records (Ševčík 2001a, 2004b): M30: 9.7.2000/20.-21.7.2000, ex *Pluteus cervinus*. M19: 2.8.2002/11.-17.8.2002, 0/3, ex *Pluteus salicinus*; M31: 18.8.2002/27.8.2002, 1/0, ex *Pluteus cervinus*.

Pluteus cervinus and related species of *Pluteus* are regular fungus hosts.

***Platypeza consobrina* Zetterstedt, 1844**

Published record (Ševčík 2004b): M23: 30.9.2003/1.-5.11.2003, 3/1, ex *Armillaria ostoyae*.

New record: M51: 24.9.2006/5.11.2006, 1/0, ex *Armillaria gallica*.

Armillaria is the only confirmed fungus host for this species (Chandler 2001).

***Polyporivora ornata* (Meigen, 1838)**

Published record (Ševčík 2004b): M3: 15.8.2002/23.-27.8.2002, 5/8, ex *Trametes versicolor*.

New record: S4: 5.7.2006/17.7.2006, 1/2, ex *Trametes versicolor*.

This is a further confirmation of its association with the only known fungus host.

***Protoclythia modesta* (Zetterstedt, 1844)**

Published records (Ševčík 2004b): M39: 11.10.2003/29.11.-3.12.2003, 0/2, ex *Armillaria gallica*; M40: 11.10.2003/28.11.-5.12.2003, 3/12, ex *Armillaria gallica*.

New record: S8: 1.10.2006/7.11.2006, 0/1, ex *Armillaria ostoyae*.

Larvae of this species (**Fig. 21**) are common in various recently distinguished species of *Armillaria*. The adults are often seen on the host fungus (**Fig. 20**).

***Seri obscuripennis* (Oldenberg, 1916)**

Published records (Ševčík 2001a, 2004c): M42: 26.5.1999/8.-9.6.1999, 18/5, ex *Polyporus badius*; M46: 10.6.2000/27.6.2000, 0/2, ex *Polyporus varius*. S10: 24.8.2001/31.8.-7.9.2001, 14/16, ex *Polyporus melanopus*.

New record: S7: 4.7.2006/ 9.-11.7.2006, 7/1, ex *Polyporus badius*.

This species is restricted to larger species of *Polyporus*.

Phoridae

Scuttle flies (Phoridae) are small (up to 5 mm) humpbacked flies, black or yellowish, with a characteristically simplified wing venation. More than 220 species are presently known from the Czech Republic and some 600 species occur in Europe.

The biology and systematics of the family was reviewed by Disney (1994). The larvae have very diverse natural history. Many species are predators or parasitoids of various invertebrates, other live in dung, carrion, wasp nests etc., and for most species the larval biology is unknown. More than 40 species, almost exclusively from the large genus *Megaselia* Rondani, 1856, are known to develop in fungi.

***Megaselia berndseni* (Schmitz, 1919)**

Published records (Ševčík 2001a, 2004c): M1: 29.5.1999/17.6.1999, 1/3, ex *Boletus impolitus*; M17: 27.4.2000/14.5.2000, 14/13, ex *Calocybe gambosa*; S10: 21.8.2001/4.9.2001, 2/2, ex *Leccinum molle*. S10: 10.5.2002/30.5.-2.6.2002, 2/8, ex *Lentinus tigrinus*.

New record: M26: 18.6.2006/2.7.2006, 2/0, ex *Inocybe erubescens*.

M. berndseni is known from a number of host fungi, including *Inocybe erubescens* (= *I. patouillardii*). This confirms Eisfelder's (1956) report of this species being reared from this poisonous fungus.

***Megaselia cinereifrons* (Strobl, 1910)**

Published record (Ševčík 2001a): M21: 17.9.2000/7.10.2000, 8/3, ex *Albatrellus ovinus*.

This species has already been reported from this fungus by Disney (1994). The other scarce rearing records are also from polypores.

***Megaselia flava* (Fallén, 1823)**

Published record (Ševčík 2001a): M51: 15.8.1998/4.9.1998, 1/2, ex *Russula violeipes*.

A polymycophagous species, recorded from many species of fungi, including three species of *Russula* (see Jakovlev 1994).

***Megaselia flavicans* Schmitz, 1935**

Published records (Ševčík 2001a, 2004b,c): M51: 3.7.1999/24.7.1999, 1/0, ex *Russula grisea*; M43: 2.5.2002/18.-19.5.2002, 27/32, ex *Morchella esculenta*; M43: 2.5.2002/19.5.2002, 2/5, ex *Mitrophora semilibera*. S10: 21.8./4.-5.9.2001, 3/2, ex *R. alutacea*. S10: 8.5./26.-28.5.2002, 5/4, ex *Entoloma clypeatum*.

New record: M27: 3.5.2006/22.5.2006, 5/2, ex *Gyromitra fastigiata*; M27: 2.9.2006/20.9.2006, 2/1, ex *Russula pulchella*.

Another polymycophagous species, known from a number of fungi. This is the first named phorid species reared from *Gyromitra fastigiata* and hence a new host record for this fly.

***Megaselia frameata* Schmitz, 1927**

Published records (Ševčík 2001a, 2004c): M25: 19.9.1999/10.10.1999, 4/2, ex *Bondarzewia montana*; M32: 4.6.2000/19.6.2000, 2/0, ex *Crepidotus mollis*; M42: 26.5.1999/14.-16.6.1999, 1/1, ex *Laetiporus sulphureus*; M42: 26.6.1999/13.7.1999, 4/0, ex *Bjerkandera adusta*; M51: 15.8.1998/3.9.1998, 1/0, ex *Pholiota squarrosa*; M54: 20.6.1998/6.7.1998, 1/0, ex *Laetiporus sulphureus*. S10: 14.10.2001/10.11.2001, 0/1, ex *Bjerkandera adusta*.

New records: M31: 22.6.2003/7.7.2003, 1/2, ex *Pleurotus pulmonarius*, M37: 23.7.2005/8.8.2005, 1/0, ex *Clavicornia pyxidata*. S7: 4.7.2006/ 19.7.2006, 3/0, ex *Polyporus badius*.

All these records confirm that *M. frameata* prefers Polyporaceae and other lignicolous fungi. It is also the first named species of Phoridae reared from *Pleurotus pulmonarius*, *Polyporus badius* and *Clavicornia pyxidata* (all new host records).

***Megaselia hilaris* Schmitz, 1927**

Published record (Ševčík 2004c): S10: 8.5.2002/26.5.2002, 1/0, ex *Entoloma clypeatum*.

This is the only record of the rearing of *M. hilaris* from anything.

***Megaselia hirtiventris* (Wood, 1909)**

Published record (Ševčík 2004b): M14: 29.5.1999/24.-26.6.1999, 7/15, ex *Agaricus xanthoderma*.

This confirms the previous records of this oligophagous fly from *Agaricus* spp.

***Megaselia lata* (Wood, 1910)**

Published records (Ševčík 2001a, 2004b,c): B2: 28.7.2000/15.8.2000, 9/6, ex *Boletus edulis*; M15: 11.8.2000/23.-24.8.2000, 12/37, ex *Amanita muscaria*; M16: 25.7.2000/9.-11.7.2000, 1/2, ex *Boletus edulis*. S10: 21.8.2001/8.-12.9.2001, 31/51, ex *Boletus edulis*; S10: 21.8.2001/5.9.2001, 3/6, ex *Amanita spissa*.

New record: M14: 27.5.2001/15.6.2001, 16/31, ex *Boletus reticulatus*; M51: 19.9.2006/7.10.2006, 4/5, ex *Amanita rubescens*.

Amanita, *Boletus* and *Russula* are usual host fungi of this species. Two braconid species were confirmed to parasitise the larvae of *M. lata* - *Aspilota caudata* and *Orthostigma pumilus*.

***Megaselia latior* Schmitz, 1936**

Published record (Ševčík 2001a): M32: 4.6.2000/20.6.2000, 1/0, ex *Psathyrella candolleana*.

This confirms the association recorded by Disney & Evans (1999) with this fungus

***Megaselia lutea* (Meigen, 1830)**

Published records (Ševčík 2001a, 2004b): M30: 30.7.2000/21.-22.8.2000, 2/4, ex *Suillus granulatus*; M44: 22.5.2000/14.6.2000, 3/2, ex *Entoloma clypeatum*; M45: 9.9.1999/3.10.1999, 2/0, ex *Lactarius acerrimus*; M51: 3.7.1999/24.7.1999, 1/1, ex *Russula grisea*. S15: 25.9.1999/24.10.1999, 2/2, ex *Lactarius scrobiculatus*; S10: 24.8.2001/18.9.2001, 1/0, ex *Russula aeruginea*; S11: 15.10.2001/11.11.2001, 1/2, ex *Lactarius subdulcis*.

Many species of *Russula* and *Lactarius* are known as its host fungi (cf. Jakovlev 1994, Disney & Evans 1999).

***Megaselia maura* (Wood, 1910)**

Published record (Ševčík 2001a): M30: 9.5.1999/20.5.1999, 13/16, ex *Agrocybe praecox*.

This species was previously known only from *Gymnopilus* and *Hypholoma*.

***Megaselia nigra* (Meigen, 1830)**

Published records (Ševčík 2001a, 2004b): M1: 5.8.2000/22.-24.8.2000, 4/12, ex *Agaricus bohussii*; M28: 17.6.2002/7.-8.7.2002, 1/2, ex *Agaricus bitorquis*.

This phorid species apparently prefers *Agaricus*, although it has been reared from several other fungus species (Disney & Evans 1999).

***Megaselia scutellaris* (Wood, 1909)**

New record: M51: 19.9.2006/22.10.2006, 2/2, ex *Amanita rubescens*.

This species was reared from *Amanita rubescens* already by Eisfelder (1955). It is also known from other species of *Amanita*, as well as *Russula*, *Tricholoma*, *Cortinarius* and other fungi (cf. Jakovlev 1994).

***Megaselia sevciki* Disney sp. n.
(Figs 22-28)**

Type material. HOLOTYPE male, CZECH REPUBLIC, Silesia, Ostrava, recultivated mine dump „Zárubek“, reared from sporophore of *Bovista pusilla* (Lycoperdaceae), 7 June 2006/20 June 2006, J. Ševčík leg. (Cambridge University Museum of Zoology, 8-70). PARATYPES, 4 males, 6 females as holotype; Also three third instar larvae.

Description.

Male. Frons brown, clearly broader than long, with 50-62 hairs, dense but fine microsetae and bristles arranged as in **Fig. 23**. SAs robust but lower pair weaker and shorter than upper SAs (being subequal to bristles on palps). Cheek with 2-3 bristles and jowl with two longer ones. Postpedicels subglobose, yellowish brown, without SPS vesicles. Palps straw yellow, with 6-7 bristles and 5-8 hairs. Labrum a little darker than palps and about 0.9x as wide as postpedicel. Labella each with a light brown band on top, together their maximum width is about 1.8x as wide as postpedicel and they have dense fields short spinules below. Thorax brown, being a little paler on sides. Mesopleuron bare. Three notopleural bristles and no cleft in front of these. Scutellum with an anterior pair of hairs (a little shorter than hairs at rear of scutum) and a posterior pair of bristles. Abdominal tergites brown with the hairs at rear of T6 longer than rest. Venter brown, and with hairs below segments 3-6. Hypopygium largely brown, with mainly pale yellow anal tube, and as **Fig. 24**. Right lobe of hypandrium shorter than that of the left. Legs mainly straw yellow except for brown patch on mid coxa and outer third to half of hind femur gradually darkens to a yellowish brown. Fore tarsus with posterodorsal hair palisade on segments 1-4 only. Dorsal hair palisade of mid tibia extends almost two thirds of length. Hairs below basal half of hind femur clearly longer than those of anteroventral row of outer half. Hind tibia with 15-18 differentiated posterodorsal hairs, the strongest being in the second and third quarters. Spinules of apical combs simple. Wings 1.6-1.7 mm long. Costal index 0.40-0.41. Costal ratios 4.3-4.6 : 1.4-1.5 : 1. Costal cilia (of section 3) 0.10-0.11 mm long. Hair at base of vein 3 subequal to the most basal costal cilium of dorsal (posterior) row. With two axillary bristles, both being longer than costal cilia. Sc not reaching R₁. Thick veins yellowish grey and thin veins more grey, with 7 being paler. Membrane tinged yellowish grey. Haltere with brown stem and straw yellow knob.

Female. Head similar to male except the labrum slightly wider than diameter of postpedicel and is brown. Thorax as male except the anterior scutellars are shorter and finer. Abdominal tergites brown. T5-T7 as **Fig. 22**. Venter brown, and with hairs below segments 3-6. Sternite 7 a narrow brown bar that is narrowest at its hind margin, where it bears a single long hair. Posterolateral lobes at rear of sternum 8 weakly developed and with two hairs at rear margin.

Cerci pale and about 2.5x as long as broad. With four rectal papillae. Furca not evident. Dufour's crop mechanism as **Fig. 25** and located in thorax. Legs similar to male. Wing as male except 1.6-1.9 mm long. Costal index 0.39-0.41. Costal ratios 3.5-4.8 : 1.2-1.6 : 1. Costal cilia 0.10-0.20 mm long. Otherwise it and haltere as male.

Larva. Third instar pale straw yellow, roughly circular in cross section and between 3.5 and 4 mm in length. The integument with weak transverse spinule bands on each segment, but otherwise bare and lacking the typical processes except at tail end. Head end and cephalopharyngeal skeleton as **Fig. 26**. Tail end as **Fig. 27**, the posterior spiracles being at the tips of longer processes than usual.

