

THE HOLARCTIC SPECIES OF THE *MYCETOPHILA FUNGORUM* (DE GEER) GROUP (DIPTERA: MYCETOPHILIDAE)

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Laffoon (1957) first recognized that *Mycetophila fungorum* (De Geer, 1776), the earliest described and one of the commonest and most distinctive fungus gnats, belonged to a group of sibling species. He accepted three species of the group in North America, all of them widespread there: *M. thioptera* Shaw, *M. fisherae* (Laffoon) and a third considered conspecific with the European species *fungorum* (De Geer). Eight other names based on European types and the Indian *M. khasiensis* Senior-White (1922) were placed in synonymy under *fungorum*.

It has recently been realized that European, including British, material of '*fungorum*' consists of at least two species, separable at present only on details of the structure of the male genitalia. Both are widespread and common although one of them strongly predominates in Mediterranean material; it does, however, occur in northern Europe where the other species (considered the true *fungorum*) is more common and both species have been found in most parts of Britain.

Laffoon (1957) selected a female as lectotype from two syntypes of *fungorum* (De Geer) but characters to separate the females of the two European species are as yet uncertain. However, De Geer (1776) had males and figured the male genitalia, preceding Dziedzicki's pioneering work on fungus gnat genitalia by more than a century. Both his figures and those of Dziedzicki (1884) under the name *punctata* Meig. represent the species recognized here as *fungorum*. None of the other synonyms have been figured; possible type material of some of them exists but it has not yet been practicable to examine them. The holotype of *khasiensis* (in Natural History Museum, London) has been examined, but it is a female and it cannot be confirmed whether it is conspecific with one of the European species. It is uncertain whether *M. pallida* (Bukowski, 1934), of which the type is presumed lost, belongs to this group. According to Bukowski's figures, its ventral stylomere resembles that of the species described here as *perpallida* sp. n., but the dorsal stylomere shows a different structure and the figure may be inaccurate. In any case, *pallida* is a junior secondary homonym of *pallida* Stannius, 1831 (= *Exechia seriata* (Meig. 1830)) so could not be used.

Although it is possible that one of the other published names refers to the second European species, it is considered desirable to describe this species as new so that its existence may be made known. Examination of North American material has confirmed that *perpallida* differs from any of the species known to Laffoon; *fisherae* and *thioptera* are quite well characterized but the North American material determined as *fungorum* by Laffoon has been found to comprise at least three undescribed species although some specimens from Alaska and Canada (Ungava Bay, Northern Quebec) are probably true *fungorum*.

It thus appears that there is a group of sibling species around *fungorum* comparable to the closely related *ruficollis* Meig. group. Examination of material from other parts of the world will probably add further species to this group.

The *fungorum* group is easily recognized within the genus *Mycetophila*, being characterized by the absence of ventral bristles on the middle tibia, the absence of anterodorsal bristles on middle and hind tibiae, the long vein *tb* (= 'M before r-m' of Laffoon) without setulae below (in contrast to the presence of these setulae in the *ruficollis* group) and the wings clear yellowish without markings. The body is largely

dull yellow although darker (more or less brown or grey dusted) individuals are frequent, especially in the winter months.

M. fisherae has the posterior preapical setae of the hind coxae long and bent apically in both sexes; the other species have not yet been separated other than on genital characters. The chief differences are found in the arrangement of setae on the ventral stylomere of the gonostylus and in the shape of the basal margin of its dorsal stylomere. The aedeagus is also figured here for each species but does not show strongly specific characters.

Laffoon suggested that *fungorum* might be divisible into subspecies and mentioned that many south-western US specimens had the apical setae of the ventral stylomere spaced and shaped differently. These may correspond to *neofungorum* sp. n. or *favnica* sp. n. of the present paper.

Laffoon illustrated small differences in the ovipositor structure of his three species but it has not yet been possible to separate females in this respect in the species hitherto confused with *fungorum*.

