Norw. J. Entomol. 51, 145–149. 2004

# Classification of Mycetophilidae (Diptera, Sciaroidea)

**Øivind Gammelmo**

Gammelmo, Ø. 2004. Classification of Mycetophilidae (Diptera, Sciaroidea). Norw. J. Entomol. 51, 145-149.

The classification of Mycetophilidae has varied considerably during the last decades. Today most scientists regard Mycetophilidae as belonging to the superfamily Sciaroidea together with the families Bolitophilidae, Diadocidiidae, Ditomyiidae, Keroplatidae, Lygistorrhinidae and Sciaridae. Mycetophilidae includes two subfamilies, Mycetophilinae with the tribes Exechiini and Mycetophilini, and Sciophilinae with the tribes Gnoristini, Leiini, Mycomyini, Sciophilini and Metanepsini. However, the classification is still far from stable and further studies based both on morphological characters and on DNA sequencing are necessary to get a better understanding of the group.

Key words: Diptera, Mycetophilidae, classification, systematics.

*Øivind Gammelmo, Zoological Museum, University of Oslo, POBox 1172 Blindern, NO-0318 Oslo, Norway [oivind.gammelmo@nhm.uio.no].*

## INTRODUCTION

Our present knowledge about the phylogeny and classification of Mycetophilidae is exclusively based on morphological characters, mainly from studies of adult males. The classification has varied much through time. The most comprehensive analysis presented so far is that of Matile (1997).

In the present paper I will summarize the history of Mycetophilidae classification since Edwards (1925) laid the basis for the present classification. The classification is still far from stable and further studies based both on morphological characters and DNA sequencing are necessary to shed light on the many unresolved question.

## RESULTS AND DISCUSSION

Edwards (1925) established the present classification of Mycetophilidae by interpreting Mycetophilidae as consisting of ten subfamilies, namely Bolitophilinae, Diadocidiinae, Ditomyiinae, Keroplatinae, Lygistorrhininae, Macrocerinae, Manotinae, Mycetophilinae, Sciarinae and Sciophilinae (Figure 1). Later Edwards included Macrocerinae in Keroplatinae (Edwards 1941). Further, Edwards (1925) recognized two tribes in Mycetophilinae (Exechiini and Mycetophilini) and four tribes in Sciophilinae (Gnoristini, Leiini, Mycomyini and Sciophilini).

The tribes in Sciophilinae have been raised to subfamily level by several authors (Bechev 1999, Henning 1973, Matile 1989, Tuomikoski 1966c, Väisänen 1984, 1986, Zaitzev 1994). However, Søli (1997) rejected this practice. Shaw and Shaw (1951) suggested an additional tribe, Allactoneurini, and Zaitzev (1994) later raised Allactoneurini to the level of subfamily. Today most authors recognize Allactoneurini as being part of Leiini (Søli 1996).

Tuomikoski (1966a) and Henning (1973) raised six of Edwards' subfamilies to separate families, namely Bolitophilidae, Diadocidiidae, Ditomyiidae, Keroplatidae, Mycetophilidae and Sciaridae. Lygistorrhininae was placed in Keroplatidae, and has been treated as a subfamily by several authors (Henning 1973, Tuomikoski 1966b, Väisänen 1984). However, Matile (1997) found Lygistorrhinidae to be the sister group of Mycetophilidae.

Tuomikoski (1966c) and Henning (1973) lumped Manotinae and Sciophilinae together with

