Notes on the Laboulbeniales (Ascomycetes) from the Czech Republic

Walter Rossi[1] and Jan Máca[2]

[1] Department of Environmental Sciences, University of L'Aquila, I-67010 Coppito, L'Aquila, Italy
[2] Czech Agency of Nature Conservation, Nám. P. Otakara 34, CZ-37001 České Budějovice, Czech Republic

Rossi W. and Máca J. (2006) Notes on the Laboulbeniales from the Czech Republic. – Sydowia 58 (1): 110 – 124.

Previous records of Laboulbeniales from the former Czechoslovakia are revised and 24 new records. – are added to the list of species for the Czech Republic. These are: *Asaphomyces cholevae* Thaxter, *Chitonomyces aculeifer* Spegazzini, *Colonomyces appendiculatus* R.K. Benjamin, *Corethromyces henrotii* Balazuc ex Balazuc, *Hydraeomyces halipli* (Thaxter) Thaxter, *Laboulbenia argutoris* Cépède & Picard, *L. cristata* Thaxter, *L. eubradycelli* Huldén, *L. fasciculata* Peyritsch, *L. flagellata* Peyritsch, *L. nana* K. Sugiyama, *L. notiophili* Cépède et Picard, *L. pedicellata* Thaxter, *L. philonthi* Thaxter, *Monoicomyces athetae* Thaxter, *Peyritschiella princeps* (Thaxter) I.I. Tavares, *Rhachomyces canariensis* Thaxter, *R. furcatus* (Thaxter) Thaxter, *Rhadinomyces pallidus* Thaxter, *Rickia peyerimhoffii* Maire, *Stigmatomyces asteiae* W. Rossi & Cesari, *S. oecotheae* Thaxter, *Trenomyces histophthorus* Chatton & Picard, and *Zodiomyces vorticellarius* Thaxter. *Euphoriomyces liodivorus* (Huggert) I.I. Tavares and *Stigmatomyces scaptomyzae* Thaxter are reported for the first time from Slovakia and new records of *S. scaptomyzae* Thaxter from various countries are also given.

Key words: arthropod-associated fungi, fungal distribution, Slovakia.

Laboulbeniales are a peculiar group of fungi growing on living insects and on a few other arthropods. For this reason they are seldom collected by the standard mycological methods. They were overlooked in the key of the cryptogamous plants of the former Czechoslovakia (Svrček *et al.*, 1976) and also in the list of the cryptogamous plants of Slovakia (Marhold & Hindák, 1998), both including otherwise comparatively detailed treatments of fungi. However, the sparse data from the former Czechoslovakia were included by Santamaria *et al.* (1991) in their survey on the distribution of European Laboulbeniales.

In the present paper a revision of previous findings is carried out and records are sorted out according to present-day countries (Czech Republic, Slovakia). Twenty four new records from Czech Republic and two new records from Slovakia, together with

comments on some of the species, are also reported. When possible, names of the localities are followed by numbers according to the faunistic and floristic grid mapping system widely used in central Europe (e.g. Ehrendorfer & Hamann 1965, Pruner & Míka 1996).

Field research was carried out in the Czech Republic only. The records from Slovakia were collected from the peer-reviewed literature and are noted separately.

Materials and Methods

Most of the material studied for this work was collected in the field by one of the authors (J.M.) by standard entomological methods, chiefly by hand collecting. The remaining material was collected either by W.R. and by Czech entomologists, or found in entomological collections. The fungi were removed from their hosts and mounted on slides following the techniques described by Benjamin (1971). Permanent slides are kept in the collection of Jan Máca, unless otherwise stated.

Taxonomy

Arthrorhynchus diesingii Kolenati

Published record. – Kolenati 1857: Moravia, locality not specified, on *Acrocholidia vexata* Westwood (Diptera, Nycteribiidae) parasitizing the bat *Vespertilio murinus* (L.).

Asaphomyces cholevae Thaxter – (Figs. 1 – 2)

Distribution. – This parasite was described from the USA on *Sciodrepoides fumatus* ssp. *terminans* (LeConte) (sub *Choleva terminans* Lec.); it was subsequently reported, sometimes under the synonym *Asaphomyces tubanticus* (Middelh. & Boelens) Scheloske, from several European countries and from Morocco on various genera of Coleoptera Leiodidae Cholevinae (*Catops, Catopidius, Sciodrepoides, Nemadus*) (Santamaria & Rossi 1999).

New records. – Bohemia, Meziměstí env., 1.5 Km NW to Vižňov (5363), 15 – 30 Jul 1992, J. Růžička leg., on *Catops coracinus* Kellner; Šumava Mts., Dešenice env., Městiště (6745), pitfall, 10 – 25 Oct 1989, J. Růžička leg., on *C. kirbyi* (Spence); Ještědský ridge, 1,5 Km E to Jitrava vill., PR Velký Vápenný, Západní cave (5255), pitfall, 4 Jun 1998 – 27 Apr 1999, J. Růžička & P. Vonička leg., on *C. nigricans* Spence; Frýdland near PR Křížový Vrch (5056), 8 Jul 2004, P. Vonička leg., on the elytra of *C. nigrita* Erichson; Krkonoše Mts., Obří důl valley, (former) Kovárna env. (5260c), pitfall, 15 Jun – 11 Aug 2004, J. Růžička leg., on *C. subfuscus* Kellner and

C. tristis (Panzer); Orlické hory Mts., Vrchní Orlice near Bartošovice v Orlických horách env., Polom Mt. (5865a), pitfall, 25 Aug – 27 Nov 2004, O. Nakládal leg., on *C. westi* Krogerus.