Discussion. In the keys to the males of the British species of the giant genus *Megaselia* (Disney 1989) the males run down to couplets 233 and 247. In both cases neither lead applies. Among non-British, European species running to these couplets the male of *M. incongruens* Schmitz will run to couplet 233, but is immediately distinguished by the bare lobe of the hypandrium and the more numerous hairs on the cerci. Of the excluded species running to couplet 247, *M. impinguinata* Schmitz has entirely brown legs and brown palps; *M. intergeriva* Schmitz has brown halteres and more than twice as many hairs on the epandrium; and *M. longistyla* Brenner has more numerous hairs on the epandrium, stronger hairs at the tip of the proctiger and a larger right paraphysis of the penis complex. Other candidate species that may run to these couplets are *M. laeta* (Lundbeck), which is distinguished by its almost colourless wing membranes, and *M. claricornis* Colyer (only known in the female sex) which differs in having unusually short hairs below the basal half of the hind femur.

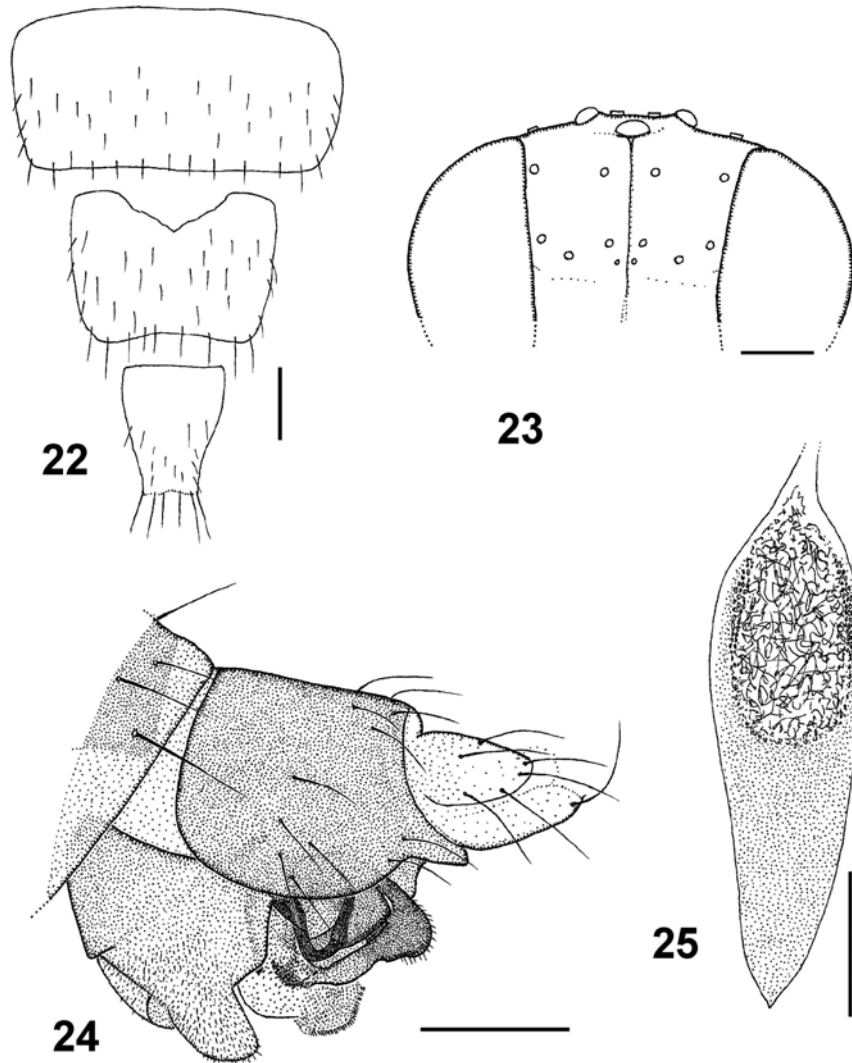
Another excluded species, *M. coetanea* Schmitz, whose original description has been augmented subsequently (Disney & Bayram 1999), needs to be considered. At couplet 231 the densely spinose labella of the new species takes it to 233, but *M. coetanea* runs to couplet 232, lead 2, where one is directed by a return loop to couplet 171, where neither lead fits. However, *M. coetanea*, closely resembles the new species. Indeed the male hypopygia are very alike apart from the left hypandrial lobe of *M. coetanea* being more tapered and bare in its distal half, in addition the male of the new species is distinguished by its densely spinose labella. A male in the Museum Koenig (Bonn) labelled „*M. coetanea* ? od. n. sp.“ was rejected as belonging to Schmitz's species (Disney & Bayram 1999) on the basis of the same two features. It was not described as a new species then because of its damaged hypopygium. It is not the new species described above, as it has more numerous hairs on the epandrium, stronger hairs at the tip of the proctiger and generally more extensively brown legs. The females of *M. coetanea* also have all femora essentially brown, whereas in the new species the front and middle femora, at least, are essentially straw yellow. In addition, while both species have a long and narrow Dufour's crop mechanism, that of *M. coetanea* is less tapered behind but in the new species it tapers to an extended point.

Biology. The larvae were found inside the fruiting bodies of the fungus *Bovista pusilla* (**Fig. 28**). This is the first record of Phoridae reared from this species of fungus.

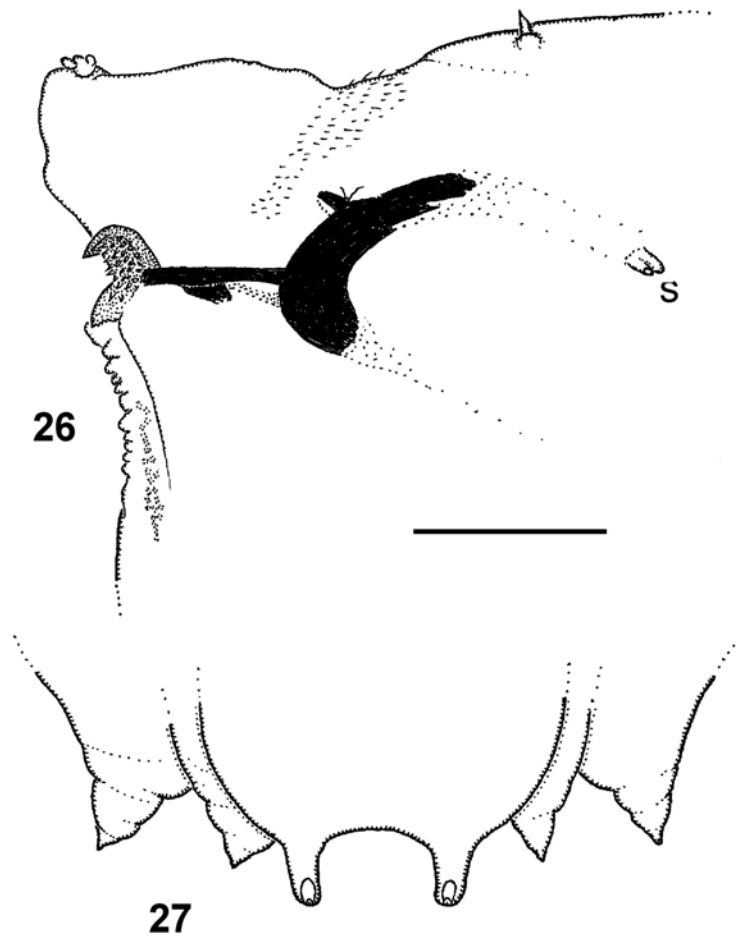
Megaselia sp.

New record: M27: 2.9.2006/24.9.2006, 2/1, ex *Russula pulchella* (coll. Cambridge University Museum of Zoology).

This is an undescribed species, which will be treated in a separate paper.



Figs 22-25: *Megaselia sevciki* Disney sp.n., details of adult. **22:** female, abdominal tergites 5-7; **23:** male, frons with bristles represented by their basal sockets only; **24:** male, left face of hypopygium; **25:** female, Dufour's crop mechanism. Scale bars = 0.1 mm.



Figs 26-27: *Megaselia sevciki* Disney sp.n., details of third instar larva. **26:** left face of head end with internal cephalopharyngeal skeleton included (s = anterior spiracle); **27:** dorsal view of tail end with median pair of spiracles and lateral processes. Scale bars = 0.1 mm.

***Megaselia uliginosa* (Wood, 1909)**

Published records (Ševčík 2001a, 2004c): M15: 11.8.2000/24.8.2000, 7/5, ex *Lepista nuda*. S11: 15.10.2001/6.-11.11.2001, 2/7, ex *Lepista nuda*.

This is probably a monophagous phorid species, restricted to two closely related species of *Lepista*.

Syrphidae

Hoverflies (Syrphidae) are a well-known and popular family of medium-sized and usually brightly coloured flies. More than 800 species are known to occur in Europe and some 400 species occur in the Czech Republic. While the adults of most species visit flowers, the larval biology is more diverse. They are aphidophagous, phytophagous or saprophagous and include both terrestrial and aquatic species. Only a few species of *Cheilosia* Meigen, 1822 are mycophagous.

***Cheilosia scutellata* (Fallén, 1817)**

Published records (Ševčík 2001a, 2004c): M1: 29.5.1999/24.6.1999, 0/1, ex *Boletus impolitus*. S10: 21.8.2001/13.-14.9.2001, 4/2, ex *Leccinum molle*; S10: 22.8.2001/15.9.2001, 2/1, ex *Leccinum quercinum*.

Three European species of *Cheilosia* Meigen, 1822 develop in fungi, especially in Boletaceae, and *Ch. scutellata* is the commonest (Jakovlev 1994).

Lonchaeidae

Small to medium sized, metallic black or dark blue flies with dorsoventrally flattened abdomen. Females have a conspicuous aculeated ovipositor. Some 60 species of this family are currently known from the Czech Republic and about 90 from Europe. The larvae are mainly phytosaprophagous, often associated with tree bark, sometimes living in the galleries of bark beetles but the species recorded here is not associated with trees. Records from fungi are only sporadic.

***Lonchaea chorea* (Fabricius, 1781)**

Published record (Ševčík 2004b): M17: 15.5.2003/16.6.2003, 0/1, ex *Pleurotus pulmonarius*.

This species was previously reared twice from the myxomycete *Fuligo septica* (Buxton 1961, as *L. vaginalis*) but also develops in a wide range of decaying plant material and in dung. Two other species of *Lonchaea* are recorded from fungi and decaying plant material by Jakovlev (1994).

Asteiidae

Small (1-3 mm), often weakly sclerotised flies with relatively narrow wings and somewhat reduced venation. Biology little known. The Central European species belong to two, ecologically different groups. *Leiomyza* species have mycetophagous larvae and the adults are sylvicolous. The larvae of *Asteia* are considered saprophagous and adults occur mainly on grasslands. Altogether 18 species in four genera are known from Europe and the adjacent island areas and 8 species occur in the Czech Republic.

***Leiomyza dudai* Sabrosky, 1956**

Published records (Ševčík 2001a, 2004b): M41: 3.8.2000/19.-28.8.2000, 1/4, ex *Amanita pantherina*. M31: 18.8.2002/6.9.2002, 0/1, ex *Pluteus cervinus*.

L. dudai is the commonest species of the genus, recorded from many agarics. A new species previously confused with this is currently being described by David Gibbs (Chandler in litt.).

Chloropidae

Chloropids are small blackish or yellowish flies (2-5 mm) occurring in various habitats. The larvae are phytophagous, saprophagous, mycophagous and rarely predaceous. Almost 400 species of the family Chloropidae are known to occur in Europe, of which 177 are recorded from the Czech Republic. Several species of *Tricimba* and *Gaurax* are associated with fungi.

***Tricimba lineela* (Fallén, 1830)**

Published record (Ševčík 2001a): M33: 22.5.1999/12.-13.6.1999, 1/2, ex *Calocybe gambosa*.

T. lineela is known from several species of agarics including *Calocybe gambosa*.

***Tricimba albiseta* Dely-Draskovits, 1983**

Published record (2004b): M52: 14.6.2003/24.-31.7.2003, 7/3, ex *Trametes versicolor*.

This is the only known host record for this species (cf. Jakovlev 1994).

***Tricimba cincta* (Meigen, 1830)**

Published records (Ševčík 2001a, 2004c): M3: 24.7.1999/16.8.1999, 1/0, ex *Lactarius vellereus*; M31: 17.8.2003/31.8.2003, 2/3, ex *Boletus chrysenteron*.

New records: M26: 18.6.2006/2.7.2006, 2/1, ex *Inocybe erubescens*; S7: 4.7.2006/25.7.2006, 2/2, ex *Pleurotus pulmonarius*

T. cincta Meigen has also been reported from many species of fungi, mainly *Russula* and *Amanita* (Jakovlev 1994).

Heleomyzidae

A medium sized family comprising some 150 species in Europe. The adults are usually yellowish brown robust flies, up to 1 cm in length. The larvae are saprophagous, mycetophagous (*Suillia* spp.), phytophagous, coprophagous or necrophagous. Biology and ecology of many species are unknown. More than 80 species of the family Heleomyzidae are currently known from the Czech Republic. It is interesting that only 3 species have been reared during this study, in spite of the fact that *Suillia* species are known from numerous species of fungi. A possible reason may be that this research has primarily been directed to mycetophilids and the fruiting bodies without mycetophilid larvae were usually not collected. Hackman & Meinander (1979) observed that the species of *Suillia* sometimes occur in fungi avoided by other Diptera.

***Neoleria ruficeps* (Zetterstedt, 1838)**

Published record (Ševčík 2004b): M8: 17.9.2000/14.4.2001, 1/2, ex *Bondarzewia montana*.

This species has already been reared from several species of fungi, e.g. *Amanita*, *Boletus* and *Fomes fomentarius* (Jakovlev 1994).

