

BEETLES OF THE FAMILY MYCETOPHAGIDAE (COLEOPTERA) IN THE SLOVAKIAN FAUNA

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Abstract: Fifteen species of the family Mycetophagidae have been documented in the territory of Slovakia; although one of them (*Pseudotriphyllus suturalis*) is apparently missing. Almost the whole family is tied to bracket fungi growing on old trees, which is obvious from its scientific name. The majority of Mycetophagid-beetles rank among infrequent or scarce species, preferring older, well-preserved forests; then they may be considered as significant bioindicators. Approximately half of them are registered in Red Lists of many European countries, this especially concerns *Mycetophagus ater*, *M. decempunctatus*, *M. quadriguttatus*, *M. fulvicollis* and *M. populi*. The distribution in Slovakia, ecology and ecosozological status of separate species throughout Europe is discussed in this paper.

Key words: Mycetophagidae, Slovakia, faunistics, bioindication, protection of insects

INTRODUCTION AND METHODS

Mycetophagidae rank among little-known families of beetles – their distribution and ecology are discussed only sporadically in accessible articles and papers from Central Europe. The name of the family indicates that they are mostly tied to the bracket fungi. Mycetophagidae especially occurring in older or almost ancient forests, then they may be considered to be significant bioindicators. Narrow ecological amplitude reflects in their potential or actual vulnerability, therefore they are often registered in Red Lists of separate European countries. (These problems are discussed in the following paragraph.)

The research of mycetophilous beetles has been carried out in suitable habitats throughout Slovakia during the last two decades. I especially dealt with individual collecting on various bracket fungi and under the bark with mycelium. The beetles were identified according to the key by VOGT (1967) and they are deposited in my private collection.

MYCETOPHAGIDAE IN RED LISTS OF EUROPEAN COUNTRIES

Mycetophagidae are often mentioned in Red Lists of separate European countries. Actually, it concerns the Red List of Great Britain (HYMAN, PARSONS 1992), Sweden (EHNSTRÖM, GÄRDENFORS, LINDELÖW 1993), Finland (RASSI et al. 1992), Denmark (ASBIRK, SOGAARD 1991), Germany (GEISER et al. 1984), Austria (FRANZ 1983, GEISER 1983) and Slovakia (JEDLIČKA et al. 1995). The level of endangerment – ecosozological status (below only „ESS“) of separate species is estimated more-or-less subjectively; and moreover, different categories, not very well compatible with IUCN ones, are used in Germanic-speaking countries. Therefore I have tried to make ESS assessment more objective and exact. I worked out two versions of ESS assessment scheme; the second one, applied for spiders (FRANC 2000) may potentially be used for the whole animal kingdom. The following chapter includes recent records, ecological notes and ESS of every Mycetophagid-beetle in Slovakian fauna. Numeric

value of ESS appears in the ecosozological index and we can distinguish the following six levels of endangerment (the last four are just the same as IUCN categories):

2 – 5: eurytopic, from adaptable to expansive species (it does not concern Mycetophagidae)

6 – 12: out of apparent danger (OAD)

13 – 19: care demanding (CD)

20 – 26: rare (R)

27 – 33: vulnerable (V)

34 → : immediately threatened, endangered (E); the abbreviations in bracket are used in table 1 as well.

RESULTS

This chapter includes the data concerning the distribution and ecology of Central-European Mycetophagidae. All findings listed below are mine, except where the name of a different author is added. Historical records before the Second World War are mentioned only when recent records are not available. The grid mapping code of every locality is given for the first time only.

Triphyllus bicolor (Fabricius, 1792) – occurs sporadically and quite rarely in older forests of hilly landscape and lower mountains. It appears on the bracket fungi of softer flesh (*Pholiota*, *Armillariella*, *Tricholomopsis*, *Herichium* spp., etc.). ROUBAL (1936) and GEISER (1989) mention that larvae prefer the 'liver fungus' (*Fistulina hepatica*). Recent records: Leles (7598a), dateless (MAJZLAN 1997); Nature Reservation (below only "NR") Boky (7480a) 28th Oct. 1989, Zvolen – Môťová: Zálužná (7481c) 21st Oct. 1989 and 15th Sept. 1991, Starohorské vrchy Mts. – NR Baranovo (7280b), under the bark of an old fir with fungi (*Polyporus* sp.) 28th Sept. 1991; Kremické vrchy Mts. – NR Špicatá (7279b), on *Herichium flagellum* 20th July 1992.