Additional records. – **U.S.A.:** IL, Cook Co., Western Springs, Benis Woods North, 2 – 16 Jul 1994, A. Newton & M. Thayer leg.; IL, Cook Co., Swallow Cliff Woods, NW of Palos Park, north site, alt. 215 m, 41 °40.6'N 87 °51.9'W, 12 – 26 Jun 1996, M. Thayer & al., on two females and two males of *Sciodrepoides fumatus* ssp. *terminans*. Hosts identified by P. Giachino (Turin, Italy). Slides nos. 2872, 2873, 2874a, 2874b & 2875 in WR collection.

Note. – Examination of a large number of parasites obtained from a few American specimens of *Sciodrepoides fumatus* ssp. *terminans,* which is the host of the type series, showed a certain variability of the thalli depending on the age and on the position of the fungi on the hosts. For example, older perithecia are more inflated than the young ones and the number of the same is higher, on average, in thalli growing on the ventral side of the host insects. This makes insignificant the differences claimed for distinguishing *Asaphomyces cholevae* from *A. tubanticus*.

Chitonomyces aculeifer Spegazzini

Distribution. – Recorded from Europe (Germany, Italy, Poland, Spain), from Argentina, and from China (Santamaria 2003).

New record. – Bohemia, Vlkov, Vlkovská pískovna (6854), 28 May 2004, W. Rossi leg., on the underside of the margin of the right elytron, near the prosternum, of a male specimen of *Haliplus variegatus* Sturm (Coleoptera, Haliplidae); slide no. 2710 in WR collection.

Note. – A single, mature thallus of *Chitonomyces aculeifer* was found, together with several thalli of *Hydraeomyces halipli* (see further on) scattered all over the body of the same host insect.

Colonomyces appendiculatus R.K. Benjamin

Distribution. – Reported so far only from the U.S.A. (type), Germany and Sweden (Santamaria *et al.* 1991).

New record. – Moravia, Adamov (6665-6), date unknown, E. et G. Mazur leg., on *Colon murinum* Kraatz (Coleoptera, Leiodidae) (W. Szymczakowski det.). The parasite was identified by T. Majewski (Warszaw) and the slide (now in the collection of J.M.) was kindly sent to us by R. Krejzová (Praha).

Corethromyces henrotii Balazuc ex Balazuc – (Figs. 3 – 4)

Distribution. – Reported from France (type), Italy, Finland, Belgium and Spain on *Choleva* spp. (Santamaria 2003).

New record. – Bohemia, Janovice nad Úhlavou (6645), 7 – 9 Oct 1989, J. Růžička leg., on *Choleva oblonga* Latreille (Coleoptera, Leiodidae).

Note. – The new record makes it possible to single out two important characters which have never been reported so far. One is the presence of a long appendage, which is simple in most cases (Figs. 3 & 4), but may also be branched. The other is a second perithecium borne above the first, which is present in 11 of the 63 examined thalli (Fig. 3).

Diphymyces niger (T. Majewski) I.I. Tavares

Published record. – Huggert 1973: Bohemia, Podledic (? recte Podletic = Podlesice near Podbořany) (5745-6), on *Ptomaphagus sericatus* (Chaudoir) (Coleoptera, Leiodidae, Cholevinae).

Hydraeomyces halipli (Thaxter) Thaxter

Distribution. – This parasite was found in several European countries, in North Africa, in Asia, and in North and South America (Majewski 1994).

New record. – Bohemia, Vlkov, Vlkovská pískovna (6854), 28 May 2004, W. Rossi leg., all over the body of a few specimens of *Haliplus fluviatilis* Aubé and *H. variegatus*.

Laboulbenia argutoris Cépède & Picard

Distribution. – Reported from several European countries and from Japan (Majewski 1994); however, some old records are questionable (Santamaria 1995).

New records. – Bohemia, Třebanice, NR (= Nature Reserve) Hrádeček (6950), 25 Oct 2002, J. Máca leg., on *Phonias (= Pterostichus) ovoideus* (Sturm) (Coleoptera, Carabidae); Střížovice nr. Kunžak (6856), 11 Mar 2003, J. Máca leg., on *P. taksonyis* Csiki.

Laboulbenia clivinalis Thaxter

Published record. – Huldén 1985: Moravia, Paskau (Paskov) (6275), on *Clivina collaris* (Herbst) (Coleoptera, Carabidae).

Additional record. – Bohemia, Mečichov (6649), 27 Apr 2005, J. Máca leg., on *Clivina fossor* (Linnaeus).

Laboulbenia cristata Thaxter

Distribution. – Very common cosmopolitan species, reported from all continents (Santamaria 1998).