***Suillia atricornis* (Meigen, 1830)**

New record: M40: 11.10.2003/10.12.2003, 0/1, ex *Armillaria gallica*.

A common polymycophagous species, recorded from a number of host fungi, including *Armillaria*.

***Suillia bicolor* (Zetterstedt, 1838)**

Published record (Ševčík 2004b): S2: 30.9.2000/18.11.2000, 0/1, ex *Paxillus filamentosus*.

Another polymycophagous species, known from more than 100 species of host fungi (cf. Dely-Draskovits 1974).

Sphaeroceridae

Small (1-5 mm), rather robust, dark coloured flies, characterized by the shortened and dilated basitarsus of hind legs. The larvae are generally saprophagous, developing in various decaying substrates, including dung, rotting vegetation, carrion or fungi.

More than 250 species are known from Europe, of which 159 occur in the Czech Republic (Roháček 2006). Although some 20 species of Sphaeroceridae have hitherto been reared from various fungi (Jakovlev 1994), only one common species is recorded here. The other species recorded in the literature are possibly rather saprophagous than mycophagous.

***Spelobia parapusio* (Dahl, 1909)**

Published records (Ševčík 2001a, 2004b,c): M3: 15.8.2002/28.8.2002, 0/4, ex *Lactarius* sp.; M31: 10.10.2001/30.10.2001, 0/1, ex *Grifola frondosa*; M8: 20.7.2000/3.8.2000, 0/2, ex *Laetiporus sulphureus*; M47: 10.6.2000/22.6.2000, 0/1, ex *Amanita rubescens*; M51: 30.5.1999/10.-11.6.1999, 0/4, ex *Pluteus cervinus*; M54: 6.6.1999/22.6.1999, 0/2, ex *Collybia confluens*. S10: 21.8.2001/1.9.2001, 0/1, ex *Lactarius volemus*.

New records: M21: 17.9.2000/30.9.2000, 0/1, ex *Amanita spissa*; M21: 17.9.2000/3.10.2000, 0/1, ex *Albatrellus ovinus*; M11: 5.9.2004/19.9.2004, 0/1, ex *Russula grisescens*; M11: 5.9.2004/18.9.2004, 0/1, ex *Lactarius rufus*; M11: 5.9.2004/17.9.2004, 0/4, ex *Lactarius pilatii*; M27: 2.9.2006/16.9.2006, 0/5, *Russula pulchella*; M51: 24.9.2006/8.10.2006, 0/5, ex *Armillaria gallica*.

A polymycophagous and parthenogenetic species (only females occur in Central Europe). It has been reared from more than 30 species of fungi, mainly Agaricales, but also ascomycetes and polypores (cf. Jakovlev 1994).

Drosophilidae

A well known family comprising some 120 species in Europe and 74 species in the Czech Republic. The adults usually concentrate around fermenting plant substrates, such as fruits, fungi, sap runs, etc. They occur in virtually all terrestrial habitats from lowlands to alpine meadows. Some of the synanthropic species are bred as important laboratory animals, especially in genetic research. Larvae of Drosophilidae develop mostly in fermenting substrates, which are sometimes different from the substrates visited by the adults. More than 25 species from several genera are known to develop in fungi. Some of them belong to the most frequent mycophagous or mycosaprophagous insects. The identification of drosophilid species associated with fungi is relatively easy, mostly based on the coloration of the abdomen.

***Drosophila busckii* Coquillett, 1901**

Published records (Ševčík 2001a, 2004b,c): M51: 14.10.2000/30.10.2000, 7/1, ex *Armillaria gallica*; M6: 22.8.2002/30.8.2002, 0/1, ex *Leccinum rufum*. S9: 21.8.2001/3.-7.9.2001, 15/26, ex *Hericium cirrhatum*.

A cosmopolitan and polyphagous species with typically banded thorax and abdomen. It is predominantly synanthropic, but there are also numerous rearing records from fungi without any host specificity (Jakovlev 1994).

***Drosophila histrio* Meigen, 1830**

Published records (Ševčík 2004c): S10: 21.8.2001/31.8.2001, 2/4, ex *Leccinum molle*; S10: 22.8.2001/2.9.2001, 3/9, ex *Leccinum quercinum*; S10: 21.8.2001/31.8.2001, 1/1, ex *Boletus edulis*.

An uncommon sylvicolous species, known from several species of fungi.

***Drosophila kuntzei* Duda, 1924**

Published records (Ševčík 2001a, 2004b,c): M30: 9.7.2000/22..7.2000, 0/1, ex *Russula amoenicolor*. M31: 6.7.2003/16.-19.7.2003, 3/1, ex *Pluteus cervinus*; M31: 9.9.2002/21.-30.9.2002, 1/4, ex *Lactarius decipiens*; M31: 21.9.2002/6.-7.10.2002, 1/0, ex *Megacollybia platyphylla*; M31: 17.8.2003/31.8.2003, 2/0, ex *Boletus chrysenteron*; M12: 11.7.2003/21.-23.7.2003, 2/6, ex *Ramaria* sp. S10: 21.8.2001/31.8.2001, 0/1, ex *Tricholoma saponaceum*.

New record: S7: 4.7.2006/19.7.2006, 0/11, ex *Pleurotus pulmonarius*.

A rather common polymycophagous species, typical for beech forests. *Pleurotus* is a new host record.

***Drosophila melanogaster* Meigen, 1830**

Published record (Ševčík 2004b): S13: 7.9.2002/26.-28.9.2002, 1/1, ex *Suillus granulatus*.

A common synanthropic species, which is not frequent in fungi. This sample was collected in high mountains.

***Drosophila phalerata* Meigen, 1830**

Published records (Ševčík 2001a, 2004b,c): M3: 27.6.1999/8.-9.7.1999, 1/1, ex *Russula carpini*; M3: 24.7.1999/3.8.1999, 1/1, ex *Boletus chrysenteron*; M30: 9.5.1999/23.5.1999, 0/1, ex *Stropharia rugosoannulata*; M54: 6.6.1999/22.6.1999, 0/2, ex *Collybia confluens*. M4: 27.5.2001/10.-12.6.2001, 2/1, ex *Boletus reticulatus*; M19: 2.8.2002/11.-13.8.2002, 2/3, ex *Pluteus salicinus*; M31: 18.5.2002/2.-4.6.2002, 2/1, ex *Laetiporus sulphureus*; M31: 18.8.2002/29.8.2002, 3/0, ex *Pluteus cervinus*; M31: 9.9.2002/23.9.2002, 1/0, ex *Russula rigida*; M31: 21.9.2002/6.-7.10.2002, 0/2, ex *Megacollybia platyphylla*; M30: 4.5.2002/16.-20.5.2002, 9/7, ex *Entoloma clypeatum*; M20: 10.6.2001/23.6.2001, 5/1, ex *Boletus impolitus*. S10: 21.8.2001/31.8.2001, 1/0, ex *Tricholoma saponaceum*; S10: 21.8.2001/30.8.2001, 3/2, ex *Lactarius volemus*; S10: 21.8.2001/4.9.2001, 1/0, ex *Russula alutacea*; S10: 21.8.2001/31.8.2001, 1/1, ex *Amanita spissa*; S10: 22.8.2001/6.9.2001, 1/1, ex *Boletus edulis*; S10: 24.8.2001/5.9.2001, 2/0, ex *Russula aeruginea*.

New record: M51: 24.9.2006/8.10.2006, 0/1, ex *Armillaria gallica*.

This is the commonest drosophilid species associated with fungi, reared from more than 150 species of fungi (Jakovlev 1994).



Figs 28-29: **28** – *Megaselia sevciki* Disney sp. n., larvae in *Bovista pusilla*; **29** – *Hirtodrosophila trivittata*, adult fly on *Pleurotus pulmonarius*.

***Drosophila testacea* von Roser, 1840**

Published records (Ševčík 2004b,c): M31: 18.5.2002/2.6.2002, 1/1, ex *Laetiporus sulphureus*; M31: 18.8.2002/27.-30.8.2002, 2/0, ex *Bjerkandera adusta*; M31: 22.6.2003/4.7.2003, 1/1, ex *Pleurotus pulmonarius*; M31: 6.7.2003/16.-19.7.2003, 4/1, ex *Pluteus cervinus*; M31: 9.9.2002/21.-30.9.2002, 1/2, ex *Lactarius decipiens*; M12: 11.7.2003/21.-23.7.2003, 1/1, ex *Ramaria* sp. S10: 21.8.2001/30.8.2001, 1/0, ex *Lactarius volemus*; S10: 21.8.2001/28.8.2001, 2/2, *Hydnum repandum*; S10: 22.8.2001/2.9.2001, 2/0, ex *Leccinum quercinum*; S10: 21.8.2001/6.9.2001, 0/1, ex *Boletus edulis*; S10: 21.8.2001/4.-5.9.2001, 2/0, *Cantharellus amethysteus*; S10: 24.8.2001/9.9.2001, 0/1, ex *Russula nigricans*.

A sylvicolous and mycophagous species, known from a number of species of fungi but not from Polyporaceae (Jakovlev 1994).

***Drosophila transversa* Fallén, 1823**

Published records (Ševčík 2001a, 2004b,c): M30: 9.5.1999/23.5.1999, 0/1, ex *Stropharia rugosoannulata*; M3: 15.8.2002/27.8.2002, 0/1, ex *Laccaria amethystina*; M43: 2.5.2002/14.5.2002, 2/1, ex *Morchella esculenta*; M43: 2.5.2002/13.5.2002, 1/2, ex *Morchella semilibera*. S10: 21.8.2001/31.8.2001, 14/15, ex *Leccinum molle*; S10: 22.8.2001/7.9.2001, 1/0, *Cantharellus cibarius*.

New record: M27: 3.5.2006/17.5.2006, 2/0, ex *Gyromitra fastigiata*.

Another common and polymycophagous species. *Gyromitra fastigiata* is a new host record.

***Hirtodrosophila confusa* (Staeger, 1844)**

Published records (Ševčík 2001a, 2004b,c): M3: 24.7.1999/9.8.1999, 2/1, ex *Lactarius vellereus*; M4: 24.9.2000/10.10.2000, 1/0, ex *Polyporus squamosus*; M46: 25.8.1999/10.9.1999, 2/1, ex *Polyporus squamosus*; M51: 30.5.1999/8.-11.6.1999, 1/1, ex *Pluteus cervinus*. M31: 18.5.2002/2.-4.6.2002, 3/1, ex *Laetiporus sulphureus*; M48: 19.5.2002/6.6.2002, 1/0, ex *Polyporus squamosus*. S9: 21.8.2001/9.9.2001, 1/0, ex *Hericium cirrhatum*.

New record: S7: 4.7.2006/19.7.2006, 1/2, ex *Pleurotus pulmonarius*.

This species is typical for beech forests and is associated mainly with polypores and other lignicolous fungi, but there are also some records from terrestrial agarics.

***Hirtodrosophila lundstroemi* (Duda, 1935)**

Published records (Ševčík 2004b,c): M31: 18.8.2002/27.8.-8.9.2002, 7/5, ex *Auricularia auricula-judae*; M12: 11.7.2003/25.-28.7.2003, 5/11, ex *A. auricula-judae*; M49: 24.7.2002/20.8.2002, 1/0, ex *A. auricula-judae*.

New record: M37: 10.8.2006/3.9.2006, 4/6, ex *A. auricula-judae*.

A monophagous species restricted to *A. auricula-judae*. The only previous rearing record is that by Dely-Draskovits & Babos (1993) from the same fungus.

***Hirtodrosophila trivittata* (Strobl, 1893)**

Published records (Ševčík 2001a, 2004b): M42: 26.5.1999/10.-11.6.1999, 3/4, ex *Polyporus badius*; M51: 30.5.1999/13.-15.6.1999, 37/43, ex *Pleurotus pulmonarius*. M31: 22.6.2003/4.-9.7.2003, 14/26, ex *Pleurotus pulmonarius*; S3: 14.8.2003/26.-27.8.2003, 11/45, ex *Pleurotus pulmonarius*.

New record: S7: 12/06 ex *Pleurotus pulmonarius*.

An oligophagous species, restricted to *Pleurotus*. It is particularly common in beech forests on *Pleurotus* spp. and it can be easily distinguished in the field by the three longitudinal stripes on mesonotum (see Fig. 29).

***Leucophenga maculata* (Dufour, 1839)**

Published records (Ševčík 2001a, 2004b): M42: 26.5.1999/10. 6.1999, 1/1, ex *Polyporus badius*; M42: 28.7.1999/11.8.1999, 1/0, ex *Abortiporus biennis*; M51: 30.5.1999/17.-18.6.1999, 1/1, ex *Kretzschmaria deusta*. M12: 11.7.2003/26.-29.7.2003, 1/8, ex *Polyporus badius*.

New records: M35: 9.6.2004/23.6.2004, 1/0, ex *Pleurotus cornucopiae*; S7: 4.7.2006/19.7.2006, 1/0, ex *Trametes hirsuta*.

Leucophenga maculata is principally associated with lignicolous fungi, but there are some dubious old records from *Boletus*, *Amanita* and *Russula* (see Canzanelli 1941).

***Mycodrosophila poecilogastra* (Loew, 1874)**

Published records (Ševčík 2001a, 2004b): M42: 26.5.1999/10.-11.6.1999, 3/4, ex *Polyporus badius*; M42: 28.7.1999/11.8.1999, 0/1, ex *Abortiporus biennis*; M31: 18.8.2002/31.8.-1.9.2002, 7/4, ex *Schizophyllum commune*; M31: 18.8.2002/30.8.-1.9.2002, 1/3, ex *Bjerkandera adusta*; M31: 22.6.2003/4.-9.7.2003, 4/2, ex *Pleurotus pulmonarius*.

