

SCIOPHILA MEIGEN, 1818 FROM THE ORIENTAL REGION (DIPTERA, MYCETOPHILIDAE)

Söli, G. E. E. 1995. *Sciophila* Meigen, 1818 from the Oriental region (Diptera, Mycetophilidae). – Tijdschrift voor Entomologie 138: 283-289, figs. 1-11 [ISSN 0040-7496]. Published 15 November 1995.

Sciophila bilobata sp. n., *S. fistulata* sp. n. and *S. suthepensis* sp. n. are described and male genitalia are illustrated; for *S. suthepensis* also the female. These species are the first three confirmed species of *Sciophila* from the Oriental region. It is pointed out that the only species previously recorded from this region, *S. bicolor* Brunetti, 1912, should be considered a nomen dubium. Some tentative remarks are made about the systematical position of the new species.

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Key words. – Diptera, Mycetophilidae, *Sciophila*, new species, Thailand.

During an expedition arranged by the Museum of Zoology, University of Bergen, to the montane evergreen forests in Northern Thailand in April 1991, more than 1000 specimens of Mycetophilidae (s. str.) were collected. Among others the material held five specimens belonging to the genus *Sciophila* Meigen, 1818, representing three species, all of which proved to be undescribed.

Species of the genus *Sciophila* can be identified in having their wing membrane densely clothed by large, decumbent trichia, a very short median fork, and a cubital fork branching out very close to the wing margin. A small, closed cell is present between R_s and R_{2+3} . These two veins may, however, occasionally fuse.

Altogether 113 species belonging to this genus are recognized, of which 48 are Nearctic, 34 Palearctic (including 2 species from the Canary Island and 5 species from Nepal), 8 Holarctic, 2 Afrotropical, 1 Oriental and 20 Neotropical. The number of Neotropical species is, however, uncertain as more than half of the species may belong to other genera (Papavero 1978). One Australasian species, *Austrosiophila solitaria* (Tonnoir, 1929) from Tasmania, was originally described as a subgenus of *Sciophila*, but the subgenus has later been raised to generic rank (Matile 1989).

The single Oriental species, *S. bicolor* Brunetti, 1912, is described from Darjiling, India (Brunetti 1912) based on 4 females. The species is not commented on by Edwards (1924) in his review of Brunetti's types of Mycetophilidae. Neither, has it been possible to trace the type specimens, and they are probably lost. Consequently, *S. bicolor* should be regarded a nomen dubium.

The world fauna of *Sciophila* has not been revised,

but the Holarctic species, which constitute the greater part of the genus, are treated by Zaitzev (1982).

METHODS AND TERMINOLOGY

All specimens were cleared and slide mounted in Canada balsam.

The general terminology follows Vockeroth (1981) and McAlpine (1981), except for the clypeus and the female genitalia. Clypeus is here regarded as being secondarily divided in Mycetophilidae, consisting of an upper postclypeus and a lower anteclypeus (see also Matile 1990). The interpretation of the female genitalia is mainly in accordance with Sæther (1977), and will be further dealt with in a forthcoming paper.

Cubital ratios are given as the length of CuA_1 and CuA_2 , respectively, to the length of CuA -petiole. Two ratios are given for the fore, mid and hind leg each: the length of femur to tibia, and the length of tibia to first tarsomere. The lengths of the tibial spurs are given in relation to the tibial diameter, measured apically.