New records. – Bohemia, Záhostice nr. Chýnov (6554), 23 March 2004, J. Máca leg., on abdomen and legs of one specimen of *Paederus riparius* (Linnaeus) (Coleoptera, Staphylinidae); Vlkov, Vlkovský rybník (6854), 28 May 2004, W. Rossi leg., on two specimens of *P. riparius*.

Laboulbenia egens Spegazzini

Published record. – Huldén 1985: Moravia, Paskau (Paskov) (6275), on *Elaphropus* (= *Tachys*) *quadrisignatus* (Duftschmidt) (Coleoptera, Carabidae).

Laboulbenia eubradycelli Huldén

Distribution. – Reported from several European countries, from Madeira and from Mexico (Santamaria 1998).

New record. – Bohemia, Volary env., Mrtvý Luh peat-bog (7149), 30 Jul – 2 Aug 2002, Aleš Bezděk leg., on *Bradycellus harpalinus* (Serville) (Coleoptera, Carabidae); Horusice (6854), 12 Apr 1999, J. Máca leg., on *B. caucasicus* (Chaudoir).

Laboulbenia fasciculata Peyritsch

Distribution. – Cosmopolitan species reported throughout Europe, Africa, Asia, and America (Majewski 1994).

New record. – Bohemia, Planá nad Lužnicí (NR Ostrov Markéta) (6654), 17 Sep 1992, J. Máca leg., on *Patrobus atrorufus* (Ström) (Coleoptera, Carabidae).

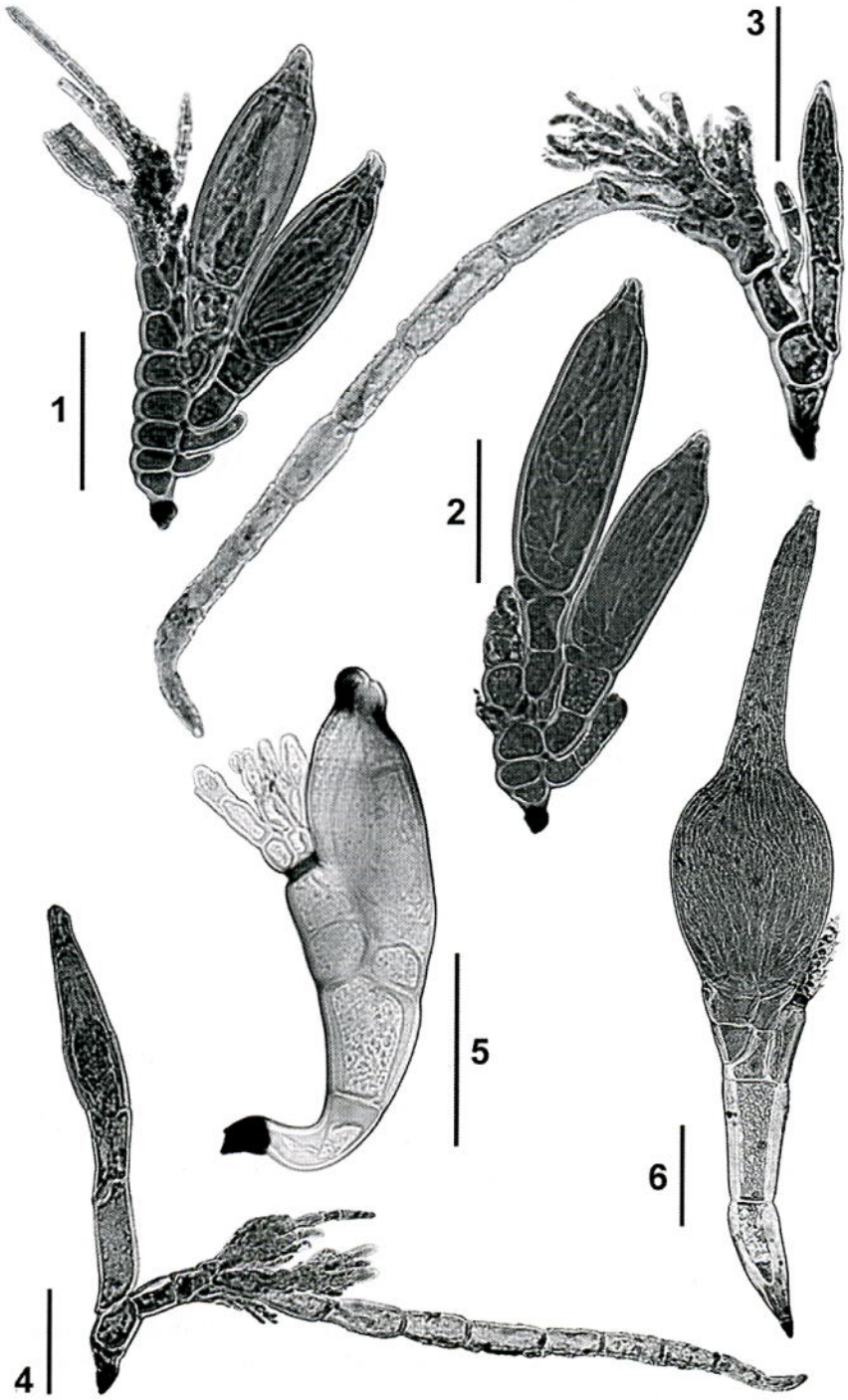
Note. – Erroneously reported from Czechoslovakia by Santamaria *et al.* (1991). The place where it was found by Banhegyi (1949), i.e. Tusnádfürdö (= Tusnad nr. Brasov), is in Romania.