New record: M31: 19.8.2005/23.-30.8.2005, 4/3, ex *Bjerkandera adusta*.

Host fungi of the rare *M. poecilogastra* are poorly known and this species is not included in the survey by Jakovlev (1994). It appears to be associated with wood-decaying fungi.

Anthomyiidae

Anthomyiids are robust muscoid flies with yellowish brown to black coloration. Almost 500 species have been found in Europe and 235 species were recorded in the Czech Republic. Larvae of most species of this family are phytophagous and some of them are important pests in agriculture and forestry, but there are several fungivorous species of *Pegomya*. No special attention has been devoted to anthomyiids by the author and they are certainly more common than it could be concluded from this study. Hackman & Meinander (1979) recorded in Finland 17 species of *Pegomya* from various species of fungi.

***Pegomya geniculata* (Bouché, 1834)**

Published record (Ševčík 2001a): M51: 14.10.2000, 0/1, collected when ovipositing between gills of *Stropharia aeruginosa*.

P. geniculata is a polymycophagous species, but according to Hackman & Meinander (1979) it avoids Boletaceae.

***Pegomya pulchripes* (Loew, 1857)**

Published record (Ševčík 2001a): M46: 25.8.1999/13.9.1999, 1/0, ex *Xerula radicata*.

P. pulchripes is reported being associated with *Leccinum* (Jakovlev 1994).

Fanniidae

Fanniids are small to medium sized (3-5 mm) blackish flies with the abdomen partly yellow in some species. In total 82 species in three genera are known to occur in Europe, and 64 of them have been found in the Czech Republic (Rozkošný et al. 1997). Larvae are generally saprophagous and mostly feed on decaying organic matter. A relatively large number of species have been reared from various fungi.

***Fannia canicularis* (Linnaeus, 1761)**

Published records (Ševčík 2001a): M3: 24.7.1999/29.8.1999, 1/0, ex *Lactarius vellereus*; M28: 17.6.2002/10.7.2002, 5/2, ex *Agaricus bitorquis*.

This is a saprophagous species reported from many species of fungi as well as from other decaying material. From *Agaricus bitorquis* reported by Dely-Draskovits & Babos (1993).

***Fannia lepida* (Wiedemann, 1817)**

Published record (Ševčík 2004c): S10: 22.8.2001/11.9.2001, 1/0, ex *Leccinum quercinum*.

According to Rozkošný et al. (1997) it is a saprophagous forest species, which develops also in fungi. It is included in the survey by Jakovlev (1994) under the name *Fannia mutica* (Zett.), but without any concrete species of fungi. This is probably the only record from a named fungus.

***Fannia monilis* (Haliday, 1838)**

Published records (Ševčík 2004c): S10: 21.8.2001/9.-15.9.2001, 3/2, ex *Hydnum repandum*; S10: 22.8.2001/11.9.2001, 0/1, ex *Leccinum quercinum*.

This species is recorded from 7 different species of fungi by Jakovlev (1994) and Rozkošný et al. (1997). It was also found in nests of birds and decaying plant material.

***Fannia umbrosa* (Stein, 1895)**

Published record (Ševčík 2004b): M52: 14.6.2003/24.-31.7.2003, 7/3, ex *Trametes versicolor*.

Larvae of this species have been found in decaying fallen leaves of oak, under the bark of ash and sap of oaks (Rozkošný et al. 1997). This is the only record from fungi.

Muscidae

A familiar group of medium sized to large robust flies, grey to black coloured. Altogether 572 species are known to occur in Europe, and 296 of them have been found in the Czech Republic (Gregor et al. 2005). Larvae of several species are saprophagous, developing in various decaying matter, but the majority of larvae are facultative or obligatory carnivores in a wide range of different habitats (under bark and in rotten wood, in soil, fungi, decaying plant rests, dung and human faeces). Gregor et al. (2002) summarized the morphology of adults, development and biology, diagnostic characters and distribution of all Central European species. Eight species have been reared from fungi within the present study.

***Muscina levida* (Harris, 1780)**

Published records (Ševčík 2001a, 2004b): M30: 9.7.2000/24.-28.7.2000, 1/1, ex *Russula amoenicolor*; M41: 29.5.1999/17.6.1999, 1/1, ex *Boletus reticulatus*; M51: 3.7.1999/19.7.1999, 1/0, ex *Leccinum carpini*. - M28: 17.6.2002/30.6.-8.7.2002, 3/1, ex *Agaricus bitorquis*; M43: 2.5.2002/30.5.2002, 1/0, ex *Morchella esculenta*.

A common mycosaprophagous and saprophagous species, known from many species of fungi, but it also develops in excrement, dead snails etc. Dely-Draskovits & Babos (1993) reared this fly (among other fungi) from *A. bitorquis* and from *Ptychoverpa bohemica* (related to *Morchella* species). According to Chandler (1978), Hackman & Meinander (1979) and other authors, at least the last larval instar of *Muscina*, *Mydaea* and *Phaonia* is carnivorous.

***Muscina stabulans* (Fallén, 1817)**

Published records (Ševčík 2001a, 2004b): M41: 17.5.1999/10.6.1999, 0/1, ex *Calocybe gambosa*; M28: 17.6.2002/30.6.2002, 0/1, ex *Agaricus bitorquis*.

A common coprophagous and predatory species, also known from many species of fungi.

***Mydaea corni* (Scopoli, 1763)**

Published records (Ševčík 2001a): M3: 24.7.1999/11.8.1999, 1/0, ex *Russula nigricans*; M45: 1.8.1999/22.8.1999, 0/1, ex *Russula luteotacta*; M21: 17.9.1999/14.10.1999, 0/1, ex *Lactarius deterrimus*.

It is interesting that only *Lactarius* and *Russula* are reported as host fungi of *Mydaea corni* by Jakovlev (1994) and this has been confirmed by the above records.

***Mydaea humeralis* Robineau-Desvoidy, 1830**

Published record (Ševčík 2001a): M45: 1.8.1999/22.8.1999, 1/0, ex *Russula luteotacta*; M51: 3.7.1999/27.8.1999, 1/0, ex *Russula grisea*. S15: 26.9.1999/28.10.1999, 0/1, ex *Lyophyllum loricatum*.

This species is known from more than 100 species of fungi (Jakovlev 1994).

***Mydaea nubila* Stein, 1916**

Published record (Ševčík 2004b): M31: 22.6.2003/17.7.2003, 1/0, ex *Pleurotus pulmonarius*.

The biology of this species has not previously been recorded (cf. Gregor et al. 2002).

***Phaonia pallida* (Fabricius, 1787)**

Published record (Ševčík 2001a, 2004b): M15: 11.8.2000/10.9.2000, 0/1, ex *Clitocybe nebularis*; M31: 6.7.2003/23.-24.7.2003, 1/1, ex *Xerula radicata*.

This species was previously recorded from *Clitocybe inversa* and *Amanita rubescens* (cf. Jakovlev 1994).

***Phaonia rufiventris* (Scopoli, 1763)**

Published record (Ševčík 2001a): M42: 7.11.1998/9.12.1998, 1/0, ex *Merulius tremellosus*.

This species was reared from several lignicolous fungi (Jakovlev 1994), also found under the bark of trees (Chandler 1978).

***Phaonia subventa* (Harris, 1780)**

Published record (Ševčík 2004b): M40: 26.10.2003/3.12.2003, 1/0, ex *Armillaria gallica*.

This species has been reared from many species of fungi (Jakovlev 1994), including *Armillaria* (cf. Buxton 1961).

5.2 Species composition of Diptera communities associated with fungi

Altogether 188 species of 26 families of Diptera have been reared from fungi by the present author. Numbers of species in particular families of Diptera reared from fungi within this study and comparison with literature data are given in tab. 1. The majority of species belong to the family Mycetophilidae (84 species), followed by the families Phoridae (16 spp.), Drosophilidae (12 spp.), Cecidomyiidae (11 spp.), Bolitophilidae (9 spp.), Muscidae (8 spp.) and Platypezidae (8 spp.). The other families were represented by less than 5 species. Comparing with the literature data summarized by Jakovlev (1994), relatively few species have been recorded in the families Keroplatidae, Sciaridae, Heleomyzidae, Sphaeroceridae and Anthomyiidae. Members of the families Sciaridae and Sphaeroceridae are not typical mycobionts, they are rather mycosaprophagous, so that they possibly colonize the fungus relatively late, during decaying process, and thus many of the species have not simply been present in the fruit bodies when collected relatively fresh. Concerning the families Heleomyzidae and Anthomyiidae, the low number of species is probably caused by the unequal choice of fungi collected by the author, who focused the attention primarily to fungi containing the larvae of Mycetophilidae and also to lignicolous fungi, which have so far been less studied than the terrestrial agarics.

Sixteen families recorded from fungi by Jakovlev (1994) have not been recorded during this study at all (Tipulidae, Diadocidiidae, Scatopsidae, Rhagionidae, Stratiomyiidae, Scenopinidae, Dolichopodidae, Platystomatidae, Dryomyzidae, Sepsidae, Lauxaniidae, Piophilidae, Anthomyzidae, Carnidae, Ephyridae and Scathophagidae). All these families contain only a few mycetophagous species and they are reared from fungi only exceptionally.

Most of the Diptera species recorded in the present study can be classified as oligophagous, restricted to a particular group of fungi. Typical examples of this are members of the families Bolitophilidae and Platypezidae. Some of these flies are even monophagous, e.g. *Bolitophila rectangulata* on the polypore *Laetiporus sulphureus* or *Agathomyia antennata* on *Bjerkandera adusta*. Other monophagous species are *Camptodiplosis auriculariae* and *Hirtodrosophila lundstroemi*, both specific to *Auricularia auricula-judae*. In all these cases the host of the monophagous consumer is a widely distributed and common fungus. In many cases the monophagy is only a tentative assumption, until the rearings from the same fungus are repeated several times.

Polymycophagous species are represented by *Mycetophila fungorum* (Mycetophilidae), recorded here from 40 species of fungi, followed by *Ula sylvatica* (Pediciidae, 20 spp. of host fungi), *Drosophila phalerata* (Drosophilidae, 19 spp. of host fungi), *Culicoides scoticus* (Ceratopogonidae, 17 spp. of host fungi), *Allodia ornaticollis* and *Exechia fusca* (Mycetophilidae, both with 15 spp. of host fungi) and *Spelobia parapusio* (Sphaeroceridae, 15 spp. of host fungi).

As a rule, flies of at least two different families of Diptera emerged from one sample of fungi. Small species usually emerge first (e.g. Psychodidae), followed by the larger specimens (e.g. Pediciidae, Muscidae). There are even differences within one family, e.g. in Mycetophilidae smaller species develop relatively quickly (e.g. *Cordyla* spp.) and larger ones may take longer (e.g. *Allodiopsis* spp.).

Tab. 1 - Number of Palaearctic species of Diptera recorded to develop in fungi

No.	Family	No. of spp. recorded in the literature (Jakovlev 1994)	No. of species recorded in this study (1998 – 2006)
1	Trichoceridae	5	2
2	Limoniidae	17	4
3	Pediciidae	5	3
4	Bolitophilidae	24	9
5	Ditomyiidae	6	1
6	Keroplastidae	21	2
7	Mycetophilidae	252	84
8	Sciaridae	33	2
9	Cecidomyiidae	51	11
10	Psychodidae	3	3
11	Anisopodidae	2	1
12	Chironomidae	5	1
13	Ceratopogonidae	11	4
14	Hybotidae	2	1
15	Platypezidae	17	8
16	Phoridae	42	16
17	Syrphidae	4	1
18	Lonchaeidae	3	1
19	Asteiidae	3	1
20	Chloropidae	7	3
21	Heleomyzidae	25	3
22	Sphaeroceridae	20	1
23	Drosophilidae	27	12
24	Anthomyiidae	37	2
25	Fanniidae	13	4
26	Muscidae	25	8
	Total	660	188

5.3 Habitat preferences of fungicolous Diptera

Habitat selection of fungicolous Diptera depends primarily on the occurrence of host fungi, especially in oligophagous species, which follow the distribution of their host. For example, members of the mycetophilid genus *Brachypeza* develop in *Pleurotus* spp., which grows mainly in beech forests. Similarly the gall midge species *Camptodiplosis auriculariae* occurs in localities with *Sambucus nigra*, on which its host fungus grows. On the other hand, polyphagous species, such as *Drosophila phalerata* or *Mycetophila fungorum*, occur in a wide range of habitat types. The distribution of mycophagous Diptera is, however, influenced also by the climate, elevation and other ecological factors at the locality. The same fungus species may host different insect species in temperate lowland forest than in extreme peat-bog in high mountains.

Specific Diptera communities occur in artificial, man-made habitats, such as recultivated mine dumps (Fig. 19), town parks and pond dams. They are often situated in the centre of an industrial town, surrounded by factories or busy communications and affected by atmospheric

pollution. The first results from recultivated mine dumps in Ostrava, a relatively large industrial town with some 300000 inhabitants, indicate that several rare species penetrated to these specific ecosystems. Three species of Diptera new to science (*Allodiopsis gracai* and 2 spp. of *Megaselia*) have been recently discovered in two coal mine dumps with different stages of succession in the city of Ostrava. The communities of fungi on these sites are very unusual and comprise some rare and interesting species (cf. Holec et al. 2003). Some of these dumps are still burning and form unique habitats with specific environmental conditions. Also dams of ponds in the surroundings of Ostrava represent very suitable habitat for several rare fungi, e.g. *Boletus impolitus* and *Russula luteotacta*.

