



***Cluzobra matilei* sp. n. from French Guyana, with notes on congeners (Diptera: Mycetophilidae)**

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Abstract

Five *Cluzobra* Edwards species were recorded from the Kaw Mountains in French Guyana. *Cluzobra matilei* sp. n. is described, with colour photographs and line drawings. The new species is compared with the closely related species *C. variegata* and *C. vicina*.

Key words: Diptera, Mycetophilidae, *Cluzobra*, new species, Neotropical region

Introduction

The Sciophilinae genus *Cluzobra* was erected by Edwards to distinguish four Neotropical species from Paraguay and Brazil (Edwards 1940). Today, thirty species are known – twenty-nine from the Neotropic and one from the Nearctic region (Matile 1996, Coher 1997). In addition, one undescribed species, with unclear identity up to now, has been noted by Vockeroth (1981) from Louisiana. The genus has been characterized morphologically, the proposed phylogeny has been analyzed and an exhaustive key to species provided by Matile (*op. cit.*). *Cluzobra* species are fragile small gnats (see figs 1–3) with macrotrichia on the wing membrane, Sc ending in C, Sc₂ absent and CuA unbranched. According to Matile (*op. cit.*), *Cluzobra* species are typical of sempervirent Neotropical forests but there is no information about larval habitats.

Eight species have been recorded from French Guyana previously: four of them—*C. fissiterna*, *C. odileae*, *C. variegata* and *C. vicina*—are, according to the present knowledge, endemic (Matile *op. cit.*). The other four, viz. *C. aitkeni*, *C. butleri*, *C. grandcolasi* and *C. spinulifera*, have a wider distribution. There is no published information on *Cluzobra* species from the Kaw Mountains. The current communication deals with five species from the area. *C. aitkeni*, *C. butleri*, *C. variegata* and *C. vicina* have previously been recorded from other regions of French Guyana, particularly from the Nouragues Nature Reserve (see Matile 1996), while *C. matilei* is described as new to science. This brings the number of known *Cluzobra* species in French Guyana up to nine.

Material and methods

Since 2002, material from several collectors from French Guyana has been accumulated by the author. The material was collected from the surroundings of the Amazone Nature Lodge (N=4°33' W=52°12', altitude 300 m) (see also Boisseau 2003) in the Kaw Mountains in the Kaw Nature Reserve (Régina commune), mainly by Malaise traps, and for a few specimens by light traps. The material collected was not of even quality: a part of

the Malaise trap samples was almost destroyed. Altogether 84 male specimens, originally preserved in 70% ethanol, have been studied. After examination, 50 specimens were deposited in ethanol. For the other 34 specimens the wings and terminalia were detached, and the rest of the body and terminalia were heated in a solution of KOH, followed by neutralization in acetic acid and washing in distilled water. Wings and the body were thereafter step-wise dehydrated and mounted in Euparal under two separate cover slips. The terminalia were inserted into glycerine for a detailed study and later preserved as glycerine preparations in small vials (Bioquip) attached to the same slide by strips of adhesive tape.

The habitus photos were made using the Canon 350D in combination with EX Sigma (DG Macro, 105mm 1:2.8) lens. Illustrations 4, 7, 9, 11, 12 and 13 were created using Helicon Focus 4.47 software, which combined the focused areas of 5 to 8 partially focused images taken with Canon 350D attached to a compound microscope Olympus CX31. The method allows creating a more completely focused image without losing information. Figures 6, 8 and 10 were prepared using a U-DA drawing tube attached to an Olympus CX31, and Adobe Photoshop 5.0 software was used to add shading to them.

All material is deposited in IZBE—Insect collection in the Institute of Agricultural and Environmental Sciences, Estonian University of Life Sciences (former Institute of Zoology and Botany), Tartu, Estonia. Morphological terminology follows that by Sjøli *et al.* (2000). In the description of the new species, all measurements are given as the range of five measured specimens, followed by the mean value and the measurements from the holotype are given in square brackets.