Laboulbenia flagellata Peyritsch

Distribution. – A common cosmopolitan species, reported on very many different genera and species of ground beetles (Carabidae) (Majewski 1994).

New records. – Bohemia, near Soběslav (6754), 1 Apr 2003, J. Máca leg., on *Europhilus thoreyi* (Dejean); Besednice (7253), 29 Mar 2001, J. Máca leg., on *E. fuliginosus* (Panzer); Veselí n. Lužnicí (6854), 29 Mar 2003, J. Máca leg., on *Platynus assimilis* (Paykull). Moravia, Rancířov (7059), 25 Apr 2003, J. Máca leg., on *Paranchus albipes* (Fabricius).

Fig. 1 – 2. *Asaphomyces cholevae:* **1.** Thallus from *Catops nigrita;* **2.** Thallus from *Sciodrepoides fumatus* ssp. *terminans.* **3 – 4.** *Corethromyces henrotii:* **3.** Young thallus with two immature perithecia; **4.** Mature thallus. **5.** *Laboulbenia nana.* **6.** *Stigmatomyces entomophilus.* Bars = 50 µm. Specimens represented in Figs. 1 – 4 were stained with acid fuchsin.


1
2
3
4
5
6

Laboulbenia gyrinicola Spegazzini

Published record. – Huldén 1983: Bohemia, Průhonice (5953), on *Gyrinus substriatus* Stephens (Coleoptera, Gyrinidae).

Laboulbenia nana K. Sugiyama – (Fig. 5)

Distribution. – Described on the ground-beetle *Tachyta nana* (Gyllenhal) from Japan and recorded again only from Spain on the same host-insect (Santamaria 1998).

New record. – Bohemia, Hluboká (6854), 17 Jun 2005, J. Máca leg., on *Tachyta nana* (Coleoptera, Carabidae).

Note. – Likely the records of *Laboulbenia tachyis* Thaxter on *Tachyta nana* from Hungary (Bánhegyi 1944), from Romania (Bánhegyi 1949), and from France (Balazuc 1990) should be ascribed to *Laboulbenia nana*.

Laboulbenia notiophili Cépède & Picard

Distribution. – Parasite associated with *Notiophilus* and with a few Lebiini (Coleoptera Carabidae), reported from several European countries (Rossi & Santamaria 2006).

New record. – Bohemia, Horusice (6854), 3 Jun 2004, J. Máca leg., on *Notiophilus biguttatus* (Fabricius).

Laboulbenia pedicellata Thaxter

Distribution. – A common and widespread species, parasitic on Coleoptera Carabidae worldwide (Santamaria *et al.* 1991).

New records. – Bohemia, Strakonice – Hajská (6749), 3 Apr 1997, J. Máca leg., on *Philochthus mannerheimi* (Sahlberg); Pašínovice (NR Pašínovická louka) (7153), 14 Mar 2000, J. Máca leg., on *P. guttula* (Fabricius).

Laboulbenia philonthi Thaxter

Distribution. – Parasitic on *Philonthus* (Staphylinidae) and related genera in Europe, Turkey and America (Santamaria *et al.* 1991).

New record. – Bohemia, Tchořovice, Hořejší rybník (fishpond) (6548), 10 Apr 2003, J. Máca leg., on *Philonthus fumarius* (Gravenhorst) (Coleoptera, Staphylinidae).

Laboulbenia rougetii Montagne & Robin

Published record. – Fassattiová & Fassatti 1956: Bohemia, Rokycany (6247), on *Brachynus crepitans* (Linnaeus) (Coleoptera, Carabidae).

Laboulbenia vulgaris Peyritsch

Published records. – Fassattiová & Fassatti 1956: Bohemia, Dolánky nr. Turnov (5356-7), on *Bembidion monticola* Sturm.; Praha-Troja (5852), on *B. tetracolum* Say (= *ustulatum* auct. nec Linnaeus); Čelákovice (5854), on *B. tetracolum*, *B. dentellum* (Thunberg) and *B. femoratum* Sturm; Jarov (6050), on *B. atrocoeruleum* Stephens; Moravia, Luhačovice (6872), on *B. testaceum* Duftschmid.

Additional records. – Bohemia, Třebanice, NR Hrádeček (6950), 25 Oct 2002, J. Máca leg., on *Philochthus mannerheimi* (Sahlberg); Dobronice nr. Chýnov, NR Stříbrná Hut (6554), 18 May 2000, J. Máca leg., on *B. bruxellense* Wesmael; Albrechtice, NR Malý a Velký Kamýk (6751), 16 May 1996, J. Máca leg., on *Bembidion tibiale* Duftschmid. Hosts identified by M. Šlachta (České Budějovice).

Note. – The records of Fassattiová and Fassatti are not mentioned in Santamaria *et al.* 1991.