The species descriptions are brief in view of the paucity of external distinguishing characters; *fisherae* and *thioptera* were described in detail by Laffoon but the other Nearctic species were evidently included in his description of *fungorum*. The chaetotactic characters of pleura and legs given are variable within species.

Development is in a wide range of soft fungi and all species evidently vary widely in size due to the variability in available larval food sources.

Mycetophila perpallida sp. n.

Male. Head yellowish brown. Antennae yellow on basal segments, the flagellum mainly dark grey dusted. Palpi yellow, with the third segment broadest. Mesoscutum pruinose, yellow with three separate more or less strongly indicated brown stripes. Scutellum brown, yellow apically. Pleura mainly brown. Legs including coxae yellow. Abdomen yellowish brown, genitalia yellow. Wings clear yellowish; cross vein r-m a little longer than stalk of median fork. Long basal cross vein tb (=M before r-m of Laffoon and earlier authors) bare. [Body may be darker, brownish and more or less strongly grey dusted in some specimens as in other species of the group.]

Proepisternum and mesepimeron each with 6 setae. Middle tibia with 4 a, 4 strong d (1 weaker basal to them), 2 strong preapical p with about 5 shorter basal to them. Hind tibia with 6 a, 4 strong d (1-2 weaker basal to them), 13-15 p on apical two-thirds. Hind coxa with short weak p setae, the preapicals straight and shorter than coxal diameter. Wing length 2.9-5.6 mm. The male genitalia are shown in Figs 4-6.

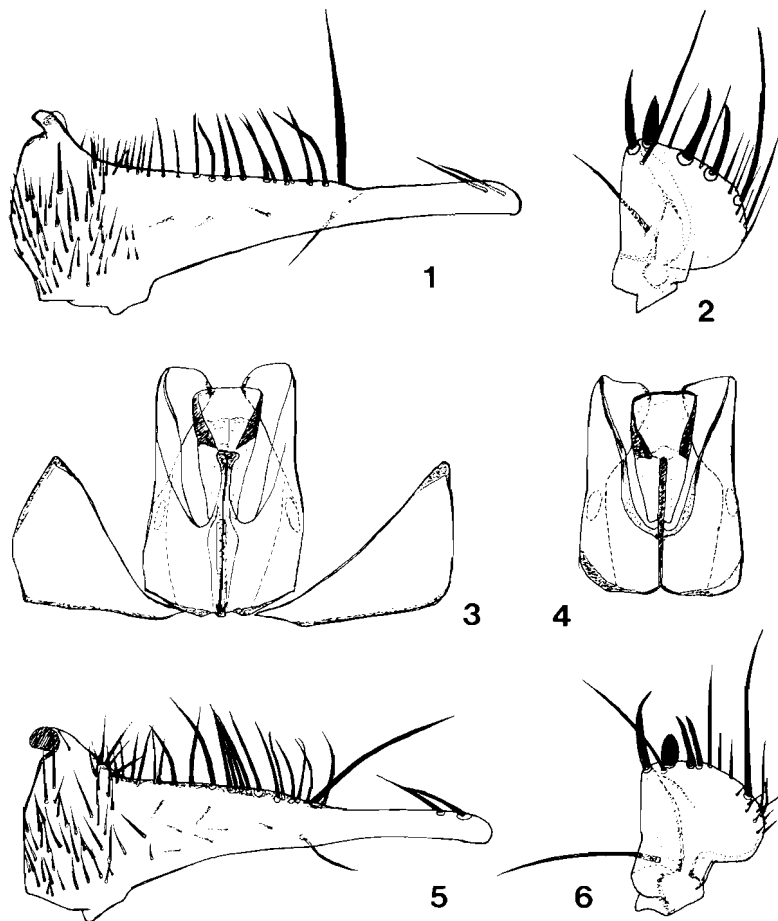
Holotype male. Montenegro, Kolasin, 5-9.vi.1958, wet gorge in old forest (R. L. Coe, Natural History Museum, London).