Taxonomy

Cluzobra aitkeni Lane, 1956

Widespread in the Neotropics: Trinidad, Brazil, French Guyana and Peru. The species is common also in light trap samples (cf. Matile 1996).

Material examined: 3 ♂♂, leg. V. Soon 25.XI. – 01.XII. 2002 (Malaise trap); 1 ♂, same except 9. – 15. XII. 2002; 1 ♂, same except 23. XII. – 29. XII. 2002; 1 ♂, same except 30. XII. 2002 – 05. I. 2003; 4 ♂♂, leg. A. Selin & T. Armulik 14. I. 2005 (light trap); 1 ♂, leg. K. Sarv 12.II – 03.III. 2007 (Malaise trap); 25 ♂♂, same except 03. – 27.III. 2007. Total: 36 ♂♂.

Cluzobra butleri Lane, 1959

Widespread in the Neotropics: Brazil, French Guyana and Peru (Matile 1996). The only known *Cluzobra* species without microtrichia and wing-patterns.

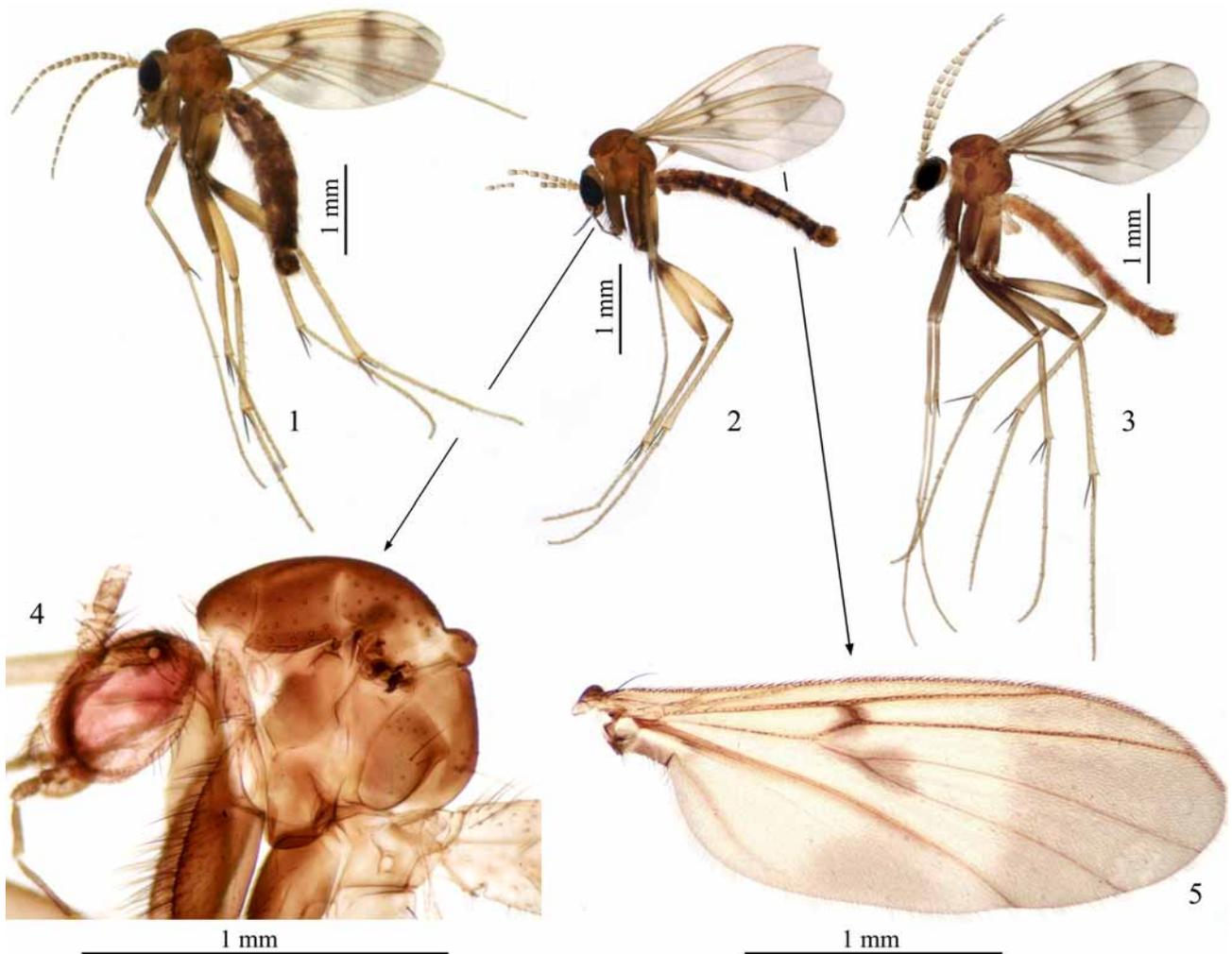
Material examined: 1 ♂, leg. V. Soon 9. – 15. XII. 2002 (Malaise trap); 1 ♂, leg. K. Sarv 5. – 15.VI. 2006 (Malaise trap); 1 ♂, same except 14. – 30.VII. 2006; 1 ♂, same except 2.–20.I. 2007; 4 ♂♂, same except 03. – 27.III. 2007. Total: 8 ♂♂.