Monoicomyces athetae Thaxter

Distribution. – Reported so far only from Germany, Great Britain and Poland (Santamaria *et al.* 1991).

New record. – Bohemia, Špindlerův Mlýn, 1 Oct 1985 (5259), J. Máca leg., on *Atheta tibialis* (Heer) (Coleoptera, Staphylinidae).

Monoicomyces invisibilis Thaxter

Published record. – Huldén 1985 (as *M. furcatus* Thaxter): Bohemia, locality not specified, on *Oxytelus laequatus* (Marsham) (Coleoptera, Staphylinidae).

Peyritschiella princeps (Thaxter) I.I. Tavares

Distribution. – Recorded from all the five continents on *Philonthus* (Coleoptera, Staphylinidae) and related genera (Santamaria *et al.* 1991).

New record. – Bohemia, Veselí nad Lužnicí, 20 Aug 1990 (6854), J. Máca leg., on *Philonthus cephalotes* (Gravenhorst).

Peyritschiella protea Thaxter

Published record. – Huldén 1985: Moravia, Paskau (Paskov) (6275), on *Anotylus rugosus* (Fabricius) (Coleoptera, Staphylinidae).

Additional record. – Bohemia, Záhostice nr. Chýnov (6554), 23 Mar 2004, J. Máca leg., on various parts of the body of a specimen of *Anotylus rugosus*.

Rhachomyces canariensis Thaxter

Distribution. – Reported on *Trechus* (Coleoptera, Carabidae) from several European countries, from Turkey and from North Africa (Santamaria *et al.* 1991).

New record. – Bohemia, Plánička, NR Olšina v Novolhotském lese (7250) , 24 Mar 2000, J. Máca leg., on *Trechus splendens* Gemminger & Harold. The host insect was identified by M. Šlachta (České Budějovice).

Rhachomyces furcatus (Thaxter) Thaxter

Distribution. – Parasitic on *Othius* (Coleoptera, Staphylinidae) in Europe, Africa and Turkey (Santamaria *et al.* 1991).

New record. – Bohemia, Zbelitov nr. Milevsko, NR Boukal (6551), 25 Apr 1991, J. Máca leg., on *Othius lapidicola* Kiesenwetter.

Rhadinomyces pallidus Thaxter

Distribution. – Reported on *Lathrobium* (Coleoptera, Staphylidae) and related genera from Europe, USA and Japan (Santamaria *et al.* 1991).

New record. – Bohemia, Krčín pond, near Mazelov (6853), 26 May 2004, W. Rossi leg., on two specimens of *Lathrobium terminatum* Gravenhorst.

Rickia peyerimhoffii Maire

Distribution. – Reported from various European countries, from Algeria (type) and from South Korea on *Scaphisoma* spp. (Castaldo *et al.* 2004).

New record. – Bohemia, Petříkov (7154), 24 Aug 2005, J. Máca leg., on *Scaphisoma* sp. (Coleoptera, Scaphidiidae).

Stigmatomyces asteiae W. Rossi & Cesari

Distribution. – Reported so far only from Italy, Romania and Spain on the fly *Asteia amoena* Meigen (Santamaria & Rossi 1998).

New record. – Moravia, Olomouc-Hlušovice (Molinion) (6369), 1 Sep 1982, J. Máca leg., on *Asteia amoena* (Diptera, Asteiidae).

Stigmatomyces baeri (Knoch) Peyritsch

Published record. – Beck v. Mannagetta 1903: Bohemia, Praha, Botanical Institute (5952), on *Musca domestica* Linnaeus (Diptera, Muscidae).

Stigmatomyces entomophilus (Peck) Thaxter – (Fig. 6)

Published record. – Máca 1982: Bohemia, Nový Hradec Králové (5861), 24 Jul 1964, V. Zeman leg., on *Drosophila funebris* (Fabricius) (Diptera, Drosophilidae).

Note. – This record is not reported by Santamaria *et al.* (1991); the same authors (p. 102, note 239) suggest that all the records of *Stigmatomyces entomophilus* from Europe need confirmation.

Actually, it does not seem easy to state whether the parasites of *Drosophila funebris* belong to *Stigmatomyces entomophilus* or not. In fact, the Czech specimens have the axis of the appendage composed of a linear series of five cells, the basal of which is sterile, while the others bear two antheridia each (Fig. 5). In *Stigmatomyces entomophilus* the number of the cells forming the axis of the appendage is six (Weir & Rossi 1995), while in *S. majewskii* Dainat, Manier & Balazuc, described on *Drosophila obscura* Fallén and *D. subobscura* Collin from France (Dainat, Manier &Balazuc 1974) and later recorded on *D. obscura* and *Scaptodrosophila rufifrons* Loew from Austria (Christian 2001), the cells in the axis of the appendage are four.

Stigmatomyces oecotheae Thaxter

Distribution. – Recorded so far only in the USA and in Italy (Santamaria *et al.* 1991).

New record. – Bohemia, Krasejovka nr. České Budějovice, NR Děkanec (7152), 24 Feb 1994, J. Máca leg., on *Oecothea fenestralis* (Fallén) (Diptera, Heleomyzidae).