Paratype males: same data as holotype, 6 males; Slovenia, Hudajuzna, 390 m, 31.vii-4.viii.1973, male (A. E. Stubbs); Spain, Sierra de Guadarrama, 6-8000', viii.1927, male (B. P. Uvarov); Corsica, Tavignano Forest, 10-25.ix.1928, male (F. W. Edwards) (all above, Natural History Museum, London).

Other material. Many males from France (including Corsica), Spain, Greece (including Crete), Czechoslovakia, Finland, British Isles and Madeira.

Mycetophila fungorum (De Geer, 1776)

Male. Coloration and wing characters as *perpallida*. Proepisternum with 4-5 setae, mesepimeron with 4-6 setae. Middle tibia with 3 a (1 weak basal), 4 d (1 weak basal), 6-9 p (1-3 apical stronger). Hind tibia with 5-6 a, 4 strong d (1 weaker basal),



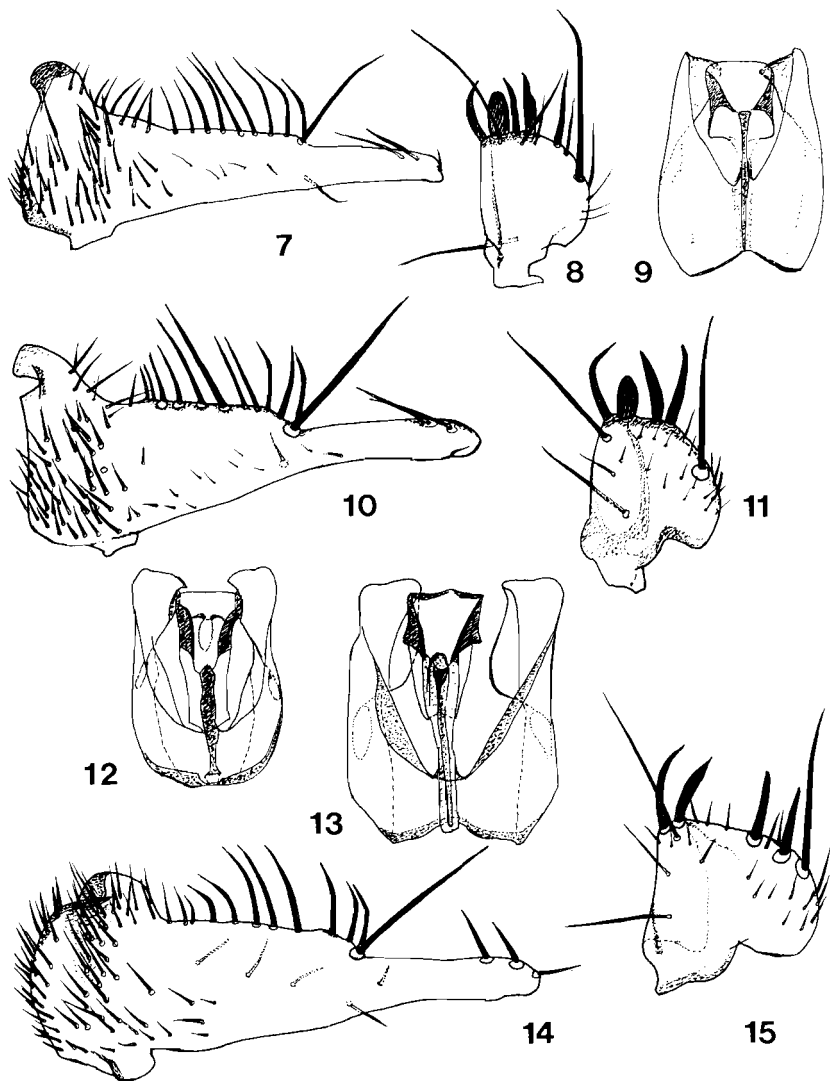
Figs 1-6. Male genitalia of European species. 1-3 *Mycetophila fungorum* (De Geer): 1 dorsal stylomere of gonostylus; 2 ventral stylomere; 3 aedeagus. 4-6 *M. perpallida* sp. n.: 4 aedeagus; 5 dorsal stylomere of gonostylus; 6 ventral stylomere.