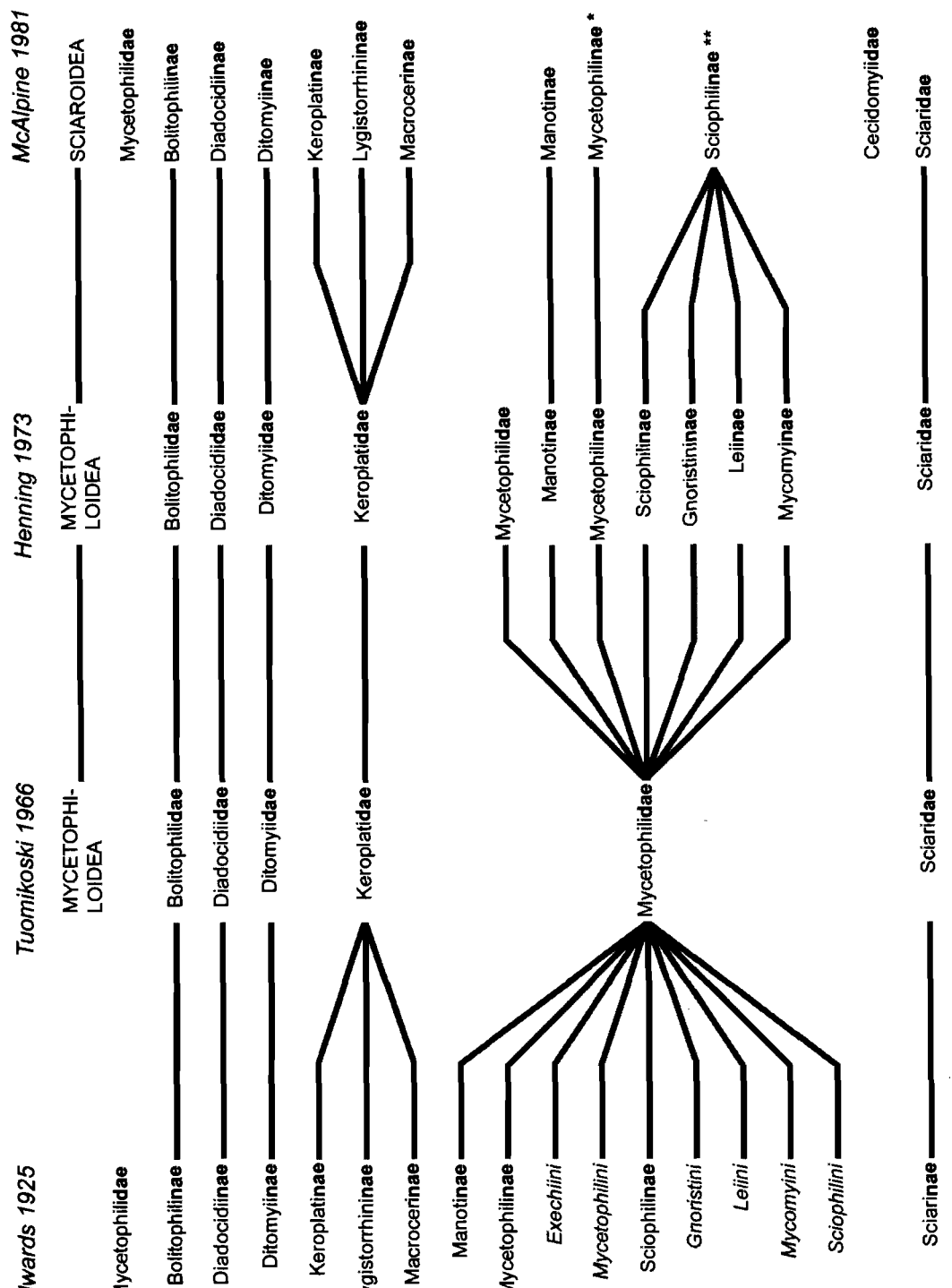


**Figure 1.** The classification of Mycetophilidae from Edwards (1925) to McAlpine (1981). * = McAlpine divided Mycetophilinae into tribes as suggested by Edwards (1925). ** = McAlpine divided Sciophilinae into tribes as suggested by Edwards (1925), but used the name Teragoneurini for Leiini.

Mycetophilinae in the family Mycetophilidae. Henning (1948) had previously treated Sciophilinae as a separate family. Later, some authors have treated Manotinae as a separate family (Krivosheina & Mamaev 1988, Matile 1989, 1990). In contrast to Tuomikoski (1966c), Henning (1973) further split Mycetophilidae and gave Edwards' tribes the rank of subfamilies, namely Gnoristininae, Leiinae, Manotinae, Mycetophilinae, Mycomyinae and Sciophilinae.

Following the American tradition, McAlpine (1981) treated Mycetophiloidea as one family, Mycetophilidae, excluding Cecidomyiidae and Sciaridae, and he introduced the name Sciaroidea for Mycetophiloidea (Figure 2). Mycetophilidae consisted of eight of Edwards' subfamilies, namely Bolitophilinae, Diadocidiinae, Ditomyiinae, Keroplatinae, Lygistorrhininae, Manotinae, Mycetophilinae and Sciophilinae. McAlpine (1981) also divided Mycetophilinae and Sciophilinae in tribes as suggested by Edwards (1925), but used the name Tetragoneurini for Leiini.

Väisänen (1984) kept Mycetophiloidea and the six families as suggested by Henning (1973), but split Mycetophilidae into eight subfamilies, namely Gnoristininae, Leiinae, Manotinae, Metanepsinae, Mycetophilinae, Mycomyinae, Sciophilinae and Eudicraninae. The latter was erected for the genus *Eudicrana* Loew.

Soós & Papp (1988) split the family Keroplatidae into two families, Macroceridae and Keroplatidae.