Stigmatomyces scaptomyzae Thaxter

Distribution. – Widely distributed species, known from all habitable continents except Australia (Santamaria *et al.* 1991, Máca 1999a).

Published records. – Máca 1982 & 1999b: Bohemia, Veselí nad Lužnicí (6854); Nový Hradec Králové (5861); Moravia, Trstěnice nr. Znojmo (7063); Sedlec nr. Lednice, NR Soutok (7367). On *Scaptomyza pallida* (Zetterstedt) (Diptera, Drosophilidae).

New records. – Bohemia, Kunice nr. Praha (6053-4), 22 Sep 1974, M. Barták leg., on *S. pallida*. Moravia: Horní Benešov nr. Bruntál (6071), 6 – 26 Jul 1977, J. Roháček leg., on *S. pallida;* Spálené – Sokolí důl nr. Bruntál (5870), 26 Jul – 11 Aug 1977, J. Roháček leg., on *S. pallida;* Jeřáb Mt. nr. Hanušovice (5867), 26 May – 28 Jun 1977, 26 Jul – 15 Aug 1977, 15 Aug – 13 Sept 1977, J. Roháček leg., on *S. pallida;* Nýdek nr. Třinec (6378), 17 Aug – 15 Sep 1977, J. Roháček leg., on *S. pallida;* Jevíčko env. – Nectava valley (6366) , 28 Jun – 26 Jul 1977, J. Roháček leg., on *S. pallida;* Ondřejov nr. Rýmařov (6069), 28 Jun – 26 Jul 1977, J. Roháček leg., on *S. pallida*. All the hosts from Moravia were collected by means of baited pitfall traps.

Unpublished records of *Stigmatomyces scaptomyzae* from other countries: GERMANY: Spiegelau (in Böhmerwald), 7 – 11 Sep 1995, M. Barták leg., on *Scaptomyza pallida*. SERBIA-MONTENEGRO: Montenegro, Radoviči, 15 Oct 1982, P. Lauterer leg., on *S. pallida*. ROMANIA: Sfintul Helena (in Banat), 15 Jun 1988, B. Mocek leg., on *S. pallida*. AFGHANISTAN: Kabul, 21 Oct 1988, J. Olejníček leg., on *S. pallida*. CANADA: Quebec, Lac Roddic, 16 Km S Maniwaki, 22 Jun 1991, M. Barták leg., on *S. pallida*.

Note: The records by Máca (1982) were not reported in Santamaria *et al.* (1991).

Trenomyces histophthorus Chatton et Picard

Distribution. – On several genera of the Mallophaga in Europe (France, Germany, Italy, Poland, Romania), U.S.A., Bahamas and Argentina (Santamaria *et al.* 1991).

New record. – Bohemia, Česká Skalice, reservoir Rozkoš (5562), 6 Feb 2004, V. Bádr leg., on a female specimen of *Pseudomenopon pilosum* (Scopoli) (Pseudomenoponidae, Mallophaga) collected on a coot (*Fulica atra* Linnaeus).

Zodiomyces vorticellarius Thaxter

Distribution. – Reported on various genera in the family Hydrophilidae from America, Europe, and Africa (Majewski 1994).

New record. – Bohemia, Vlkov, Vlkovský rybník (6854), 28 May 2004, W. Rossi leg., on meso- and metasternum of two specimens of *Helochares lividus* (Forster).

Only eight species reported so far from "Czechoslovakia" were collected in the territory which now belongs to Slovakia. Two more unpublished species (*Euphoriomyces liodivorus* and *Stigmatomyces scaptomyzae*) are added to the list, which is given below.

Arthrorhynchus nycteribiae (Peyritsch) Thaxter

Published record. – Samšiňáková 1960 (as *Stigmatomyces nycteribiidarum* Thaxter): Domica cave (7588), on *Pencillidia conspiqua* Speiser and *Penicillidia*

dufouri (Westwood) (Diptera, Nycteribiidae), parasitizing the bat *Miniopterus schreibersi* (Kuhl).

Asaphomyces cholevae Thaxter

Published record. – Bánhegyi 1950 (sub *Asaphomyces tubanticus*): Silica (Szilice) (7489), on *Catops longulus* Kellner (Coleoptera, Leiodidae).

Dimeromyces strongylii Thaxter

Published record. – Santamaria 1994: Breznica (7578), on *Platydema violacea* Fabricius (Coleoptera, Tenebrionidae).

Euphoriomyces liodivorus (Huggert) I.I. Tavares

New record. – Trenčín Čepelák (7173), 1931, on *Leiodes hybrida* (Erichson) (Coleoptera, Leiodidae); (ex Coll. Luigioni in the Zoological Museum of Rome; slide no. 822 WR).

Laboulbenia flagellata Peyritsch

Published record. – Peciar *et al.* 1984: Slovakia, *sine loc.*, on "various Carabidae".

Laboulbenia luxurians Peyritsch

Published record. – Huldén 1985: Cenke (= Mužla – Čenkov) (8177), on *Bembidion varium* Olivier.