12-14 p on apical two-thirds. Hind coxa with p setae short and weak, preapicals straight, shorter than coxal diameter. Wing length 3.4-5.2 mm. The male genitalia are shown in Figs 1-3.

Material examined. Many males from Sweden, Finland, France, Spain, Czechoslovakia and British Isles; also a few examples from Alaska and Canada.

Mycetophila neofungorum sp. n.

Male. Coloration and wing characters as *perpallida*. Proepisternum with 4-6 setae, mesepimeron with 4-8 setae. Middle tibia with 3 strong a (1 weaker basal to them),



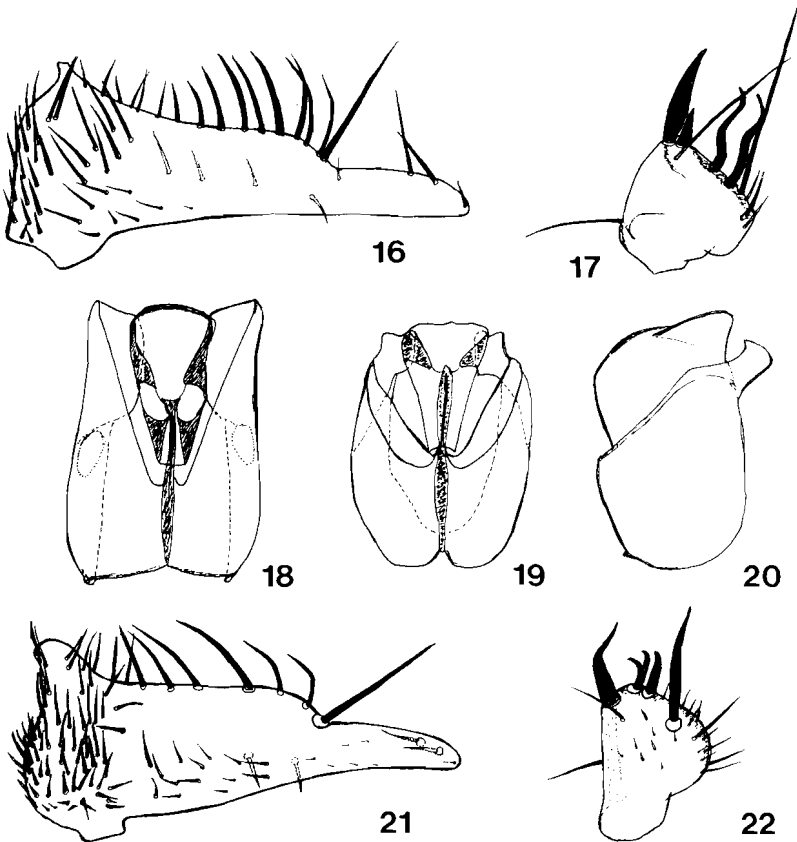
Figs 7-15. Male genitalia of North American species. 7-9 *M. neofungorum* sp. n.: 7 dorsal stylomere of gonostylus; 8 ventral stylomere; 9 aedeagus. 10-12 *M. riparia* sp. n.: 10 dorsal stylomere; 11 ventral stylomere; 12 aedeagus. 13-15 *M. favonica* sp. n.: 13 aedeagus; 14 dorsal stylomere; 15 ventral stylomere.

1 strong p (5 weak p basal to it). Hind tibia with 6 strong a, 5 strong d (2 short, weak between them), 7 p on apical half. Hind coxa with short weak p up to half length of preapicals which are straight to gently curved. The male genitalia are shown in Figs 7-9.

Holotype male USA, Arizona, Grand Canyon National Park (north rim), 15.vii.1954 (W. L. Downes, Natural History Museum, London).