Cluzobra variegata Matile, 1996

Figs 3, 10, 11.

Endemic in French Guyana: The Nouragues Nature Reserve (cf. Matile 1996) and Kaw Nature Reserve. Close to *C. vicina* and *C. matilei*, see under *C. matilei* for discussion.

Material examined: 1 ♂, leg. K. Sarv 31. VIII – 17. IX. 2006 (Malaise trap).



FIGURES 1–5. Habitus, thorax and wing photos of *Cluzobra* species. 1. *Cluzobra vicina* Matile, 1996. 2, 4, 5. *Cluzobra matilei* sp. n. 3. *Cluzobra variegata* Matile, 1996.

***Cluzobra vicina* Matile, 1996**

Figs 1, 8, 9.

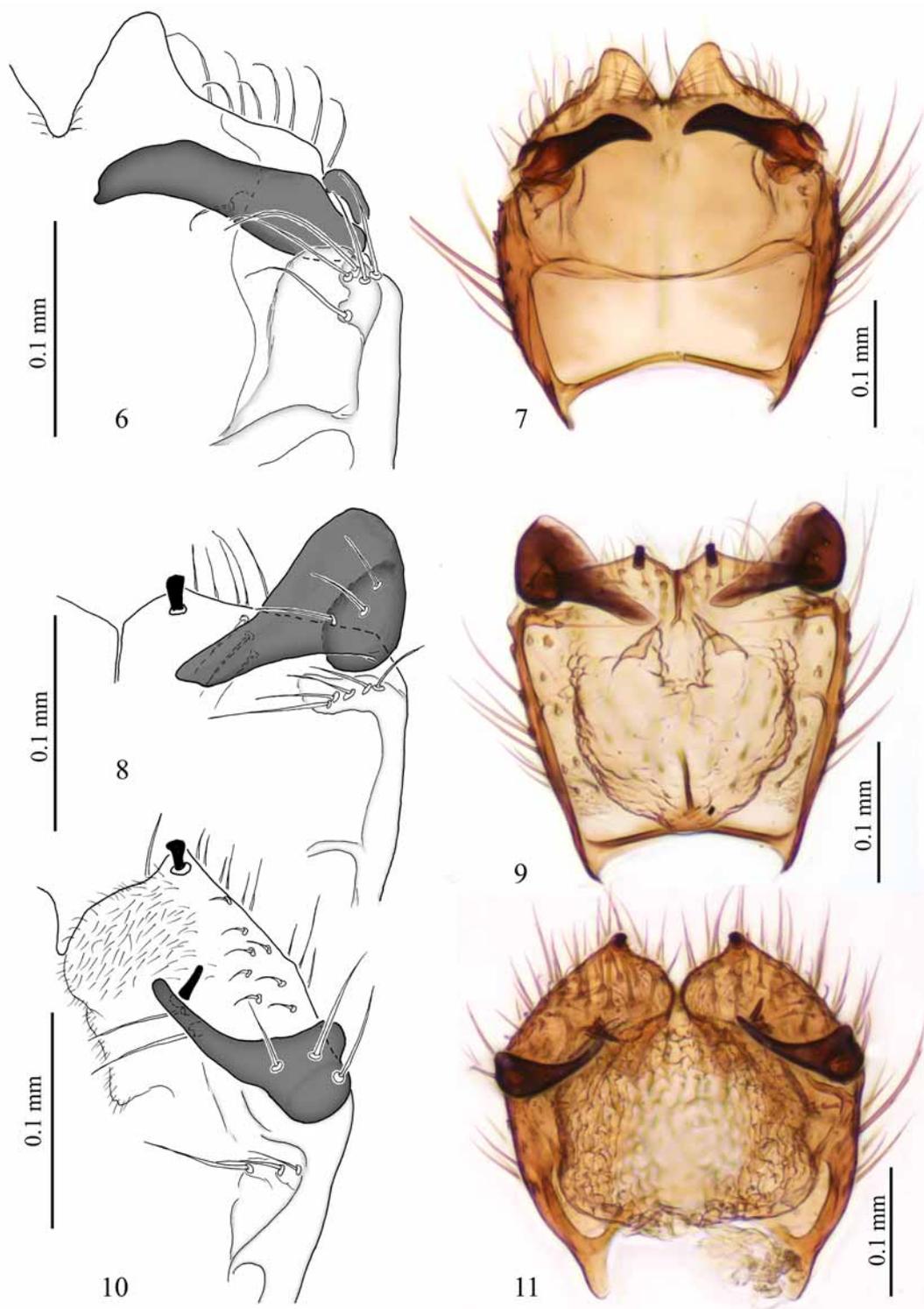
Endemic in French Guyana: The Nouragues Nature Reserve (cf. Matile 1996) and Kaw Nature Reserve. Close to *C. variegata* and *C. matilei*, see under *C. matilei* for discussion.