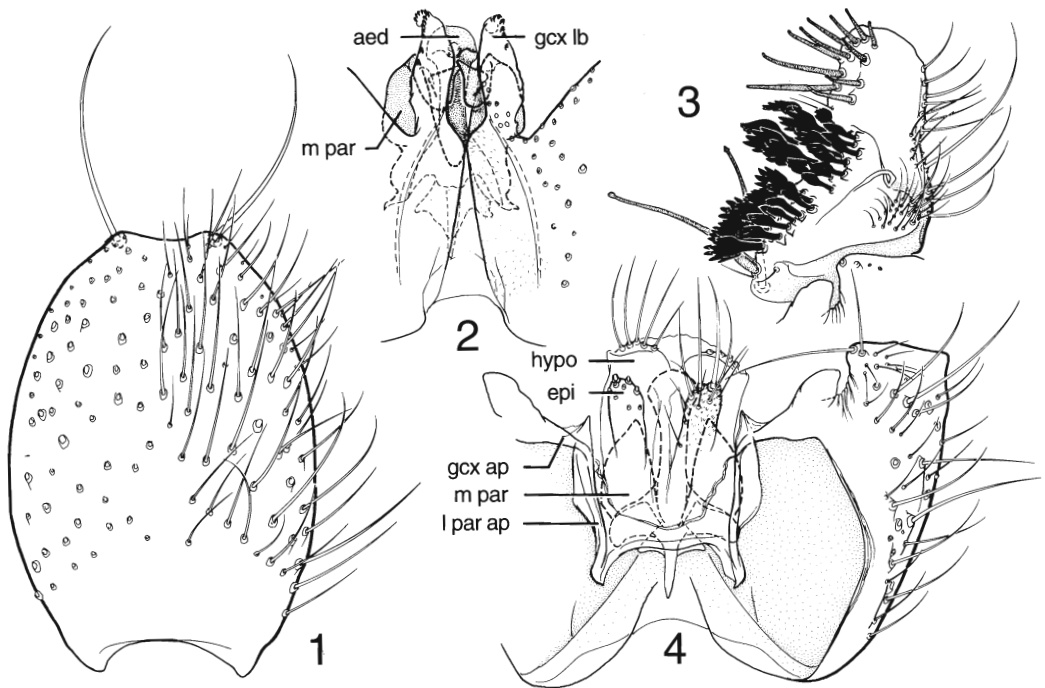
Sciophila bilobata sp. n.

(figs. 1 - 4)

Type material. – Holotype ♂: Thailand, Chiang Mai region, Doi Suthep, 9.-15.04.1991, G. Söli (Malaise trap) (ZMBN No. 224).

Diagnostic characters. – Metakatepisternum setose; male gonocoxites with two well developed medioventral lobes.

Etymology. – From Latin, *bi-*, two, and *lobate*, with lobes, referring to the two medioventral lobes of the male gonocoxites.



Figs. 1-4. Male terminalia of *Sciophila bilobata* sp. n. – 1, tergite 9, dorsal view; 2, median lobes of gonocoxite, ventral view; 3, gonostylus, dorsal view; 4, gonocoxite and proctiger, dorsal view.
Abbreviations: aed, aedeagus; epi, epiproct; hypo, hypoproct; gcox ap, gonocoxal apodemes; gcox lb, gonocoxal lobe; l par ap, lateral parameral apodeme; m par, median paramere.

Description

Male (n=1). – Total length about 3.8 mm. Flagellum 1.19 mm, or 1.4 times as long as scutum and scutellum together.

Coloration. Head, incl. antennae and mouthparts, light brown. Thorax, legs and abdomen yellowish.

Head. Lateral ocelli about twice as large as median, and separated from the eye margin for a distance of about 1.5 times their diameter. Frons with 29 setae in front of ocelli. Frontal suture nearly complete, not reaching median ocellus. Frontal tubercle broad, bilobate. Stipes with 6-9 setae. Fused face-postclypeus with 10 setae. Anteclypeus ovate, about 1.3 times as long as broad, with 56 setae. Relative lengths of the palpomeres: 1 : 1.2 : 1.3 : 2.7 : 7.5. Sensory pit on third palpomere shallow. Lacinia tapered, about 1.2 times as long as first palpomere, with a few small trichia.

Thorax. Anepisternum with 12-14 setae situated anterodorsally. Katepisternum bare. Laterotergite with 8-9 setae. Mediotergite with 4-5 lateral and 5 posterior setae. Metakatepisternum with 11 setae.