Pseudotriphyllus suturalis (Fabricius, 1798) – an extremely rare European species, known only from old literary data: Bardejov (6693d), dateless, KUTHY lgt. (ROUBAL 1936). Newer records are not available, furthermore this little-known species is missing both in

the Checklist of beetles of the former Czechoslovakia (JELÍNEK 1993) and in the Ecosozological checklist of beetles of Slovakia (JELÍNEK et al. 1995); on the other hand it is mentioned in the key by BALTHASAR (1957). GEISER (1989) mentions its recent occurrence in Germany "in old forests and parks" on the fungi *Polyporus squamosus*, *Pleurotus ostreatus*, *Fistulina hepatica*, *Laetiporus sulphureus*, and even *Phallus impudicus*. Long-lasting deficiency of *Ps. suturalis* in Slovakia would indicate that it is approaching extinction. On the other hand, the records from Germany (on frequent fungi!) and an unsatisfactory level of mycetophilous beetles' research in Slovakia keep hopes that it will be 're-discovered' in our country as well.

Litargus connexus (Fourcroy, 1785) – a frequent species of open forests and groves from lowlands to submountain regions. It occurs under the dry bark of nearly all deciduous trees, infected by various fungi (*Schizophyllum commune*, *Trametes*, *Stereum*, *Polyporus* spp., etc). It is missing only in high mountains and large colder conifer woodlands.

Litargus balteatus Leconte, 1856 – this species, widely distributed throughout the American continent, has appeared in Europe during the 1970s, having acclimatised. The first and only single record till now is from Kamenica nad Hronom (8178c) 12th June 1988, 2 individuals (below only "ind."). FORNŮSEK lgt. et coll. (JELÍNEK 1990). Surprisingly, JELÍNEK later (1993) states that its occurrence is documented in Moravia and Bohemia only; and, moreover, this species is also missing in the Ecosozological checklist of beetles of Slovakia (JEDLIČKA et al. 1995). Actually, the distribution of *L. balteatus* in Slovakia seems to be an open question; it has a similar ecology to *L. connexus* and they may be confused.

Mycetophagus ater Reitter, 1879 – a scarce Euro-Siberian species of a large, but apparently discontinuous range. Formerly it had been considered to be extremely rare; for example, ROUBAL (1936) mentions only one historical dateless record from Subcarpathian Ukraine (Užhorod). It seems that the abundance of this species, living in old deciduous forests, is contemporarily increasing in Central Europe. The first record from Slovakia has been published from Plášťovce (7879b): on the fungi *Panus tigrinus* on an old willow 24th July 1983 (FRANC 1989). Further recent findings: Štúrovo – 'Hegyfarok' (8178a), dateless (MAJZLAN, RYCHLÍK 1997); Gombasek (7488b), accidentally swept from the vegetation 6th July 1992, ZÚBER lgt. (HALAŠA in litt.); NR Vereš (7586d), on the fungi *Pleurotus* sp. on an old oak 17th May 1993, 2 ind.; NR Baranovo, on the fungi *Polyporus squamosus* on an old beech 16th May 2000, 4 ind.; Urpín (7280d), on the fungi *Laetiporus sulphureus* on an oak stem 27th May 2000, 2 ind. I suppose that its ESS in Slovakia (V) is over-estimated and it ought to be lower – R.

Mycetophagus quadripustulatus (Linnaeus, 1767) – a frequent species of the softer-fleshed bracket fungi growing on the majority of deciduous trees, but sometimes conifers as well. It occurs almost continually from lowlands to lower mountains (optimal habitats are in submountain altitudes); missing in open agricultural landscape only. Several forms are scarcer – for example,

f. antemacularis TORRE, found in the Kremnické vrchy Mts. – NR Mláčik (7380c) 30th Oct. 1988.

Mycetophagus atomarius (Fabricius, 1787) – a frequent species of the softer-fleshed bracket fungi, often occurring together with *M. quadripustulatus*, sometimes in a large amount. It lives in a large range of forest types (except conifer monocultures and high mountains) and in older gardens and parks as well. A lot of old and recent records from Slovakia are available.

Mycetophagus decempunctatus Fabricius, 1801 – a sporadic and very rare European species of open woodlands with xerothermic character especially. It prefers softer-fleshed bracket fungi; GEISER (1989) specifies *Polyporus laevigatus* and *P. radiatus*. Only a few records from Slovakia are available – with the exception of several pre-war ones (ROUBAL 1936) only three recent findings are accessible: NR Čabrad' (7780d) 30th Apr. 1990; Medovarce (7779d) 16th May 1992, 2 ind.; Cerová vrchovina Mts. – Bagóva skala (7785d), on the fungus *Daedalea quercina* 6th May 1995. This scarce species, highly endangered in several countries of Europe, deserves more attention of conservationists. In the Red List of Slovakia it ought to be listed among rare (R) species.

Mycetophagus piceus (Fabricius, 1787) – a relatively widespread and frequent species of older deciduous forests. Like its relatives, it lives on a large scale of bracket fungi. A relatively large number of old and recent records from Slovakia are available.