Material examined: 1 ♂, leg. K. Sarv 11.XII.2006 – 2.I.2007 (Malaise trap); 1 ♂, same except 20.I. – 24. II. 2007; 9 ♂♂, same except 12.II – 03.III. 2007; 18 ♂♂, same except 03. – 27.III. 2007. Total: 29 ♂♂.

***Cluzobra matilei* sp. n.**

Figs 2, 4, 5, 6, 7, 12, 13.

Material examined: Holotype, ♂, FRENCH GUYANA, Régina: Kaw Mts., Point Road 40, Malaise trap; N= 4°33'562" W=52°12'425; alt. 300 m a.s.l., leg. K. Sarv 12.II – 03.III. 2007. **Paratypes**, 5 ♂♂, same as holotype; 3 ♂♂, same as holotype except 03. – 27.III. 2007; 1 ♂, same as holotype except leg. V. Soon and 06. – 12.I. 2003.



FIGURES 6–11. Male terminalia of *Cluzobra* species, dorsal view, tergite IX removed. 6, 7. *C. matilei* sp. n. 8, 9. *C. vicina* Matile. 10, 11. *C. variegata* Matile.

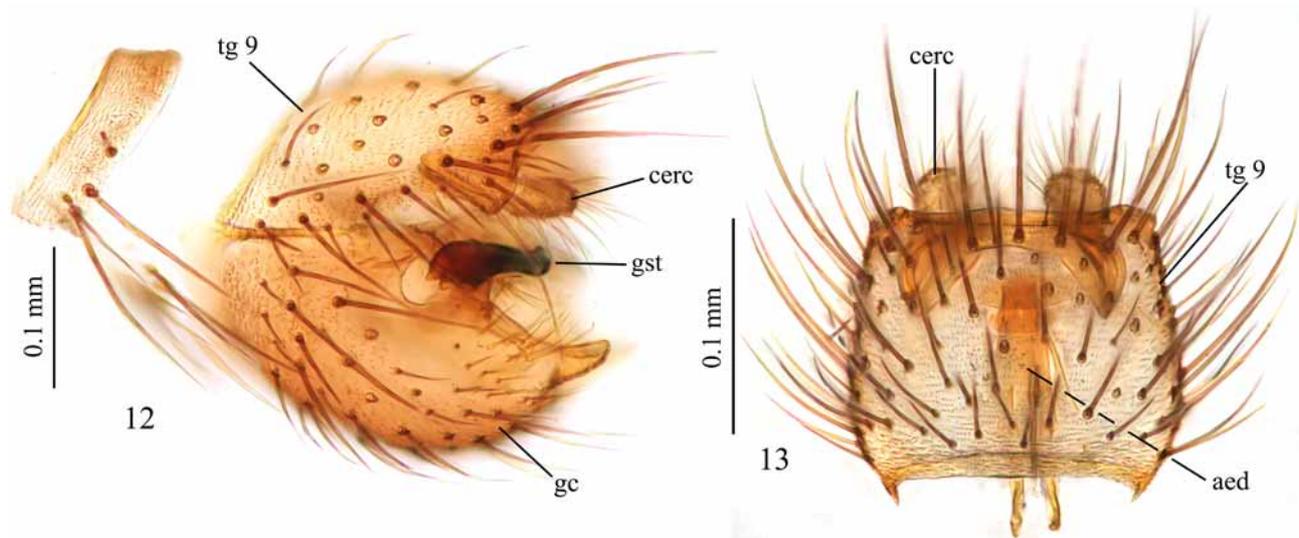
Diagnosis: Wing patterned, with both micro- and macrotrichiae. Two ocelli. Anepisternum setose. Male gonocoxite ventroapically bare, indented and without paired blunt spines. Male gonostylus blackish brown, unbranched, apically rostrum-shaped.

Description: Male. Length of wing 2.35–2.63, 2.51 [2.63] mm.

Head dull yellow, with surroundings of ocelli brown. Two ocelli, separated from eye margins by about their own diameter. Mouthparts yellowish. Palpus with all segments brown. Palpomere ratios 1 : 1.09–1.10,

1.10 [1.10] : 1.64–2.00, 1.79 [2.00] : 2.64–3.00, 2.85 [3.00] : 4.20–5.00, 4.71 [5.00]. Clypeus obovoid, with long dark bristles. Scape and pedicel yellow, flagellomeres yellowish, basally darker. Flagellomeres cylindrical, about 1.5 times as long as broad.