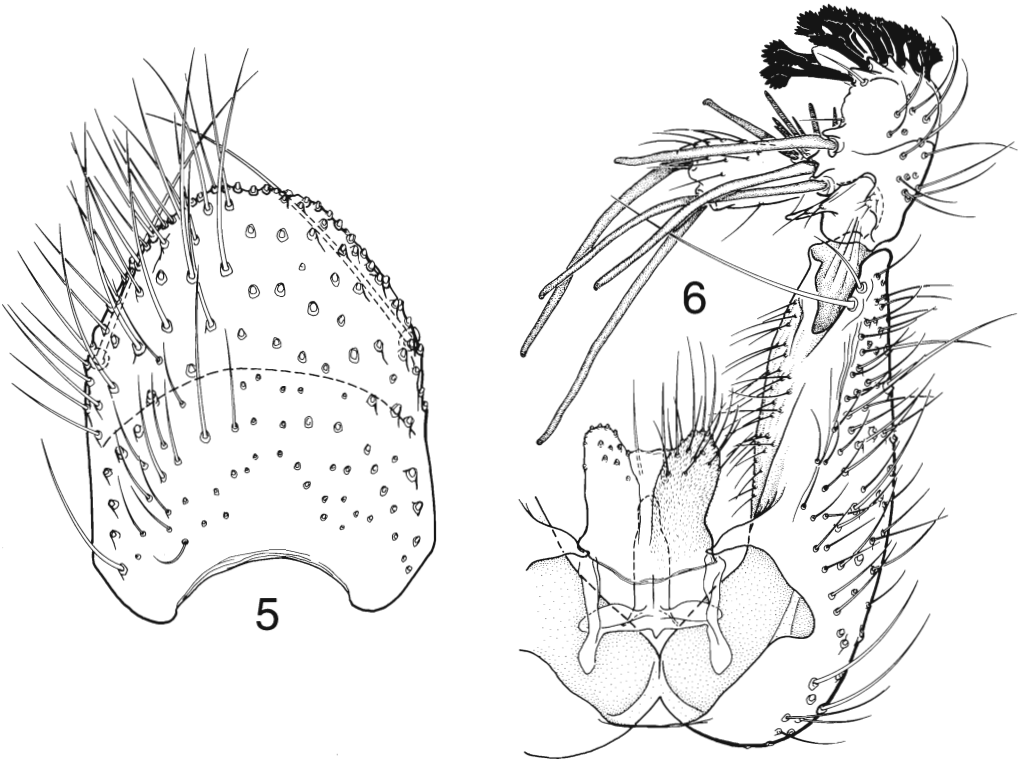
Wings. Wing length 2.39 mm. Length to width 2.3. Sc 0.41 times as long as wing. Sc-r located in front of Rs. M-petiole about as long as r-m. M-basis

0.56 times as long as CuA-petiole. CuA-ratios: 0.71 and 0.51. Anal vein well developed, 1.15 times as long as CuA-petiole.

Legs. Apical triangular, depressed area on fore tibia with two distinct rows of setae. Ratio femur to tibia: 0.97; 0.96; 0.85. Ratio tibia to tarsus: 1.17; 1.50; 1.98. Spur lengths: 2.6; 2.6, 3.5; 2.3, 3.3.

Abdomen. Sternite 8 about 0.7 times as long as sternite 7, and 5.0 times as long as tergite 8.

Terminalia (figs. 1-4). Gonocoxites short, fused medioventrally for about half of their length; fusion weakly sclerotized. Two distinct, notched lobes are formed where the two gonocoxites meet medioventrally. Apical half of each lobe with several small, blunt setae. Gonocoxite with a rounded, flat outgrowth above the gonocoxal apodeme. Gonostylus with numerous dark, rather short-stalked furcated megasetae. Apicomedial part of gonostylus with numerous straight, thick setae. Two pairs of parameres present, the lateral pair less developed than the median. Lateral parameres short, not protruding beyond the gonocoxal apodemes; the medians partly fused with the basal portion of aedeagus, each broad with a conspicuous bend apically. Aedeagus with a club-



Figs. 5-6. Male terminalia of *Sciophila fistulata* sp. n. – 5, tergite 9, dorsal view; 6, gonocoxite, gonostylus and proctiger, dorsal view.

shaped head, and well developed aedeagal apodemes. Tergite 9 about 1.4 times as long as broad. Two long setae situated posterodorsally. Proctiger situated above the parameres and aedeagus, distinctly connected to the gonocoxal apodemes. Hypoproct protruding beyond the epiproct, apically bilobed with numerous setae.