Mycetophagus salicis Brisout de Berneville, 1862 – a relatively rare species of older deciduous, often alluvial forests and groves. It may often be confused with *M. piceus*, therefore its distribution in Slovakia is known only approximately. Recent records: Gabčíkovo – Istragov (8171a), under the bark of a willow 22nd June 1986; NR Boky, under the bark of an old, mycelium-infected oak 24th March 1990; and Vrbovka (7982a/b), on the 'sulphur fungus' (*Laetiporus sulphureus*) on a willow stem 5th Aug. 1990, 2 ind. FRANC lgt. et coll.; Klátovské rameno near Jahodná (7972c), dateless (KODADA, MAJZLAN 1991); Leles (7598a), dateless (MAJZLAN 1997). MAJZLAN (1991) found it directly in Bratislava (7868), where it appeared on old deciduous trees, perhaps mainly along the Danube river.

Mycetophagus quadriguttatus Müller, 1821 – occurs scattered and relatively rarely in warmer deciduous forests. Unlike relatives, it is not so evidently tied to fungi; often appearing under the bark and in tree hollows, sometimes on mouldy plant debris: "phytodetriticol" (GEISER 1989). HYMAN and PARSONS (1992) mention that it also may live as a synanthropic species. Its range includes mainly Central, Southern and Eastern Europe up to the Caucasus – in Northern Europe it occurs very rarely, in several countries is threatened and, for example, in Finland is considered to be an extinct species. Recent findings: NR Boky 7th Apr. 1984, Dobrá Niva 25th March 1989, Plášťovce 4th Apr. 1990 and 28th Apr. 1991, Banská Bystrica – Radvaň (7280d), in a hollow of a damaged willow near the manor-house 12th Dec. 1992, 2 hibernating ind.; NR Kamenínske slanisko (8178c), accidentally swept from the vegetation 29th Apr. 1994; Poľana Mts. – Žiarec (7382a), under the bark of a damaged maple on the rocky slope 6th Nov. 1994 (an

interesting record from mountain altitude!); Cerová vrchovina Mts. – NR Ragač (7785d), under the bark of an old oak 6th May 1995.

Mycetophagus multipunctatus Fabricius, 1792 – a scattered and sometimes relatively frequent species of deciduous and mixed forests, nevertheless occurs in well-preserved environments only. It appears on softer-fleshed bracket fungi (*Laetiporus*, *Pholiota*, *Panus*, *Ischnoderma*, *Hericium* spp., etc.). Recent findings: Veľká Fatra Mts. – Bystrická dolina (7180c), on the fungus *Pholiota aurivella* 23rd Oct. 1988; NR Baďínsky prales (7380a), on *Pholiota* 25th Oct. 1989; PR Baranovo 6th Oct. 1985 on *Hericium flagellum* and 28th Sept. 1991 on *Pholiota*, 2 ind.; NR Jurský Šúr (7769c), on *Laetiporus sulphureus* on a poplar stem 1st June 1992; Dobrá Niva, on *Laetiporus* on an old oak 27th Sept. 1992, 3 ind.; Šalková – NR Príboj (7281a/b) 14th Feb. 1993; Strážovské vrchy – NR Strážov (7076b/d) 8th July 1993; Nitrianske Rudno (7176d/7276b) 22nd Apr. 1994.

Mycetophagus fulvicollis Fabricius, 1792 – occurs locally and rarely in well-preserved warmer deciduous forests. It appears on softer-fleshed bracket fungi (like relatives), but often under the bark of fungus-infected trees. It prefers older solitarily growing trees, especially oaks, exposed to the sunshine. Recent records from Slovakia are not numerous: Hlohovec – NR Sedlisko (7572d), dateless (VALENČÍK 1979); Trábeč Mts. – NR Lupka (7674c/d), the end of the 1980s (VALENČÍK 1991); NR Boky 22nd Nov. 1980, Dobrá Niva 22nd Feb. 1987, NR Čabrad' 8th Apr. 1989, Selany (7881a) 11th March 1995, Cerová vrchovina Mts. – NR Pohanský hrad (7785d) 7th May 1995; everything FRANC lgt. et coll. This rare species, seriously threatened (or even extinct) in

several European countries, deserves more attention of conservationists. In the Red List of Slovakia it ought to be listed among rare (R) species.

Mycetophagus populi Fabricius, 1798 – a sporadic and rare species of warmer deciduous forests, occurring near the drier fungi (*Schizophyllum commune*, *Polyporus*, *Trametes*, *Stereum* spp., etc.). It prefers beech, but may live on a large range of deciduous trees. Recent records: Hlohovec – NR Sedlisko, dateless (VALENČÍK 1979); Medzibrod – Holíčka (7282a), on a beech 11th Oct. 1980; Dobrá Niva, on an old oak 20th Oct. 1985; NR Baranovo, on a beech 26th Oct. 1985; Urpín, in a rotten beech (hibernating ind.) 25th Jan. 1992; Poľana Mts. – Žiarec, on a beech 19th June 1993, everything FRANC lgt. et coll.; Leles (7598a), dateless (MAJZLAN 1997).