The most commonly adopted classification today is that of Matile (1990, 1997) in which the superfamily Sciaroidea is divided into seven families, namely Bolitophilidae, Diadocidiidae, Ditomyiidae, Keroplatidae, Lygistorrhinidae, Mycetophilidae, and Sciaridae. This classification is also in accordance with Søli (1997), who kept Edwards' subfamilies and tribes of Mycetophilidae but adding a fifth tribe in Sciophilinae, Metanepsiini.

However, the systematics of Mycetophilidae is still not well understood. Revisions of genera and redescriptions of many taxa based on more detailed morphological characters, as well as zoogeographical analyses are necessary to better understand the evolution and systematics of the group. Today DNA sequencing has become an important tool in systematic studies, and also for Mycetophilidae this technique will undoubtedly help solving many systematic problems.

**Acknowledgements.** I am indebted to Dr. Geir E.E. Søli, University of Oslo, for all help and encouragement during my study of the fungus gnats.

## REFERENCES

Bechev, D. 1999. The zoogeographic classification of the Palaeartic genera of fungus gnats (Diptera: Sciaroidea, excluding Sciaridae). Studia Dipt. 6, 321-326.

Edwards, F.W. 1925. British fungus-gnats (Diptera, Mycetophilidae). With a revised generic classification of the Family. Trans. Ent. Soc. Lond. 1924, 505-670.

Edwards, F.W. 1941. Notes on British fungus-gnats (Dipt., Mycetophilidae). Entomol. Mon. Mag. 77, 21-32, 67-82.

Henning, W. 1948. Die Larvenformen der Dipteren. 1. 184 pp. Akademie Verlag, Berlin.

Henning, W. 1973. Diptera (Zweiflüger). Hand. Zool. 4 (2) 2/31, 1-337.

Krivosheina, N.P. & Mamaev, B.M. 1988. Manotidae. Pp. 199-210 in: Soós, Á. & Papp, L. (eds), Catalouge of Palaearctic Diptera. 3. Ceratopogonidae – Mycetophilidae. Akadémiai Kiadó, Budapest.

Matile, L. 1989. Superfamily Sciaroidea. 10. Family Mycetophilidae. Pp. 135-145 in: Evenhuis, N.L. (ed.), Catalog of the Diptera of the Australasian and Oceanian Regions. Bishop Museum Press & E.J. Brill, Honolulu & Leiden.

Matile, L. 1990. Recherches sur la systématique et l'évolution des Keroplatidae (Diptera, Mycetophiloidea). Mém. Mus. natn. Hist. nat. Paris (A) 148, 1-682.

Matile, L. 1997. Phylogeny and evolution of the larval diet in the Sciaroidea (Diptera, Bibionomorpha) since the Mesozoic. Pp. 273-303 in Grandcolas, P. (ed.), The origin of biodiversity in insects: phylogenetic tests of evolutionary scenarios. Mém. Mus. natn. Hist. nat. (zool.) 173.

McAlpine, J.F. 1981. Morphology and terminology – Adults. Pp. 9-63 in McApline, J.F. et al. (eds.), Manual of Nearctic Diptera. 1. Research Branch Agriculture Canada, Monograph 27, Ottawa.

Shaw, F.R. & Shaw, M.M. 1951. Relationship of certain genera of fungus gnats of the family Myceto-