Mycetophila riparia sp. n.

Male. Coloration and wing characters as above species. Head and scutellum mainly yellow, brownish on disc. Proepisternum with 4-5 setae, mesepimeron with 6 setae. Middle tibia with 3 strong a (1 weaker basal), 3 strong d (1 weaker basal), 8-10 p



Figs 16-22. Male genitalia of North American species. 16-18, *M. fisherae* (Laffoon): 16 dorsal stylomere of gonostylus; 17 ventral stylomere; 18 aedeagus. 19-22 *M. thioptera* Shaw: 19 aedeagus, dorsal view; 20 aedeagus, lateral view; 21 dorsal stylomere; 22 ventral stylomere.

(2–3 apicals stronger). Hind tibia with 5–6 strong a, 4 strong d, 9 (Fairbanks)–16 (Matanuska) p on little more than apical half. Hind coxa with p setae very weak, preapicals straight, shorter than coxal diameter. Wing length 4.6–4.9 mm. The male genitalia are shown in Figs 10–12.

Holotype male. USA, Alaska, Fairbanks, 28–29.vii.1944 (J. C. Chamberlin, United States National Museum, Washington DC).

Paratype male. USA, Alaska, Matanuska, 4.vi.1944, rotary trap (J. C. Chamberlin, United States National Museum, Washington DC).

Mycetophila favonica sp. n.

Male. Coloration and wing characters as above species. Mesoscutal stripes relatively faint. Proepisternum with 5 setae, mesepimeron with 5–6 setae. Middle tibia with 3 strong a (1 weaker basal), 4 strong d (1 weaker basal), 8–9 p (1–2 apicals stronger). Hind tibia with 6–7 a, 4 strong d (1 weaker basal), 14–16 p on apical two-thirds. Hind coxa as in *riparia*. Wing length 4.0–6.2 mm. The male genitalia are shown in Figs 13–15.

Holotype male. USA, California, Palo Alto, 22.i.1985 (R. W. Doane, United States National Museum, Washington DC).

Paratype males. USA, California, Alameda County, Strawberry Canyon, ii.1949, light trap (W. W. Wirth); USA, California, Alpine County, 8.x.1953 (C. S. Richards); USA, Nevada, Verde, 22.viii.1953 (C. S. Richards) (all United States National Museum, Washington DC).

Other material. California, Claremont, Baker (J. M. Aldrich); Idaho, Moscow Mountain, 4.viii.1915, 24.vi.1919 (A. L. Melander) (all United States National Museum, Washington DC).

Mycetophila fisherae (Laffoon, 1957)

Material examined has wing length 4.0–5.2 mm (Laffoon gives the wider range 3.0–5.6 mm). The male genitalia are shown in Figs 16–18.

Paratype male examined. USA, Massachusetts, Amherst, light trap, 1.x.1951 (E. L. Coher, Natural History Museum, London).

Other material examined. USA, Iowa, Ledges State Park, 6.v.1950, male (E. L. Coher); USA, New York, Tuxedo, viii.1928, male (F. W. Edwards) (both Natural History Museum, London). USA, Louisiana, Independence, 23.ii–1.iii.1990. Malaise trap, 2 males, 1 female (received via R. S. George, P. J. Chandler collection).

Mycetophila thioptera Shaw, 1940

Material examined (23 males, 33 females, from many parts of USA) has wing length 3.2–4.8 mm (Laffoon gives the wider range 3.1–5.5 mm). The male genitalia shown in Figs 19–22 are drawn from a specimen from Louisiana, Ruston, 18.xi.1941 (W. W. Wirth, United States National Museum).

ACKNOWLEDGEMENTS

I am grateful to the authorities of the Natural History Museum, London and the United States National Museum, Washington DC for the opportunity to study the North American material which has been useful in widening knowledge of the extent of this species group.