Typhaea stercorea (Linnaeus, 1758) – according to old literary sources (ROUBAL 1936, BALTHASAR 1957) it is a very frequent species of decaying plant debris from lowlands to mountain altitudes; GEISER (1989) also specifies it as a “phytodetricol”. In spite of these facts, recent records (both in collections and papers) are very sporadic: Plášťovce, under the bark of a mycelium-infected oak 2nd May 1986, 1 ind. FRANC lgt. et coll.; Sládečkovce (7773d), dateless (CUNEV 1991) and Trábeč Mts. – the valley of the Hunták brook (7674b), dateless (CUNEV 1997); the rare occurrence is also mentioned in both cases. Contemporary knowledge indicates that this species occurs sporadically and infrequently in warmer regions of Slovakia especially. Partially, the data deficiency may have another reason: *T. stercorea* is very similar to larger species of the genus *Cryptophagus* (ecological and habitual convergence!) that are overlooked by the large majority of coleopterologists.

Tab. 1. Review of ecosozological status of Central-European Mycetophagidae

Species	Ecosozological status								Ecosozological index assessment
	GB	Sw	Fin	Dk	Ger	A ₁	A ₂	Sk	
<i>Triphyllus bicolor</i>					R		R		302314211; 17 → CD
<i>Pseudotriphyllus suturalis</i>						V	E	Ex?	525565421; 35 → E
<i>Litargus connexus</i>									101102111; 8 → OAD
<i>L. balteatus</i>									005402211; 15 → CD
<i>Mycetophagus ater</i>						V	V	V	2244 – 14221; 20 → R
<i>M. quadripustulatus</i>		CD	D				R		201102211; 10 → OAD
<i>M. atomarius</i>									301102211; 11 → OAD
<i>M. decempunctatus</i>		V			E		V	+ R	315534321; 27 → V
<i>M. piceus</i>	N	CD		D	R				203323211; 17 → CD
<i>M. salicis</i>					V				303424221; 21 → R
<i>M. quadriguttatus</i>	N	V	Ex		R				203313211; 16 → CD
<i>M. multipunctatus</i>					V				203313211; 16 → CD
<i>M. fulvicollis</i>	Ex	V		Ex	E		V	+ R	304434321; 24 → R
<i>M. populi</i>	N	V			V		V		303424211; 20 → R
<i>Typhaea stercorea</i>									101432111; 14 → CD

GB – Great Britain, Sw – Sweden, Fin – Finland, Dk – Denmark, Ger – Germany, A₁ – Austria (FRANZ 1983), A₂ – Austria (GEISER 1983), Sk – Slovakia

CONCLUSION

This paper includes the data on the occurrence, ecology and conservation problems of Central-European Mycetophagidae. Fifteen species of this family may be mentioned from the territory of Slovakia, but one of them (*Litargus balteatus*) is doubtfully referred, and the second one (*Pseudotriphyllus suturalis*) is missing.

Mycetophagidae mostly rank among stenotopic species of narrow biotopic requirements – they occur only in some regions, and several species only in a few sites. According to the ecosozological-index summing up we can assert that 3 species belong to the category “out of apparent danger” (OAD), 6 species are “care-demanding” (CD), 4 species are “rare” (R), 1 species is specified as

“vulnerable” (V) and I may be specified as “endangered” (E).

Mycetophagid-beetles are not threatened by humans directly – they are (fortunately) less attractive for commercial “entomologists” and their life substrata mostly appear as inedible fungi. Although several fungi would be considered to be exceptions (*Fistulina hepatica*, *Hericium flagellum* or *Pleurotus* spp.), they are little known-and-popular among kitchen-mushroom utilizers. The last one – ‘honey fungus’ (*Armillariella mellea*), ranks among the most frequent fungi of Europe. On the other hand, the serious threat for these stenotopic beetles include the impacts of intensive forestry, mainly the degradation of spatially and dendrologically variegated forests towards monocultures, and the selective cutting of old, hollow and damaged trees from forests (and alleys, parks, cemeteries and gardens as well), that are still considered to be the reservoirs of so-called “pests”. But, really, Mycetophagidae deserve more attention of entomologists and conservationists – approximately half of them may be used as the bioindicators of well-preserved, valuable habitats of a high biodiversity. Discussing the questions of Mycetophagid-beetles’ conservation we can touch upon the fundamental problem of invertebrate conservation – separate species protection has a very limited significance, because the accurate and proper identification of a large majority of invertebrates is the matter of a few specialists only. Nevertheless, if our forests remain varied and well-preserved, we can meet rare species of Mycetophagidae (and many others) relatively often, too.

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