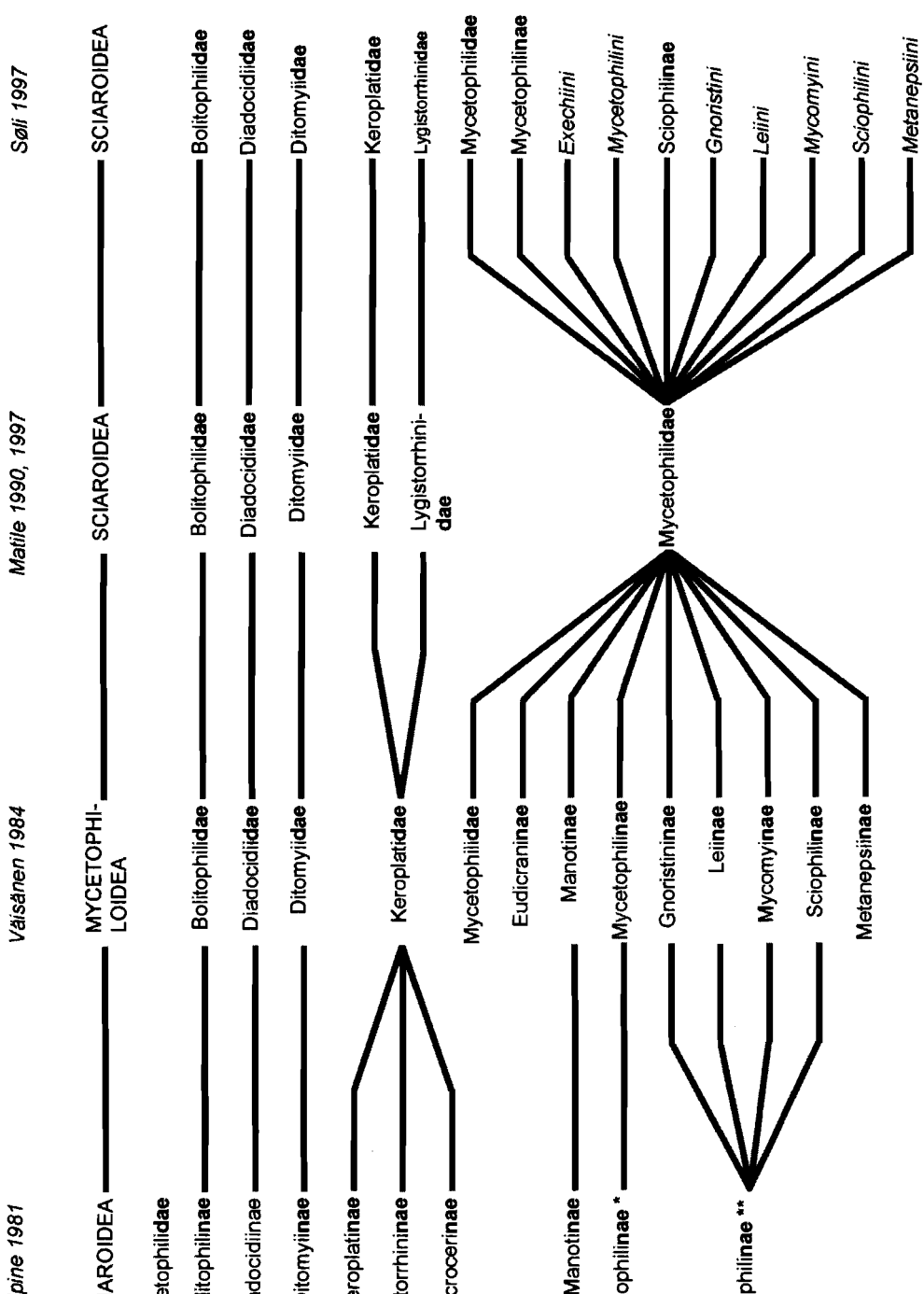


**Figure 2.** The classification of Mycetophilidae from McAlpine (1981) until present.

philidae. Smithson. Misc. Collns. 117, 1-23.
Soós, A. & Papp, L. 1988. Catalouge of Palaearctic Diptera. 3. Ceratopogonidae – Mycetophilidae. 448 pp. Akadémiai Kiadó, Budapest.
Søli, G.E.E. 1996. *Sticholeia* – a new genus of Leiini, with comments on the systematical position of *Allactoneura* de Meijere (Diptera, Mycetophilidae). Ent. Scand. 27, 1-10.
Søli, G.E.E. 1997. On the morphology and phylogeny of Mycetophilidae, with a revision of *Coelosia* Winnertz (Diptera, Sciaroidea). Ent. Scand. Suppl. 50, 1-139.
Tuomikoski, R. 1966a. Generic taxonomy of the Exechiini (Dipt., Mycetophilidae). Ann. Ent. Fenn. 32, 159-194.
Tuomikoski, R. 1966b. Systematic position of *Lygistorrhina* Skuse (Diptera, Mycetophiloidea). Ann. Ent. Fenn. 32, 254-260.
Tuomikoski, R. 1966c. On the subfamily Manotinae Edwards (Dipt., Mycetophilidae). Ann. ent. Fenn. 32, 211-223.
Väisänen, R. 1984. A monograph of the genus *Mycomya* Rondani in the Holarctic region (Diptera, Mycetophilidae). Acta Zool. Fenn. 177, 1-346.
Väisänen, R. 1986. The delimitation of the Gnoristinae: criteria for the classification of recent European genera (Diptera, Mycetophilidae). Annales Zool. Fenn. 23, 197-206.
Zaitzev, A.I. 1994. Fungus gnats of the fauna of Russia and adjacent regions. 1. (Ditomyiidae, Bolitophilidae, Diadocidiidae, Keroplatidae, Mycetophilidae). 288 pp. Nauka, Moscow [in Russian].

*Received 18 February 2004,*
*accepted 24 May 2004*