5.4 Attractiveness of poisonous and edible fungi to insects

The fungi poisonous for humans are usually used normally as larval food by insects. Many of the poisonous species of *Amanita*, such as *A. pantherina* and *A. muscaria*, are regularly infested mainly by mycetophilid larvae, especially the polyphagous *Cordyla brevicornis*, *Allodia ornaticollis* and *Mycetophila fungorum*. The fresh fruiting bodies of the strongly poisonous *Amanita phalloides* are apparently less attractive for insects than are other *Amanita* species, but decaying fruit bodies are sometimes infested by Psychodidae. Hackman & Meinander (1979) stated that 13 species of Diptera were reared from *A. phalloides* by various authors. The hallucinogenic *Psilocybe bohemica* has been proved to be normally consumed by insect larvae, e.g. the polyphagous fungus gnat *Exechia fusca*. Also *Marasmius alliaceus* with strong garlic smell often hosts insect larvae, e.g. *Allodia ornaticollis*.

Some other non-poisonous fungi are, however, strictly avoided by insects. For example *Tylopilus felleus*, the common bolete with sour taste, has never been seen infested by larvae, as pointed out already by Hackman & Meinander (1979). Also *Paxillus atrotomentosus* or the polypore *Daedalea quercina* are usually avoided by insects. Even several edible and tasty species for humans are not attractive for Diptera and other insects. For example, most species of *Agaricus* are rarely infested by larvae and then usually by Phoridae or Platypezidae. Also some genera of Ascomycetes (*Morchella*, *Helvella*) and Gasteromycetes (*Lycoperdon*) are rarely used as food by insect larvae.

5.5 Most attractive groups of fungi

Species principally belonging to the families Polyporaceae, Amanitaceae, Tricholomataceae, Boletaceae and Russulaceae comprise the most attractive fungi for Diptera. The following species and genera of fungi were the most attractive for insects during this study: 19 species from 10 families of Diptera have been reared from *Pleurotus pulmonarius*, 15 species of Diptera belonging to 11 families were reared from *Bjerkandera adusta*, 13 species from 10 families from *Armillaria gallica*, 11 species belonging to 7 families from *Pluteus cervinus*, 9 species belonging to 7 families from *Polyporus squamosus*, 11 species from 6 families were associated with various species of *Amanita* and 26 species from 9 families were reared from various species of *Russula*.

5.6 Parasitoids reared

Hymenoptera: Braconidae: Alysiinae

Aspilota caudata Thomson, 1895

Published records (Ševčík 2001a): B2: 28.7.2000/17.-18.8.2000, 1/1, ex *Boletus edulis*, reared together with *Megaselia lata* (Phoridae); M15: 11.8.2000/5.9.2000, 0/1, ex *Amanita muscaria*, reared together with *Megaselia lata* (Phoridae) and *Mycetophila fungorum* (Mycetophilidae).

In this case it was confirmed that the host of this braconid was a fly of the genus *Megaselia*. The author dissected several puparia of *Megaselia lata* from the first sample and found a developing braconid inside one of them.

Orthostigma longicorne Königsman, 1969

New record: M41: 16.6.1999/12.7.1999, 1/1, ex *Boletus impolitus*, reared together with *Cordyla brevicornis* and *Mycetophila fungorum* (Mycetophilidae).

Although no adult specimen of Phoridae emerged, the occurrence of the larvae of *Megaselia* is not excluded. It is, however, possible that mycetophilids were the hosts.

Orthostigma pumilum (Nees, 1834)

New record: M16: 25.7.2000/28.8.2000, 1/1, ex *Boletus edulis*, reared together with *Megaselia lata* (Phoridae) and *Cordyla brevicornis* (Mycetophilidae).

One puparium of *Megaselia* with developing braconid inside was dissected to confirm the host. Members of the genus *Orthostigma* have already been recorded as the parasitoids of *Megaselia* (cf. Disney 1994).

Orthostigma sculpturatum Tobias, 1962

Published record (Ševčík 2001a): M45: 25.8.1999/15.-17.9.1999, 9/0, ex *Leccinum scabrum*, reared together with *Megaselia flavicans* (Phoridae) and *Allodia grata* (Mycetophilidae).

Considering the size of the larvae, *Megaselia* was most probably the host of this braconid.

Synaldis globipes Fischer, 1962

Published record (Ševčík 2001a): M15: 11.8.2000/5.9.2000, 0/1, ex *Amanita muscaria*, reared together with *Megaselia lata* (Phoridae) and *Mycetophila fungorum* (Mycetophilidae).

This small braconid wasp developed most probably in *Megaselia* larvae, which are of similar size. Jakovlev & Tobias (1992) described a new species of *Synaldis* reared from two species of *Russula* together with *Megaselia rubella* and *Chodopsycha lobata*.

Hymenoptera: Cynipoidea: Eucolidae

Kleidotoma formicaria (Kieffer, 1902)

Published record (Ševčík 2001a): M51: 30.5.1999/29.6.-2.7.1999, 1/1, ex *Pluteus atricapillus*, reared together with *Chodopsycha buxtoni* (Psychodidae), *Hirtodrosophila confusa* (Drosophilidae), *Spelobia parapusio* (Sphaeroceridae) and *Allodia grata* (Mycetophilidae).

***Kleidotoma bicolor* (Kieffer, 1902)**

Published record (Ševčík 2001a): M51: 30.5.1999/29.6.-2.7.1999, 1/1, ex *Pluteus atricapillus*, the same possible hosts as above.

The real host of both these parasitoid species is not clear from the above mentioned records. According to J. Macek (pers. comm.), usual hosts of *Kleidotoma* are acalyprate Diptera.

Hymenoptera: Diapriidae

Only a part of the material has been identified. Some of the specimens require further study or represent undescribed species. These will be treated in separate publications.

***Aclista alticollis* (Thompson, 1858)**

New records: M30: 3/99: 24.4.1999/9.5.1999, 1/0, ex *Allodia ornaticollis* (Mycetophilidae) in *Cortinarius romagnesii*.

A common European species, together with the following one.

***Aclista cantiana* (Curtis, 1831)**

New records: M33: 22.5.1999/5.-9.6.1999, 4/1, ex *Allodia grata* (Mycetophilidae) in *Calocybe gambosa*; M41: 16.6.1999/12.7.1999, 1/1, ex *Cordyla brevicornis* and *Mycetophila fungorum* (Mycetophilidae) in *Boletus impolitus*.

***Aclista modesta* (Kieffer, 1909)**

New record: S11: 15.10.2001/23.11.2001, 1/0, ex *Bolitophila pseudohybrida* (Bolitophilidae) and *Allo-diopsis domestica* (Mycetophilidae) in *Lepista nuda*.

This species is known from the Czech Republic and Germany. New for Slovakia.

***Cinetus piceus* Thompson, 1859**

New record: S10: 24.8.2001/20.-21.9.2001, 1/1, ex *Mycetophila alea* (Mycetophilidae) in *Russula nigricans*.

New for Slovakia, also known from Western and Northern Europe.

***Miota* (= *Scorpioteleia*) *compressa* (Thompson, 1858)**

Published host (Laštovka 1971): *Mycetophila fungorum*.

New records: M3: 8.8.1998/24.8.1998, 0/1, ex *Mycetophila fungorum* (Mycetophilidae) in *Russula lepida*; M53: 27.6.1999/16.-18.7.1999, 4/10, ex *Mycetophila fungorum* in *Boletus chrysenteron*; M32: 4.6.2000/25.-27.6.2000, 0/3, ex *Mycetophila fungorum* in *Psathyrella candolleana*.

Hymenoptera: Proctotrupidae

***Cryptoserphus aculeator* (Haliday, 1839)**

Published host (Laštovka 1971): *Mycetophila ichneumonea* (Mycetophilidae) in *Lactarius rufus*.

New records: M51: 27.7.1998/9.8.1998, 2/0, ex *Allodia grata* (Mycetophilidae) in *Pluteus* sp.

***Cryptoserphus flavipes* (Provancher, 1881)**

New records: M30: 30.7.2000/17.-20.7.2000, 1/2, ex *Mycetophila fungorum* (Mycetophilidae) in *Suillus granulatus*; M21: 17.9.2000/8.10.2000, 2/1, ex *Mycetophila fungorum* in *Boletus calopus*.

New record for the Czech Republic (known from Western and Northern Europe, also from Germany, Austria).

***Cryptoserphus longitarsis* (Thompson, 1858)**

New records: M3: 8.8.1998/24.8.1998, 0/2, ex *Mycetophila fungorum* (Mycetophilidae) in *Russula lepida*; M21: 17.9.2000/28.9.2000, 1/0, ex *Mycetophila fungorum* in *Amanita spissa*.

A common species, known from Central and Northern Europe.

Hymenoptera: Ichneumonidae

Šedivý & Ševčík (2003) summarized data about the ichneumonid parasitoids of fungus gnats from the years 1998 – 2000. They identified 21 species of ichneumonids belonging to 9 genera and ascertained the degree of parasitism as 25 %. This means that on average every fourth sample with mycetophilids is parasitised by ichneumonids. Numerous specimens reared in 2001-2006 have not yet been identified.

***Hyperacmus crassicornis* Förster, 1871**

Published host (Šedivý & Ševčík 2003): *Sciophila varia* in *Hydnum repandum*.
This is the only known host of this parasitoid.

***Aniseres palipes* Förster, 1871**

Published hosts (Šedivý & Ševčík 2003): *Mycetophila fungorum* in *Entoloma nidorosum*; *Mycetophila ruficollis* group in *Lactarius* sp.

Kolarov & Bechev (1995) recorded this ichneumonid species from *Mycetophila fungorum* and *Mycetophila forcipata*.

***Aperileptus albipalpus* Gravenhorst, 1829**

Published host (Šedivý & Ševčík 2003): *Mycetophila alea* in *Russula nigricans*.

Laštovka (1971) reared this ichneumonid from *Mycetophila fungorum*. *Mycetophila alea* (= *M. guttata* Dziedzicki, 1884) was already recorded as the host of *A. albipalpus* by Thompson (1957).

***Aperileptus microspilus* Förster, 1871**

Published host (Šedivý & Ševčík 2003): *Mycetophila alea* in *Russula nigricans*.

This is the only known host of this parasitoid.

***Aperileptus plagiatus* Förster, 1871**

Published host (Šedivý & Ševčík 2003): *Mycetophila evanida* in *Russula luteotacta*.

This is the only known host of this parasitoid.

***Aperileptus viduatus* Förster, 1871**

Published host (Šedivý & Ševčík 2003): *Exechia bicincta* in *Mycena galericulata*.

This is the only known host of this parasitoid.

***Entypoma robustum* Förster, 1871**

Published host (Šedivý & Ševčík 2003): *Mycetophila fungorum* in *Pluteus cervinus*.
Kolarov & Bechev (1995) also recorded *Mycetophila alea* as a host.

***Entypoma suspiciosum* Förster, 1871**

Published hosts (Šedivý & Ševčík 2003): *Mycetophila* sp. (probably *M. cingulum*, adults have not been reared, only larvae studied) in *Polyporus squamosus*; *Allodia ornaticollis* and *Exechia spinuligera* in *Cortinarius romagnesii*.

These are the only known hosts of this parasitoid.

***Hemiphanes gravator* Förster, 1871**

Published hosts (Šedivý & Ševčík 2003): *Ditomyia fasciata*, *Mycetophila trinotata*, *Ula bolitophila*, *Agathomyia antennata* and *Megaselia frameata* in *Bjerkandera adusta*.

Bjerkandera adusta is one of the most attractive species of fungi for insects and this makes problems with the identification of the real host of this ichneumonid species. Considering the size of the adults of *Hemiphanes*, *M. trinotata* seems to be the most probable host.

***Orthocentrus asper* (Gravenhorst, 1829)**

Published host (Šedivý & Ševčík 2003): *Sciophila lutea* on *Russula luteotacta*.

Three other species of *Orthocentrus* have been recorded in the literature (Kolarov & Bechev 1995) as parasitoids of the genus *Sciophila*.

***Pantisarthrus luridus* Förster, 1871**

Published host (Šedivý & Ševčík 2003): *Cordyla nitidula* and *Cordyla fusca* in *Russula* sp.
There are no other reports about the biology of this ichneumonid species.

***Plectiscidea agitator* (Förster, 1871)**

Published host (Šedivý & Ševčík 2003): *Allodia grata* in *Pluteus* sp.
This is the only known host of this parasitoid.

***Plectiscidea canaliculata* (Förster, 1871)**

Published host (Šedivý & Ševčík 2003): *Allodia grata* in *Calocybe gambosa*.
This is the only known host of this parasitoid.

***Plectiscidea cinctula* (Förster, 1871)**

Published host (Šedivý & Ševčík 2003): *Allodia foliifera* in *Peziza micropus*.
This is the only known host of this parasitoid.

***Plectiscidea collaris* (Gravenhorst, 1829)**

Published hosts (Šedivý & Ševčík 2003): *Mycetophila fungorum*, *Exechia fusca* and *Allodia ornaticollis* in *Hebeloma crustuliniforme*; *Mycetophila fungorum* in *Entoloma nidorosum*.

These are the only known hosts of this parasitoid.

***Plectiscidea deterior* (Förster, 1871)**

Published host (Šedivý & Ševčík 2003): *Allodiopsis* sp. in *Clitocybe odora*.

This is the only known host of this parasitoid.

***Plectiscidea monticola* (Förster, 1871)**

Published host (Šedivý & Ševčík 2003): *Mycetophila* sp. (*ruficollis* group, only females obtained) in *Collybia confluens*.

This is the only known host of this parasitoid.

***Plectiscidea vagator* (Förster, 1871)**

Published hosts (Šedivý & Ševčík 2003): *Allodia ornatocollis* and *Exechia* sp. in *Mycena pura*.

This is the only known host of this parasitoid.

***Proclitus paganus* (Haliday in Curtis, 1838)**

Published hosts (Šedivý & Ševčík 2003): *Allodia zaitzevi* and *Cordyla fusca* in *Russula* sp.