Laboulbenia subterranea Thaxter

Published record. – Siemaszko & Siemaszko 1928: Silica (Speluncae Szilicze) (7489), B. Hicker leg., on *Duvalites bokori* (Csiki) (= *Duvalites hungaricus* s. *bokorianus*) (Coleoptera, Carabidae).

Note. – According to Santamaria *et al.* (1991), all the European records of *Laboulbenia subterranea* should be ascribed to *L. vulgaris*.

Laboulbenia vulgaris Peyritsch

Published records. – Fassattiová & Fassatti 1956: Červený Kláštor – Pieniny (6688), on *B. varicolor* (Fabricius) [= *tricolor* (Fabricius)]; Tatranská Kotlina (6787–8), on *B. tetracolum;* Oravský Podzámok (6781), on *B. testaceum.*

Rhachomyces peyerimhoffii Maire

Published record. – Bánhegyi 1950: Nagysalló (= Tekovské Lužany) (7977), on *Trechus austriacus* Dejean (Coleoptera, Carabidae).

Note. – We agree with Santamaria *et al.* (1991) in considering very doubtful the occurence of *Rhachomyces peyerimhoffii* on insects of the genus *Trechus*, which usually host *Rhachomyces canariensis*.

Stigmatomyces scaptomyzae Thaxter

New record. – Žiarska dolina, Vysoké Tatry Mts. (6985), 11 Aug 1982, M. Barták leg., on *Scaptomyza pallida*.

Discussion

With the 24 new records reported in this paper, the number of the Laboulbeniales from the Czech Republic is raised to 36 species. Ten species are reported from Slovakia, with only *Asaphomyces cholevae, Laboulbenia flagellata, L. vulgaris* and *Stigmatomyces scaptomyzae* having been collected in both countries. *Laboulbenia melanaria* Thaxter, recorded by Fassattiová & Fassatti (1956), is omitted from the list as it is not clear whether it was collected in the Czech Republic, Slovakia or elsewhere. The presence of *Laboulbenia formicarum* Thaxter on ants in Slovakia was reported by Peciar *et al.* (1984); because the identification of the fungus is very doubtful, and because no material was left, this record is also omitted.

The knowledge of the Laboulbeniales from the Czech Republic is still very incomplete in comparison with other countries where these fungi have been more intensively studied (e.g. neighbouring Poland, with about 200 species – see Majewski 1994 & 1999). Most of the hosts of the Laboulbeniales collected in the Czech Republic belong to the Coleoptera (beetles) and Diptera (flies), which are the insects more frequently parasitized by the Laboulbeniales worldwide; only one species *(Trenomyces histophthorus)* has been collected on Mallophaga. The members of other orders of arthropods (i.e. Insecta: Blattodea, Dermaptera, Heteroptera; Diplopoda: Julida; Acarina: Sarcoptiformes, Parasitiformes) are also hosts of the Laboulbeniales in central Europe, and the presence in the Czech Republic and in Slovakia of quite a few of their laboulbenialean parasites is very probable.

Acknowledgements

We are grateful to Prof. T. Majewski (Warszawa) for the record of *Colonomyces appendiculatus*, and to Dr. R. Krejzová (Praha) for sending us the slide of this species. Those who supplied us with parasitized insects – Dr. V. Bádr (Fac. of Education, University Hradec Králové), Prof. M. Barták (Fac. of Agronomy, Czech Agri-

cultural University, Praha), Dr. A. Bezděk (Entomological Institute, Czech Academy of Science, České Budějovice), Dr. P. Lauterer (Moravian Museum, Brno), Dr. B. Mocek (East Bohemian Museum, Hradec Králové), Dr. A. Newton & Dr. M. K. Thayer (Field Museum of Natural History, Chicago, USA), late Dr. J. Olejníček (Parasitological Institute, Czech Academy of Science, České Budějovice), Ing. O. Nakládal and Dr. J. Růžička (Fac. of Forestry and Environment, Czech Agricultural University, Praha), Dr. J. Roháček (Silesian Museum, Opava), Dr. P. Vonička (Regional Museum, Liberec) – and the entomologists who kindly identified some of the host insects are also acknowledged.

References

Balazuc J. (1990) Catalogue actuel des Laboulbéniales (Ascomycètes parasites) de la France métropolitaine. *L'Entomologiste* **46** (6): 219 – 232.

Bánhegyi J. (1944) A Balaton környékének Laboulbenia-féléi. *Botanikai Közlemények* **41:** 49 – 61.

Bánhegyi J. (1949) Les Laboulbéniales de la Transylvanie. *Index Horti Botanici Universitatis Budapestinensis* **7:** 93 – 101.

Bánhegyi J. (1950) Ritka Laboulbeniák a Karpátmedencéból. *Annales Biologicae Universitatis Budapestinensis* **1** (1): 189 – 196.

Beck v. Mannagetta G. (1903) Über das vorkommen des auf der Stubenfliege lebenden Stigmatomyces Baerii Peyr. in Böhmen. *Lotos (Prag), N. S.* **23:** 101 – 102.

Castaldo D., Rossi W., Sabatini F. (2004) Contribution to the knowledge of the Laboulbeniales from Greece. *Plant Biosystems* **138** (3): 261 – 269.