Thorax yellowish brown, with scutum and mediotergite somewhat darker, and anteprepronotum and proepisternum lighter. All bristles and setae dark. Laterotergite and mediotergite with bristles, anepisternum with setae on upper part. Scutellum yellowish brown with six stronger scutellars and some smaller setae. Halteres yellow, with brownish knob.



FIGURES 12–13. Male terminalia of *C. matilei* sp. n. 12. Lateral view. 13. Tergite IX and cerci, dorsal view. Abbreviations: aed, aedeagal complex; cerc, cercus; gc, gonocoxite; gst, gonostylus; tg 9, tergite IX.

Legs. Fore and mid coxae brownish. Apical half of hind coxae posteriorly brownish. Fore and mid femora entirely brownish, hind femora yellow with brown band at each end. Fore and mid tibiae yellow, hind tibia basally slightly brownish. Tarsi yellow with darker setae. Tibial spurs dark brown. Ratio of femur to tibia for fore, mid and hind legs: 0.85–0.91, 0.89 [0.89]; 0.83–0.91, 0.88 [0.88]; 0.77–0.83, 0.81 [0.79]. Ratio of tibia to basitarsus for fore, mid and hind legs: 0.88–1.00, 0.92 [0.88]; 1.11–1.21, 1.17 [1.20]; 1.56–1.62, 1.59 [1.58].

Wings patterned (fig. 5). Wing apex widely smoke-coloured to brownish. Cubital cell apically concolorous. R_4 , apical half of r-m, m-stem and basal fifth of medial fork surrounded by intense brown patches. CuA_2 surrounded by narrow brownish band. Microtrichia and macrotrichia almost uniformly distributed on wing membrane, except basal cell, which has, besides of microtrichia, only few macrotrichia on distal half. Costa reaches 0.39 – 0.47, 0.44 [0.47] from R_5 to M_1 . M-stem 1.19 – 1.41, 1.27 [1.27] times as long as r-m.