REFERENCES

- Bukowski, W. 1934. Neue und abweichende Formen von Pilzmücken (Diptera, Fungivoridae) aus der Krim. *Konowia* 13: 183–192.
- De Geer, C. 1776. *Mémoires pour servir à l'histoire des insectes*. Vol. 6. 523 pp. 30 pls, Stockholm.
- Dziedzicki, H. 1884. Przyczynek do Fauny owadów dwuskrzydłych. Gatunki rodzajów: *Mycothera*, *Mycetophila*, *Staegeria*. *Pamiętnika Fizyograficznego* 4: 298–324, pls 5–9.
- Laffoon, J. L. 1957. A revision of the Nearctic species of *Fungivora* (Diptera, Mycetophilidae). *Iowa State Coll. J. Sci* 31 (2): 141–340.
- Senior-White, R. A. 1922. Notes on Indian Diptera. *Dept. Agric. India Mem. Ent. Series* 7: 83–169.
- Shaw, F. R. 1940. Some new Mycetophilidae. *Canadian Entomologist* 72: 48–51.

 SHORT COMMUNICATIONS

Some uncommon insects from two waste-ground sites in South Yorkshire.—I read with interest Mr R. K. A. Morris's comments (*Br. J. Ent. Nat. Hist.* 5: 186) regarding the value of recording Diptera and Hymenoptera on ruderal sites, a viewpoint I can enthusiastically endorse after working abandoned colliery waste-ground localities over the past few years.

During 1992 a small sheltered corner of the vast Manvers site (SE 4501)—the largest derelict area in the country—produced a number of outstanding wasps, at least in a Yorkshire context, most notably *Nysson dimidiatus* Jurine, *N. trimaculatus* (Rossius), *Gorytes tumidus* (Panz.), *Entomognathus brevis* (V.d. Lind.) and *Pseudomalus violaceus* (Scop.). All these species were noted on at least three occasions. Other more widespread though still locally scarce species included *Ectemnius dives* (Lepelletier & Brulle), *Ammophila sabulosa* (L.), *Tachysphex pompiliformis* (Panz.), *Psenulus concolor* (Dahlbom), *Hedychridium ardens* (Lat. in Coquebert) and *Dipogon variegatus* (L.).

Diptera during 1992 included *Dioctria baumhaueri* Meig., *Sphaerophoria rueppellii* (Wiedemann), *Oxycera morrisii* Curt., *Solva marginata* (Meig.) and *Dolichopus signifer* Hal., this last fly an RDB 2 species almost exclusively confined to a few coastal sites in the south-west. A similar 'rubble-scape' at nearby Cortonwood has also proved to be a fruitful collecting ground for Diptera and Aculeate Hymenoptera although the most remarkable find here is the sawfly *Stethomostus funereus* (Klug) recorded in 1989 and 1992, a species found on only a handful of occasions in Britain.

I should like to thank Mr R. Crossley for confirming and Dr D. Sheppard for identifying the last two above-mentioned insects respectively.—J. D. Coldwell, 16 Railway Cottages, Dodworth, Barnsley, South Yorkshire S75 3JJ.

***Arhopalus rusticus* (L.) (Coleoptera: Cerambycidae) in Joydens Wood, Bexley, Kent.**—Mr Martin Henderson (*Br. J. Ent. Nat. Hist.*, 5: 187) may be interested in a further record of this local longhorn beetle, *Arhopalus rusticus* (L.). Six larvae of this insect were found in 1991 in Joyden's Wood, Bexley, Kent, TQ500720. They were obtained from hard heartwood of Scots pine which was uprooted in the great storm of 1987. In due course six adults emerged, two of which were presented to the Natural History Museum as all 29 specimens in their collection were found in the area of Nethy Bridge, Inverness, Scotland. The long-term future of this beetle in the wood is uncertain, as the wood is managed by the Woodland Trust and it is their intention to clear the wood of pine and plant broadleaf trees, so returning it to its 1950 status. At present there is a good breeding colony.—K. C. Lewis, 108 Parkview Road, Welling, Kent DA16 1JS.