Bolitophila glabrata Loew, 1869 was recorded as host of this ichneumonid species by Kolarov & Bechev (1995).

***Proclitus praetor* (Haliday in Curtis, 1838)**

Published hosts (Šedivý & Ševčík 2003): *Mycetophila fungorum* in *Russula* sp.; *Mycetophila fungorum* and *Allodia ornatocollis* in *Psathyrella candolleana*; *Mycetophila finlandica* in *Tricholomopsis decora*; *Mycetophila ornata* in *Bondarzewia montana*.

This ichneumonid species is probably common. Its hosts are, however, little known. Preference for larger species of *Mycetophila* is apparent from the above records.

***Proclitus subsulcatus* Förster, 1871**

Published hosts (Šedivý & Ševčík 2003): *Mycetophila fungorum*, *Cordyla nitidula* and *Ula sylvatica* in *Russula cyanoxantha*.

This is the only known host of this parasitoid.

5.7 Systematic list of fungi and myxomycetes examined with associated Diptera species

(the system follows www.indexfungorum.org and Kalina & Vána 2005)

FUNGI

Class ASCOMYCETES

Helotiaceae

Ascocoryne sarcoides (Jacq.) J.W. Groves & D.E. Wilson

Mycetophilidae: *Anatella lenis*.

Xylariaceae

Kretzschmaria deusta (Hoffm.) P.M.D. Martin /= *Ustulina deusta* (Hoffm.) Lindl/

Drosophilidae: *Leucophenga maculata*.

Pezizaceae

Peziza badia Pers.

Mycetophilidae: *Sciophila lutea*, *Docosia gilvipes*, *Allodia silvatica*.

Peziza micropus Pers.

Pediciidae: *Ula bolitophila* Mycetophilidae: *Allodia barbata*, *Allodia foliifera*.

Morchellaceae

Morchella esculenta (L.) Pers.

Phoridae: *Megaselia flavicans*; Drosophilidae: *Drosophila transversa*; Muscidae: *Muscina levida*.

Mitrophora semilibera (DC.) Lév.

Phoridae: *Megaselia flavicans*; Drosophilidae: *Drosophila transversa*.

Discinaceae

Gyromitra fastigiata (Krombh.) Rehm

Phoridae: *Megaselia flavicans*; Drosophilidae: *Drosophila transversa*.

Class BASIDIOMYCETES

Order **DACRYMYCETALES**

Dacrymycetaceae

Calocera viscosa (Pers.) Fr.

Mycetophilidae: *Phronia siebeckii*, *Trichonta icenica*.

Order **AURICULARIALES**

Auriculariaceae

Auricularia auricula-judae (Fr.) Quél.

Mycetophilidae: *Sciophila plurisetosa*; Cecidomyiidae: *Camptodiplosis auriculariae*, *Peromyia fungicola*; Drosophilidae: *Hirtodrosophila lundstroemi*.

Order **TREMELLALES**

Exidiaceae

Pseudohydnum gelatinosum (Scop.) P. Karst.

Pediciidae: *Ula sylvatica*; Mycetophilidae: *Trichonta* sp.

Order **POLYPORALES**

Ganodermataceae

Ganoderma applanatum (Pers.) Pat.

Cecidomyiidae: *Lestodiplosis polypori*; Platypezidae: *Agathomyia wankowiczii* (Schnabl, 1884) - galls common on the lower side of the fruit bodies, but no successful rearing of adults by the author until now.

Meruliaceae

Merulius tremellosus Schrad. /= *Phlebia tremellosa* (Schrad.) Nakasone et Burds. /

Limoniidae: *Achyrolimonia decemmaculata*; Sciaridae: *Scatopsciara neglecta*; Muscidae: *Phaonia rufiventris*.

Schizophyllaceae

Schizophyllum commune Fr.

Drosophilidae: *Mycodrosophila poecilogastra*.

Steccherinaceae

Antrodiella romellii (Donk) Niemelä

Cecidomyiidae: *Lestodiplosis polypori*.

Fomitopsidaceae

Fomitopsis pinicola (Sw.) P. Karst.

Mycetophilidae: *Mycetophila attonsa*, *Mycetophila laeta*, *Sciophila buxtoni*.

Kula et al. (1999) reported 35 species of beetles (Coleoptera) from this and the following fungus, including accidentally occurring species, as well as several hymenopteran parasitoids and tineid moths.

Piptoporus betulinus (Bull.) P. Karst.

Mycetophilidae: *Dynatosoma fuscicorne*, *Mycetophila forcipata*.

Postia caesia (Schrad.) P. Karst. /= *Oligoporus caesius* Gilb. et Ryvarden/

Pediciidae: *Ula bolitophila*, *Ula sylvatica*; Bolitophilidae: *Bolitophila occlusa*; Mycetophilidae: *Dynatosoma fuscicorne*.

Postia stiptica (Pers.) Jülich /= *Oligoporus stipticus* (Pers.) Gilb. et Ryvarden/

Cecidomyiidae: *Lestodiplosis polypori*.

Postia tephroleuca (Fr.) Jülich /= *Oligoporus tephroleucus* (Fr.) Gilb. et Ryvarden/

Bolitophilidae: *Bolitophila occlusa*.

Hapalopilaceae

Bjerkandera adusta (Willd.) P. Karst.

Limoniidae: *Metalimnobia quadrimaculata*, *Achyrolimonia decemmaculata*; Pediciidae: *Ula bolitophila*; Ditomyiidae: *Ditomyia fasciata*; Mycetophilidae: *Dynatosoma fuscicorne*, *Mycetophila trinotata*; Sciaridae: *Lycoriella ingenua*; Cecidomyiidae: *Lestodiplosis polypori*, *Winnertzia lugubris*; Ceratopogonidae: *Culicoides scoticus*; Hybotidae: *Ocydromia glabricula*; Platypezidae: *Agathomyia antennata*; Phoridae: *Megaselia frameata*; Drosophilidae: *Drosophila testacea*, *Mycodrosophila poecilogastra*.

Several species of beetles and other insects associated with this fungus were recently recorded by Ševčík & Čapek (2003) and Šedivý & Ševčík (2003).

***Climacocystis borealis* (Fr.) Kotl. & Pouzar**

Pediciidae: *Ula bolitophila*; Ditomyiidae: *Ditomyia fasciata*; Mycetophilidae: *Dynatosoma fuscicornae*.

***Hapalopilus nidulans* (Fr.) P. Karst. /= *Hapalopilus rutilans* (Pers.) P. Karst./**

Keroplastidae: *Keroplastus testaceus*; Cecidomyiidae: *Lestodiplosis polypori*.

Meripilaceae

***Abortiporus biennis* (Bull.) Singer**

Limoniidae: *Metalimnobia quadrimaculata*; Ditomyiidae: *Ditomyia fasciata*; Drosophilidae: *Leucophenga maculata*, *Mycodrosophila poecilogastra*.

***Grifola frondosa* (Dicks.) Gray**

Pediciidae: *Ula mollissima*; Mycetophilidae: *Mycetophila cingulum*; Cecidomyiidae: *Camptodiplosis boleti*.

***Meripilus giganteus* (Pers.) P. Karst.**

Ditomyiidae: *Ditomyia fasciata*; Mycetophilidae: *Mycetophila ornata*; Cecidomyiidae: *Camptodiplosis boleti*, *Lestodiplosis polypori*.

Albatrellaceae

***Albatrellus ovinus* (Schaeff.) Kotl. et Pouzar**

Pediciidae: *Ula mollissima*, *Ula sylvatica*; Mycetophilidae: *Exechia lundstroemi*; Psychodidae: *Chodopsycha lobata*; Ceratopogonidae: *Culicoides scoticus*; Phoridae: *Megaselia cinereifrons*; Sphaeroceridae: *Spelobia parapsusio*.

***Albatrellus confluens* (Alb. et Schwein.) Kotl. et Pouzar**

Cecidomyiidae: *Lestodiplosis polypori*.

Polyporaceae

***Phaeolus schweinitzii* (Fr.) Pat.**

Limoniidae: *Achyrolimonia decemmaculata*.

***Pycnoporus cinnabarinus* (Jacq.) Fr.**

Cecidomyiidae: *Lestodiplosis polypori*.

***Tyromyces chioneus* (Fr.) P. Karst.**

Bolitophilidae: *Bolitophila occlusa*; Mycetophilidae: *Dynatosoma norwegiense*, *Mycetophila mohilevensis*; Ceratopogonidae: *Forcipomyia nigra*.

***Trichaptum bifforme* (Fr.) Ryvarden**

Chironomidae: *Bryophaenocladus* sp..

***Trametes gibbosa* (Pers.) Fr.**

Keroplastidae: *Keroplastus testaceus*; Cecidomyiidae: *Camptodiplosis boleti*, *Lestodiplosis polypori*.

Beetles of the family Ciidae frequently develop in this fungus as well as in the other species of *Trametes* (cf. Jelínek 1990).

***Trametes hirsuta* (Wulfen) Pilát**

Cecidomyiidae: *Lestodiplosis polypori*; Drosophilidae: *Leucophenga maculata*.

***Trametes versicolor* (L.) Lloyd**

Pediciidae: *Ula sylvatica*; Ditomyiidae: *Ditomyia fasciata*; Mycetophilidae: *Sciophila buxtoni*, *Rondaniella dimidiata*, *Dynatosoma fuscicorne*, *Mycetophila morosa*; Cecidomyiidae: *Lestodiplosis polypori*; Platypezidae: *Polyporivora ornata*; Chloropidae: *Tricimba albisetia*; Fanniidae: *Fannia umbrosa*.

***Fomes fomentarius* (L.) J.J. Kickx**

Mycetophilidae: *Sciophila rufa*.

Although many species of beetles and other insects have been recorded from this fungus (cf. Jelínek 1990, Kula et al. 1999), dipterous larvae are not common in this tough polypore.

***Laetiporus sulphureus* (Bull.) Murrill**

Pediciidae: *Ula bolitophila*; Bolitophilidae: *Bolitophila rectangulata*; Cecidomyiidae: *Camptodiplosis boleti*; Phoridae: *Megaselia frameata*; Sphaeroceridae: *Spelobia parapusio*.

***Lentinus tigrinus* (Bull.) Fr.**

Mycetophilidae: *Leia crucigera*, *Mycetophila fungorum*, *Mycetophila idonea*, *Mycetophila luctuosa*, *Mycetophila strigatoides*; Cecidomyiidae: *Camptodiplosis boleti*; Phoridae: *Megaselia berndseni*.

***Polyporus brumalis* (Pers.) Fr.**

Mycetophilidae: *Mycetophila bialorussica*.

***Polyporus ciliatus* Fr.**

Mycetophilidae: *Mycetophila fungorum*, *Mycetophila strigatoides*.

***Polyporus squamosus* (Huds.) Fr.**

Pediciidae: *Ula mollissima*, *Ula sylvatica*; Ditomyiidae: *Ditomyia fasciata*; Mycetophilidae: *Mycetophila cingulum*; Cecidomyiidae: *Lestodiplosis polypori*, *Peromyia fungicola*; Anisopodidae: *Sylvicola cinctus*; Platypezidae: *Bolopus furcatus*; Drosophilidae: *Hirtodrosophila confusa*.

***Polyporus badius* (Pers.) Schwein.**

Pediciidae: *Ula bolitophila*; Ditomyiidae: *Ditomyia fasciata*; Keroplastidae: *Keroplastus testaceus*; Cecidomyiidae: *Camptodiplosis boleti*; Ceratopogonidae: *Culicoides scoticus*, *Forcipomyia bipunctata*; *Forcipomyia nigra*; Platypezidae: *Seri obscuripennis*; *Megaselia frameata* Drosophilidae: *Hirtodrosophila trivittata*, *Leucophenga maculata*, *Mycodrosophila poecilogastra*.

***Polyporus melanopus* (Sw.) Fr.**

Mycetophilidae: *Mycetophila strigatoides*; Cecidomyiidae: *Camptodiplosis boleti*, *Lestodiplosis polyperi*; Platypezidae: *Seri obscuripennis*.

***Polyporus varius* (Pers.) Fr.**

Ditomyiidae: *Ditomyia fasciata*; Keroplastidae: *Keroplastus tuvensis*, *Dynatosoma fuscicorne*; Platypezidae: *Seri obscuripennis*.

Order AGARICALES

Fistulinaceae

***Fistulina hepatica* (Schaeff.) With.**

Mycetophilidae: *Allodia grata*; Cecidomyiidae: *Camptodiplosis boleti*.

Pleurotaceae

***Pleurocybella porrigens* (Pers.) Sing.**

Pediciidae: *Ula mollissima*; Mycetophilidae: *Mycetophila marginata*.

***Pleurotus cornucopiae* Paulet (Rolland)**

Mycetophilidae: *Mycetophila luctuosa*, *Mycetophila spectabilis*, *Brachypeza armata*, *Brachypeza radiata*; Drosophilidae: *Leucophenga maculata*.

***Pleurotus ostreatus* (Jacq.) P. Kumm.**

Mycetophilidae: *Mycetophila fungorum*.

***Pleurotus pulmonarius* (Fr.) Quél.**

Pediciidae: *Ula mollissima*, *Ula sylvatica*; Keroplastidae: *Keroplastus testaceus*; Mycetophilidae: *Sciophila antiqua*, *Mycetophila dentata*, *Mycetophila luctuosa*, *Brachypeza armata*, *Brachypeza bisignata*; Cecidomyiidae: *Heteropeza pygmaea*; Psychodidae: *Psychomora vanharai*; Phoridae: *Megaselia frameata*; Lonchaeidae: *Lonchaea chorea*; Chloropidae: *Tricimba cincta*; Drosophilidae: *Drosophila kuntzei*, *Drosophila testacea*, *Hirtodrosophila confusa*, *Hirtodrosophila trivittata*, *Mycodrosophila poecilogastra*; Muscidae: *Mydaea nubila*.