Abdomen entirely light brown with sternites lighter. All setae dark. Terminalia (Figs 6, 7, 12, 13) yellowish brown except well sclerotized and blackish-brown, one-lobed gonostyli. Gonocoxite ventroapically extended, without setae or spines. Tergite IX quadrate, with almost straight posterior margin, covered with strong dark setae. Cercus bifid with normal setae.

Female. Unknown.

Biology. Unknown.

Etymology. The species is named in honour of late Prof. Loïc Matile (1938-2000) to mark his tremendous contribution to the studies of Sciarioidea (= Mycetophiliformia, cf. Amorim & Rindal 2007) all over the world and of the genus *Cluzobra*, in particular.

Discussion. According to Matile's key (Matile 1996), the new species runs to couplet 17: the wings being covered with both micro and macrotrichia, having two ocelli, anepisternum being setose, having brown coxae

and brownish fore and mid femora. The scutum, however, is more brownish than yellowish, but the specimens of *C. variegata* and *C. vicina* – the alternatives under couplet 17 by Matile – from the Kaw Mountains have the scutum brownish as well. *C. matilei* also shares the general appearance of the male terminalia with *C. variegata* and *C. vicina* (both illustrated for comparison) having a moderately intended ventroapical margin of gonocoxite and well sclerotized one-lobed gonostylus. However, the new species lacks blunt apical paired spines on the gonocoxite, unlike the other two species, and the ventroapical margin of gonocoxite is bare, while it is setose in case of other two species. *C. matilei* has the gonostylus almost of equal width and apically rostrum shaped. *C. variegata* and *C. vicina* have the gonostylus basally much broader: it is humpbacked in *C. vicina* and heavily tapered in *C. variegata*. The new species, unlike the other two species, lacks bristles on dorsal surface of gonostylus. The wing pattern of the new species is more similar to that of *C. variegata*, while *C. vicina* has the smoke-coloured wing apex divided by an uncoloured patch.

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References

- Amorim, D.S. & Rindal, E. (2007) A phylogenetic study of the Mycetophiliformia, with creation of the subfamilies Heterotrichinae, Ohakuneinae, and Chiletrichinae for the Rangomaramidae (Diptera, Bibionomorpha). *Zootaxa*, 1535, 1–92.
- Boisseau, R. (2003) Amazone Nature Lodge. Available from <http://www.amazonenature.com/English/accueil.htm> (accessed 7 May 2008).
- Coher, E.I. (1997) A new North American species of the genus *Cluzobra* (Diptera: Mycetophilidae). *Entomological News*, 108, 151–154.
- Edwards, F.W. (1940) New Neotropical Mycetophilidae (IV) (Diptera). *Revista de Entomologia*, 11, 440–465.
- Lane, J. (1956) New Neotropical Sciophilinae (Diptera, Mycetophilidae). *Dusenya*, 7, 119–124.
- Lane, J. (1959) Insecta Amapaensia. – Diptera: Mycetophilidae. *Studia Entomologica*, 2, 105–118.
- Matile, L. (1996) Révision des *Cluzobra* Néotropicaux (Diptera: Mycetophilidae) – *Annales de la Société Entomologique de France (Nouvelle série)*, 32, 3–57.
- Søli, G.E.E., Vockeroth, J.R. & Matile, L. (2000) A.4. Families Sciaroidea. In: Papp, L. & Darvas, B. (Eds) *Contribution to a Manual of Palearctic Diptera. Appendix*. Science Herald, Budapest, pp. 49–92.
- Vockeroth, J.R. (1981) Mycetophilidae. In: McAlpine, J.F. et al. (Eds.) *Manual of Nearctic Diptera. Volume 1*. Research Branch Agriculture Canada, Monograph No. 27, Ottawa, pp. 223–246.