Christian E. (2001) The coccinellid parasite Hesperomyces virescens and further species of the order Laboulbeniales (Ascomycotina) new to Austria. *Annalen des Naturhistorischen Museums in Wien* **103 B:** 599 – 603.

Dainat H., Manier J. F., Balazuc J. (1974) *Stigmatomyces majewskii* n. sp., *Stigmatomyces papuanus* Thaxter 1901, Laboulbéniales parasites de Diptères Acalyptérés. *Bulletin de la Société Mycologique de France* **90** (3): 171 – 178.

Ehrendorfer F., Hamann U. (1965) Vorschläge zu einer floristischen Kartierung der Mitteleuropa. *Berichte der Deutschen Botanischen Gesselschaft* **78:** 38 – 50.

Fassattiová O., Fassatti M. (1956) Příspěvek k poznání našich zástupců Laboulbeniales. *Česká mykologie* **10:** 204 – 208.

Huggert L. (1973) Laboulbeniales on Coleoptera from Sweden (Ascomycetes). *Svensk Botanisk Tidskrift* **67:** 238 – 252 (1972).

Huldén L. (1985) Floristic notes on Palaearctic Laboulbeniales (Ascomycetes). *Karstenia* **25:** 1 – 16.

Kolenati F. A. (1857) Epizoa der Nycteribien. *Wiener Entomologische Monatsschrift* **1:** 66 – 69.

Máca J. (1982) Parasitizing and transported macroorganisms dependent on Drosophilidae (Diptera) in Czechoslovakia. *Folia Facultatis Scientiarium Naturalium Universitatis Masarykianae Brunensis 23:* 69 – 74.

Máca J. (1999a) Notes to Drosophilidae, Campichoetidae and Camillidae of Turkey. In Jedlička L. (ed.): *Dipterologica bohemoslovaca* **9**: 127 – 131. Slovak Entomological Society, Bratislava.

Máca J. (1999b) Diptera of the Pálava Biosphere Reserve of UNESCO, II. Camillidae, Drosophilidae, Diastatidae. *Folia Facultatis Scientiarium Naturalium Universitatis Masarykianae Brunensis* **100:** 359 – 364.

Majewski T. (1994) The Laboulbeniales of Poland. *Polish Botanical Studies* **7:** 3 – 466.

Majewski T. (1999) New and rare Laboulbeniales (Ascomycetes) from the Bialowieża forest (NE Poland). *Acta mycologica* **34:** 7 – 39.

Marhold K., F. Hindák (eds.) (1998) Checklist of non-vascular and vascular plants of Slovakia. Veda, Bratislava.

Peciar V., Červenka M., Hindák F. (1984) Základy systému a evolúcie výtrusných rastlín. Slovenské pedagogické nakladatelstvo, Bratislava.

Pruner L., Míka P. (1996) List of settlements in the Czech Republic with associated map field codes for faunistic grid mapping system. *Klapalekiana* **32,** Suppl.: 1 – 115.

Rossi W., Santamaria S. (2006) *Laboulbenia casnoniae* and allied species (Fungi, Ascomycota). *Nova Hedwigia* **82:** 189 – 204.

Samšiňáková A. (1960) Příspěvek k poznání entomofytních hub na muchulovitých (Nycteribiidae). *Zoologické listy* (Ser. 2), **9:** 237 – 238.

Santamaria S. (1994) New or interesting species of Dimeromyces (Laboulbeniales, Ascomycotina). *Nova Hedwigia* **58:** 177 – 189.

Santamaria S. (1995) New and interesting Laboulbeniales (Fungi, Ascomycotina) from Spain, III. *Nova Hedwigia* **61:** 65 – 83.

Santamaria S. (1998) Laboulbeniales, I. Laboulbenia. *Flora Mycologica Iberica,* vol. 4, 186 pp.

Santamaria S. (2003) Laboulbeniales, II. Acompsomyces-Ilyomyces. *Flora Mycologica Iberica,* vol. 5, 344 pp.

Santamaria S., Balazuc J., Tavares I.I. (1991) Distribution of the European Laboulbeniales (Fungi, Ascomycotina). An annotated list of species. *Treballs de l'Institut Botànic de Barcelona* **XIV:** 1 – 123.

Santamaria S., Rossi W. (1998) Laboulbeniales (Fungi, Ascomycota) parasitic on Iberian Diptera. *Nova Hedwigia* **66:** 267 – 278.

Santamaria S., Rossi W. (1999) New or interesting Laboulbeniales (Ascomycota) from the Mediterranean region. *Plant Biosystems* **133** (2): 163 – 171.

Siemaszko J., Siemaszko W. (1928) Owadorosty polskie i palearktyczne. *Polskie Pismo Entomologiczne* **6:** 188 – 211.

Svrček M., Kalina T., Smola J., Urban Z., Váňa J. (1976) Klíč k určování bezcévných rostlin. Státní pedagogické nakladatelství, Praha.

Weir A., Rossi W. (1995) Laboulbeniales parasitic on British Diptera. *Mycological Research* **99:** 841 – 849.

(Manuscript accepted 13 Mar 2006; Corresponding Editor: U. Peintner)