Hygrophoraceae

Hygrophorus chrysodon (Batsch.) Fr.

Mycetophilidae: *Mycetophila fungorum*.

Hygrophorus sp.

Pediciidae: *Ula sylvatica*; Mycetophilidae: *Docosia gilvipes*, *Chodopsycha lobata*.

Hygrophoropsis aurantiaca (Wulfen) Maire

Mycetophilidae: *Exechia fusca*.

Marasmiaceae

Armillaria cepistipes Velen.

Trichoceridae: *Trichocera rufescens*.

Armillaria gallica Marxm. & Romagn. / = *A. bulbosa* (J.B. Barla) Romagn. /

Trichoceridae: *Trichocera rufescens*; Pediciidae: *Ula sylvatica*; Mycetophilidae: *Mycetophila fungorum*, *Mycetophila ruficollis*; Psychodidae: *Chodopsycha lobata*; Ceratopogonidae: *Culicoides scoticus*; Platypezidae: *Platypeza consobrina*, *Protoclythia modesta*; Heleomyzidae: *Suillia atricornis*; Sphaeroceridae: *Spelobia parapusio*; Drosophilidae: *Drosophila busckii*, *Drosophila phalerata*; Muscidae: *Phaonia subventa*.

Armillaria ostoyae (Romagn.) Herink

Platypezidae: *Platypeza consobrina*, *Protoclythia modesta*; Ceratopogonidae: *Culicoides scoticus*.

Marasmius alliaceus (Jacq.) Fr.

Mycetophilidae: *Allodia ornatcollis*.

Xerula (= *Oudemansiella*) *radicata* (Relhan) Dorfelt.

Anthomyiidae: *Pegomya pulchripes*; Muscidae: *Phaonia pallida*.

Bolbitiaceae

Agrocybe erebia (Fr.) Kühner

Mycetophilidae: *Allodia ornatcollis*, *Exechia fusca*.

Agrocybe praecox (Pers.) Fayod

Mycetophilidae: *Mycetophila fungorum*; Phoridae: *Megaselia maura*.

Hebeloma crustuliniforme (Bull.) Quél.

Mycetophilidae: *Mycetophila fungorum*, *Allodia ornatcollis*, *Exechia fusca*.

***Hebeloma sacchariolens* Quél.**

Mycetophilidae: *Mycetophila evanida*.

Cortinariaceae

***Cortinarius amoenolens* Rob. Henry & P. D. Orton**

Mycetophilidae: *Mycetophila fungorum*.

***Cortinarius cinnamomeoluteus* Rob. Henry**

Mycetophilidae: *Allodia czernyi*.

***Cortinarius croceoconus* Fr.**

Mycetophilidae: *Docosia gilvipes*, *Allodia czernyi*.

***Cortinarius cumatilis* Fr.**

Mycetophilidae: *Docosia gilvipes*, *Allodia zaitzevi*.

***Cortinarius romagnesii* Rob. Henry**

Mycetophilidae: *Allodia ornatcollis*, *Exechia spinuligera*, *Rymosia virens*.

***Crepidotus mollis* (Schaeff.) Staude**

Mycetophilidae: *Mycetophila ruficollis*, *Allodia ornatcollis*; Phoridae: *Megaselia frameata*.

***Galerina marginata* (Batsch) Kühner**

Mycetophilidae: *Allodia lugens*.

***Galerina paludosa* (Fr.) Kühner**

Mycetophilidae: *Exechia fusca*.

***Inocybe geophylla* (Fr.) P. Kumm.**

Mycetophilidae: *Allodia ornatcollis*, *Rymosia bifida*.

***Inocybe erubescens* A. Blytt / = *I. patouillardii* Bres. /**

Phoridae: *Megaselia berndseni*; Chloropidae: *Tricimba cineta*.

***Rozites caperata* (Pers.) P. Karst.**

Mycetophilidae: *Cordyla brevicornis*.

Hydnangiaceae

***Laccaria amethystina* Cooke**

Mycetophilidae: *Exechia dorsalis*; Drosophilidae: *Drosophila transversa*.

***Laccaria laccata* (Scop.) Fr.**

Mycetophilidae: *Exechiopsis fimbriata*.

Tricholomataceae

***Calocybe gambosa* (Fr.) Donk**

Mycetophilidae: *Mycetophila strigata*, *Allodia grata*; Phoridae: *Megaselia berndseni*; Chloropidae: *Tricimba lineela*; Muscidae: *Muscina stabulans*.

***Clitocybe nebularis* (Batsch) Quél.**

Mycetophilidae: *Allodiopsis rustica*; Muscidae: *Phaonia pallida*.

***Clitocybe inversa* (Scop.) Quél.**

Mycetophilidae: *Allodiopsis rustica*.

***Collybia confluens* (Pers.) P. Kumm.**

Cecidomyiidae: *Lestodiplosis inermis*; Sphaeroceridae: *Spelobia parapasio*; Drosophilidae: *Drosophila phalerata*.

***Collybia dryophila* (Bull.) P. Kumm.**

Mycetophilidae: *Mycetophila ichneumonea*.

***Gymnopus ocior* (Pers.) Antonín & Noordel**

/ = *Collybia ocior* (Pers.) Vilgalys & O. K. Mill /

Mycetophilidae: *Allodia alternans*.

***Lepista nuda* (Bull.) Cooke**

Bolitophilidae: *Bolitophila pseudohybrida*; Mycetophilidae: *Sciophila lutea*, *Docosia gilvipes*, *Rondaniella dimidiata*, *Allodiopsis rustica*; Phoridae: *Megaselia uliginosa*.

***Lyophyllum loricatum* (Fr.) Kühner ex Kalamees**

Limoniidae: *Metalimnobia bifasciata*; Bolitophilidae: *Bolitophila bimaculata*; Mycetophilidae: *Exechia repanda*.

***Megacollybia platyphylla* (Pers.) Kotl. & Pouzar**

Pediciidae: *Ula mollissima*; Mycetophilidae: *Mycetophila fungorum*, *Allodia grata*; Drosophilidae: *Drosophila kuntzei*, *Drosophila phalerata*.

***Melanoleuca grammopodia* (Bull.) Murrill**

Bolitophilidae: *Bolitophila modesta*.

***Mycena galericulata* (Scop.) Gray**

Mycetophilidae: *Mycetophila ruficollis*, *Allodia ornatocollis*, *Allodia grata*, *Exechia bicincta*.

***Mycena haematopus* (Pers.) P. Kumm.**

Mycetophilidae: *Mycetophila ruficollis*.

***Mycena polygramma* (Bull.) Gray**

Mycetophilidae: *Exechia fusca*.

***Mycena pura* (Pers.) P. Kumm.**

Mycetophilidae: *Allodia ornaticollis*.

***Rhodocollybia butyracea* f. *asema* Antonín, Halling & Noordel, 1997**

/ = *C. asema* (Fr.) P. Kumm. /

Mycetophilidae: *Mycetophila fungorum*, *Allodia lugens*, *Allodia ornaticollis*, *Allodia zaitzevi*, *Allodiopsis rustica*, *Exechia fusca*.

***Tricholoma populinum* J. E. Lange**

Mycetophilidae: *Mycetophila fungorum*.

***Tricholoma saponaceum* (Fr.) P. Kumm.**

Pediciidae: *Ula sylvatica*; Drosophilidae: *Drosophila kuntzei*, *Drosophila phalerata*.

***Tricholoma sejunctum* (Sowerby) Quél.**

Mycetophilidae: *Docosia gilvipes*, *Exechia repandoides*.

***Tricholoma sulphureum* (Bull.) P. Kumm.**

Mycetophilidae: *Allodia czernyi*.

***Tricholomopsis decora* (Fr.) Singer**

Mycetophilidae: *Mycetophila finlandica*.

***Tricholomopsis rutilans* (Schaeff.) Singer**

Mycetophilidae: *Mycetophila ruficollis*.

Gomphidiaceae

***Gomphidius glutinosus* (Schaeff.) Fr.**

Mycetophilidae: *Cordyla murina*, *Exechia lundstroemi*, *Exechia separata*.

Psathyrellaceae

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

Mycetophilidae: *Mycetophila fungorum*, *Allodia ornaticollis*; Phoridae: *Megaselia latior*.

Pluteaceae

***Limacella guttata* (Pers.) Konrad & Maubl**

Mycetophilidae: *Allodiopsis rustica*.

***Pluteus cervinus* (Schaeff.) P. Kumm. / = *P. atricapillus* (Batsch) Fayod/**

Trichoceridae: *Trichocera rufescens*; Mycetophilidae: *Mycetophila fungorum*, *Allodia ornaticollis*, *Allodia grata*; Psychodidae: *Chodopsycha buxtoni*; Platypezidae: *Paraplatypeza atra*; Asteiidae: *Leiomyza dudai*; Sphaeroceridae: *Spelobia parapusio*; Drosophilidae: *Drosophila kuntzei*, *Drosophila phalerata*, *Drosophila testacea*.

***Pluteus salicinus* (Pers.) P. Kumm.**

Platypezidae: *Paraplatypeza atra*; Drosophilidae: *Drosophila phalerata*.

Amanitaceae

***Amanita muscaria* (L.) Pers.**

Mycetophilidae: *Mycetophila fungorum*; Phoridae: *Megaselia lata*.

***Amanita pantherina* (DC.) Krombh.**

Mycetophilidae: *Leia bimaculata*, *Allodia grata*, *Cordyla brevicornis*; Asteiidae: *Leiomyza dudai*.

***Amanita phalloides* (Fr.) Link**

Psychodidae: *Chodopsycha lobata*, *Psychomora vanharai*.

***Amanita rubescens* Pers.**

Mycetophilidae: *Mycetophila fungorum*, *Cordyla brevicornis*; Psychodidae: *Chodopsycha buxtoni*, *Chodopsycha lobata*; Phoridae: *Megaselia lata*; Sphaeroceridae: *Spelobia parapusio*.

***Amanita spissa* (Fr.) Opiz**

Mycetophilidae: *Mycetophila fungorum*, *Cordyla brevicornis*, *Exechia fusca*; Psychodidae: *Chodopsycha buxtoni*, *Chodopsycha lobata*; Ceratopogonidae: *Culicoides scoticus*; Phoridae: *Megaselia lata*; Sphaeroceridae: *Spelobia parapusio*; Drosophilidae: *Drosophila phalerata*.

Agaricaceae

***Agaricus bohusii* Bon**

Phoridae: *Megaselia nigra*.

***Agaricus bitorquis* (Quél.) Sacc.**

Platypezidae: *Lindneromyia dorsalis*; Phoridae: *Megaselia nigra*; Fanniidae: *Fannia canicularis*; Muscidae: *Muscina levida*, *Muscina stabulans*.

***Agaricus xanthoderma* Genev.**

Phoridae: *Megaselia hirtiventris*.

***Chlorophyllum rhacodes* (Vittad.) Vellinga / = *Lepiota rhacodes* (Vittad.) Quél. /**

Mycetophilidae: *Mycetophila fungorum*.

***Lepiota aspera* (Pers.) Quél.**

Trichoceridae: *Trichocera rufescens*; Mycetophilidae: *Mycetophila fungorum*, *Allodia grata*.

***Leucoagaricus pudicus* (Bull.) Bon**

Mycetophilidae: *Exechia fusca*.

***Macrolepiota procera* (Scop.) Singer**

Mycetophilidae: *Mycetophila fungorum*, *Exechia fusca*.

Strophariaceae

***Conocybe aporos* Kits van Wav.**

Mycetophilidae: *Allodia anglofennica*, *Allodia ornaticollis*, *Allodia zaitzevi*, *Exechia fusca*.

***Hypholoma fasciculare* (Huds.) P. Kumm.**

Bolitophilidae: *Bolitophila cinerea*.

***Hypholoma sublateritium* (Schaeff.) Quél.**

Bolitophilidae: *Bolitophila cinerea*.

***Psilocybe bohemica* Šebek**

Mycetophilidae: *Exechia fusca*.

***Stropharia rugosoannulata* Farlow**

Mycetophilidae: *Mycetophila fungorum*; Drosophilidae: *Drosophila phalerata*, *Drosophila transversa*.

***Stropharia aeruginosa* (M.A. Curtis) Quél.**

Mycetophilidae: *Allodia lugens*; Muscidae: *Pegomya geniculata*.

***Pholiota lenta* (Pers.) Singer**

Bolitophilidae: *Bolitophila tenella*.

***Pholiota lubrica* (Pers.) Singer**

Bolitophilidae: *Bolitophila tenella*, *Bolitophila (Cliopisa) sp.*

***Pholiota squarrosa* (Weigel) P. Kumm.**

Bolitoophilidae: *Bolitophila cinerea*; Mycetophilidae: *Mycetophila ruficollis*; Phoridae: *Megaselia frameata*.

Entolomataceae

***Entoloma cetratum* (Fr.) Mos.**

Mycetophilidae: *Exechia fusca*.

***Entoloma clypeatum* (L.) P. Kumm.**

Mycetophilidae: *Mycetophila fungorum*, *Allodia grata*; Phoridae: *Megaselia flavicans*, *Megaselia hilaris*, *Megaselia lutea*; Drosophilidae: *Drosophila phalerata*.

***Entoloma hirtipes* (Schumach.) Moser**

Mycetophilidae: *Allodia ornaticollis*.

***Entoloma nidorosum* (Fr.) Quél.**

Trichoceridae: *Trichocera hiemalis*; Mycetophilidae: *Mycetophila fungorum*.

***Entoloma vernum* S. Lundell.**

Mycetophilidae: *Allodia ornaticollis*.

Lycoperdaceae

***Bovista pusilla* (Batsch.) Pers.**

Phoridae: *Megaselia sevciki*.

***Lycoperdon perlatum* Pers.**

Mycetophilidae: *Allodiopsis gracai*.

Order BOLETALES

Paxillaceae

***Paxillus filamentosus* (Scop.) Fr.**

Pediciidae: *Ula sylvatica*; Bolitoophilidae: *Bolitophila hybrida*; Mycetophilidae: *Mycetophila signatoides*; Cecidomyiidae: *Spaniocera squamigera*; Heleomyzidae: *Suillia bicolor*.

***Paxillus involutus* (Batsch) Fr.**

Pediciidae: *Ula sylvatica*; Bolitoophilidae: *Bolitophila hybrida*; Mycetophilidae: *Mycetophila signatoides*, *Exechia confinis*.

Boletaceae

***Boletus aereus* Bull.**

Mycetophilidae: *Mycetophila signatoides*.

***Boletus badius* (Fr.) Fr. / = *Xerocomus badius* (Fr.) J.-E. Gilbert /**

Mycetophilidae: *Exechia lundstroemi*; Ceratopogonidae: *Culicoides scoticus*.

***Boletus calopus* Pers.**

Mycetophilidae: *Mycetophila fungorum*.

***Boletus chrysenteron* Bull. / = *Xerocomus chrysenteron* (Bull.) Quél. /**

Mycetophilidae: *Mycetophila fungorum*, *Mycetophila signatoides*; Psychodidae: *Chodopsycha lobata*; Chloropidae: *Tricimba cincta*; Drosophilidae: *Drosophila kuntzei*, *Drosophila phalerata*.

***Boletus edulis* Bull.**

Limoniidae: *Metalimnobia bifasciata*; Mycetophilidae: *Mycetophila fungorum*, *Cordyla brevicornis*; Phoridae: *Megaselia lata*; Drosophilidae: *Drosophila histrio*, *Drosophila phalerata*, *Drosophila testacea*.

***Boletus impolitus* Fr.**

Mycetophilidae: *Mycetophila fungorum*, *Allodia grata*, *Cordyla brevicornis*, *Exechia bicincta*; Phoridae: *Megaselia berndseni*; Syrphidae: *Cheilosia scutellata*; Drosophilidae: *Drosophila phalerata*.

***Boletus pinophilus* Pilát & Dermek**

Ceratopogonidae: *Culicoides scoticus*.

***Boletus reticulatus* Schaeff.**

Mycetophilidae: *Mycetophila signatoides*, *Cordyla brevicornis*; Phoridae: *Megaselia lata*; Drosophilidae: *Drosophila phalerata*; Muscidae: *Muscina levida*.

***Boletus rubellus* Krombh. / = *Xerocomus rubellus* (Krombh.) Quél. /**

Mycetophilidae: *Mycetophila fungorum*.

***Boletus subtomentosus* (L.) Quél.**

Mycetophilidae: *Mycetophila fungorum*, *Exechia bicincta*.

***Boletellus pruinaeus* Klofac & Grisai-Greilh.**

Mycetophilidae: *Exechia bicincta*.

***Suillus collinitus* (Fr.) Kuntze**

Mycetophilidae: *Mycetophila fungorum*.

***Suillus granulatus* (L.) Roussel**

Mycetophilidae: *Mycetophila fungorum*; Phoridae: *Megaselia lutea* Drosophilidae: *Drosophila melanogaster*.

***Suillus luteus* (L.) Gray**

Mycetophilidae: *Mycetophila fungorum*, *Cordyla murina*.

***Leccinum carpini* (Schulzer) M. M. Moser**

Mycetophilidae: *Muscina levida*.

***Leccinum molle* (Bon) Bon**

Phoridae: *Megaselia berndseni*; Syrphidae: *Cheilosia scutellata*; Drosophilidae: *Drosophila histrio*, *Drosophila transversa*.

***Leccinum quercinum* (Pilát) Green & Watling**

Psychodidae: *Chodopsycha buxtoni*; Syrphidae: *Cheilosia scutellata*; Drosophilidae: *Drosophila histrio*, *Drosophila testacea*; Fanniidae: *Fannia lepida*, *Fannia monilis*.

***Leccinum rufum* (Schaeff.) Kreisel**

Drosophilidae: *Drosophila busckii*.

***Leccinum scabrum* (Bull.) Gray**

Mycetophilidae: *Allodia grata*.

Order THELEPHORALES

Bankeraceae

***Sarcodon imbricatus* (L.) P. Karst.**

Pediciidae: *Ula sylvatica*; Psychodidae: *Chodopsycha lobata*.

Order RUSSULALES

Auriscalpiaceae

***Clavicornia pyxidata* (Pers.) Doty**

Limoniidae: *Achyrolimonia decemmaculata*; Mycetophilidae: *Mycetophila evanida*, *Trichonta* sp.; Phoridae: *Megaselia frameata*.

Bondarzewiaceae

***Bondarzewia montana* (Quél.) Singer** /= ***B. mesenterica* (Schaeff.) Kreisel** /

Pediciidae: *Ula mollissima*; Ditomyiidae: *Ditomyia fasciata*; Mycetophilidae: *Mycetophila ornata*; Ceratopogonidae: *Culicoides scoticus*; Phoridae: *Megaselia frameata*; Heleomyzidae: *Neoleria ruficeps*.

Russulaceae

***Lactarius acerrimus* Britzelm.**

Mycetophilidae: *Sciophila lutea*, *Sciophila pseudoflexuosa*, *Leia bimaculata*; Phoridae: *Megaselia lutea*.

***Lactarius decipiens* Quél.**

Mycetophilidae: *Mycetophila strobli*; Cecidomyiidae: *Stomatosema nemorum*; Drosophilidae: *Drosophila kuntzei*, *Drosophila testacea*.

***Lactarius deterrimus* Gröger**

Pediciidae: *Ula sylvatica*; Mycetophilidae: *Mycetophila blanda*, *Mycetophila estonica*, *Mycetophila evanida*; Ceratopogonidae: *Culicoides scoticus*; Muscidae: *Mydaea corni*.

***Lactarius fulvissimus* Romagn.**

Mycetophilidae: *Mycetophila evanida*.

***Lactarius pilatii* Z. Schaef.**

Mycetophilidae: *Mycetophila luctuosa*, *Mycetophila strobli*; Ceratopogonidae: *Culicoides scoticus*; Sphaeroceridae: *Spelobia parapusio*.

***Lactarius piperatus* (L.) Gray**

Mycetophilidae: *Mycetophila alea*; Cecidomyiidae: *Peromyia fungicola*.

***Lactarius rufus* (Scop.) Fr.**

Pediciidae: *Ula sylvatica*; Mycetophilidae: *Docosia gilvipes*, *Mycetophila strobli*; Ceratopogonidae: *Culicoides scoticus*; Sphaeroceridae: *Spelobia parapusio*.

***Lactarius salmonicolor* R. Heim & Leclair**

Mycetophilidae: *Mycetophila blanda*, *Mycetophila estonica*, *Mycetophila fungorum*.

***Lactarius scrobiculatus* (Scop.) Fr.**

Pediciidae: *Ula mollissima*, *Ula sylvatica*; Mycetophilidae: *Rondaniella dimidiata*, *Mycetophila strobli*; Ceratopogonidae: *Culicoides scoticus*; Phoridae: *Megaselia lutea*.

***Lactarius subdulcis* (Bull.) Gray**

Phoridae: *Megaselia lutea*.

***Lactarius vellereus* (Fr.) Fr.**

Limoniidae: *Metalimnobia bifasciata*; Mycetophilidae: *Sciophila pseudoflexuosa*, *Mycetophila strobli*; Chloropidae: *Tricimba cincta*; Drosophilidae: *Hirtodrosophila confusa*, *Fannia canicularis*.

***Lactarius volemus* (Fr.) Fr.**

Mycetophilidae: *Leia bimaculata*, *Mycetophila strobli*; Psychodidae: *Chodopsycha lobata*, *Psychomora vanharai*; Ceratopogonidae: *Culicoides scoticus*; Sphaeroceridae: *Spelobia parapusio*; Drosophilidae: *Drosophila phalerata*, *Drosophila testacea*.

***Russula aeruginea* Lindblad**

Ceratopogonidae: *Culicoides scoticus*; Phoridae: *Megaselia lutea*; Drosophilidae: *Drosophila phalerata*.

***Russula alutacea* (Pers.) Fr.**

Cecidomyiidae: *Peromyia fungicola*; Phoridae: *Megaselia flavicans*; Drosophilidae: *Drosophila phalerata*.

***Russula amoenicolor* Romagn.**

Mycetophilidae: *Cordyla nitidula*; Drosophilidae: *Drosophila kuntzei*; Muscidae: *Muscina levida*.

***Russula carpini* Heinem. et R. Girard**

Mycetophilidae: *Mycetophila fungorum*, *Exechia fusca*; Drosophilidae: *Drosophila phalerata*.

***Russula cyanoxantha* (Schaeff.) Fr.**

Pediciidae: *Ula sylvatica*; Mycetophilidae: *Mycetophila fungorum*, *Cordyla brevicornis*; Ceratopogonidae: *Atrichopogon rostratus*, *Culicoides scoticus*.

***Russula grisea* (Pers.) Fr.**

Mycetophilidae: *Cordyla brevicornis*, *Cordyla nitidula*; Phoridae: *Megaselia flavicans*, *Megaselia lutea*; Muscidae: *Mydaea humeralis*.

***Russula grisescens* (Bon & Gaugué) Marti**

Mycetophilidae: *Allodia grata*, *Exechia fusca*, *Exechia seriata*; Psychodidae: *Chodopsycha lobata*; Sphaeroceridae: *Spelobia parapusio*.

***Russula luteotacta* Rea**

Mycetophilidae: *Sciophila lutea*, *Mycetophila evanida*, *Mycetophila fungorum*, *Allodia ornatcollis*, *Exechia seriata*; Muscidae: *Mydaea corni*, *Mydaea humeralis*.

***Russula nigricans* (Bull.) Fr.**

Limoniidae: *Metalimnobia bifasciata*; Pediciidae: *Ula mollissima*; Mycetophilidae: *Mycetophila alea*; Cecidomyiidae: *Tricholaba trifolii*; Ceratopogonidae: *Culicoides scoticus*; Drosophilidae: *Drosophila testacea*; Muscidae: *Mydaea corni*.

***Russula paludosa* Britz.**

Pediciidae: *Ula sylvatica*.

***Russula pectinata* Fr.**

Mycetophilidae: *Mycetophila fungorum*.

***Russula pulchella* Borsz.**

Mycetophilidae: *Mycetophila fungorum*; Phoridae: *Megaselia flavicans*, *Megaselia* sp.;
Sphaeroceridae: *Spelobia parapsio*.

***Russula rigida* Velen.**

Mycetophilidae: *Allodia grata*; Drosophilidae: *Drosophila phalerata*.

***Russula violeipes* Quél.**

Mycetophilidae: *Cordyla nitidula*, *Exechia bicincta*, *Exechia seriata*; Phoridae: *Megaselia flava*.

***Russula virescens* (Schaeff.) Fr.**

Mycetophilidae: *Mycetophila fungorum*.

Hericiaceae

***Hericium cirrhatum* (Pers.) Nikol / = *Creolophus cirrhatum* (Pers.) P. Karst. /**

Drosophilidae: *Drosophila busckii*, *Hirtodrosophila confusa*.

***Hericium alpestre* Pers. / = *H. flagellum* (Scop.) Pers. /**

Cecidomyiidae: *Monardia modesta*.

Stereaceae

***Stereum hirsutum* (Willd.) Gray**

Ditomyiidae: *Ditomyia fasciata*; Mycetophilidae: *Leptomorphus focipatus*.

Hoplothrips fungi Zetterstedt, 1828 (Thysanoptera) was recently recorded from this fungus by Ševčík (2003)

***Stereum subtomentosum* Pouzar**

Mycetophilidae: *Leptomorphus focipatus*.

Order HYMENOGYSALES

Hymenochaetaceae

***Inonotus radiatus* (Sowerby) P. Karst.**

Ditomyiidae: *Ditomyia fasciata*; Cecidomyiidae: *Lestodiplosis polypori*; Mycetophilidae: *Sciophila hirta*, *Dynatosoma fuscicorne*.

Order CANTHARELLALES

Cantharellaceae

***Cantharellus amethysteus* Quél.**

Mycetophilidae: *Leia bimaculata*; Drosophilidae: *Drosophila testacea*.

***Cantharellus cibarius* Fr.**

Ceratopogonidae: *Culicoides scoticus*; Drosophilidae: *Drosophila transversa*.

Hydnaceae

***Hydnum repandum* L.**

Pediciidae: *Ula sylvatica*; Mycetophilidae: *Sciophila baltica*, *Sciophila varia*; Psychodidae: *Chodopsycha buxtoni*, *Psychomora vanharai*; Drosophilidae: *Drosophila testacea*; Fanniidae: *Fannia monilis*.

Order PHALLALES

Gomphaceae

***Ramaria bataillei* (Maire) Corner**

Mycetophilidae: *Rondaniella dimidiata*.

***Ramaria* sp.**

Mycetophilidae: *Tarnania tarnanii*; Cecidomyiidae: *Peromyia fungicola*; Psychodidae: *Chodopsycha buxtoni*, *Chodopsycha lobata*; Drosophilidae: *Drosophila kuntzei*, *Drosophila testacea*.

MYXOMYCETES

***Lycogala epidendrum* (L.) Fr.**

Mycetophilidae: *Mycetophila adumbrata*.

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