Sciophila fistulata sp. n.

(figs. 5, 6)

Type material. – Holotype ♂: Thailand, Chiang Mai region, Doi Suthep, 9.-15.04.1991, G. Söli (Malaise trap) (ZMBN No. 223).

Diagnostic characters. – Male gonostylus with a well developed, elongated ventral lobe, and equipped with several long, pipe-like megasetae.

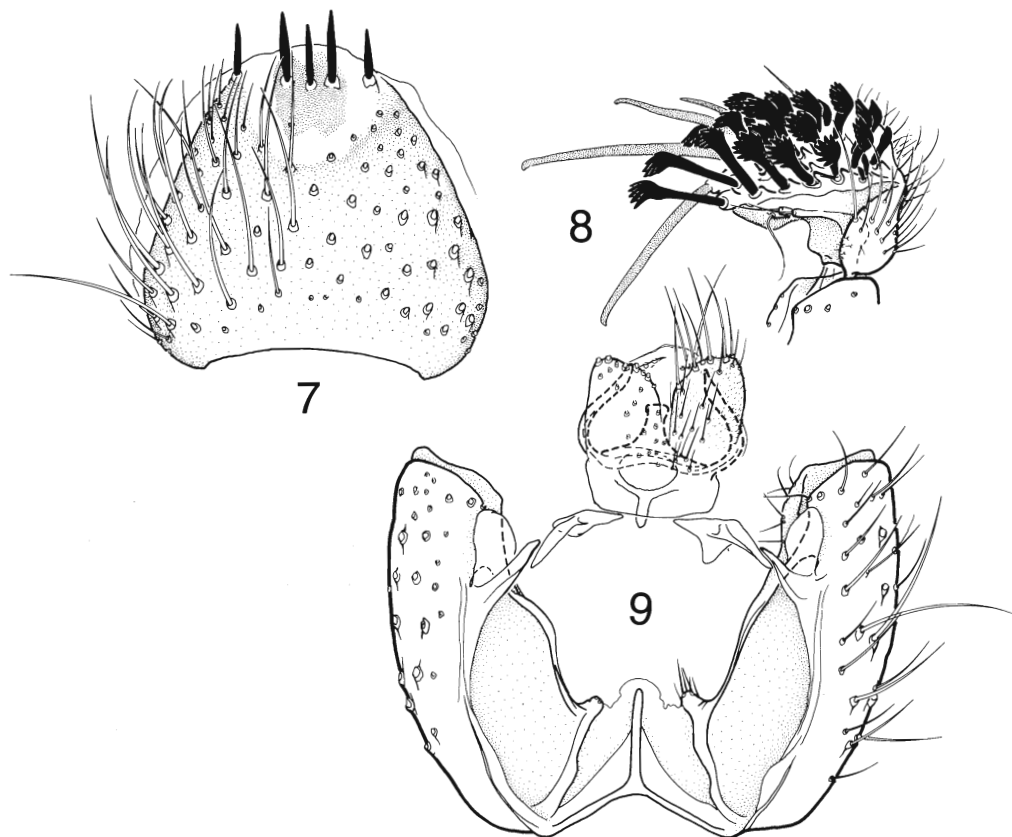
Etymology. – From Latin, *fistulatus*, with pipes, referring to the well developed pipe-like megasetae on the male gonostylus.

Description

Male (n=1). – Total length about 3.5 mm. Flagellum 1.36 mm, or 1.8 times as long as scutum and scutellum together.

Coloration. Head, including antennae and mouthparts, light brown. Thorax light brown. Coxae yellowish, hind coxa brownish apically. Abdomen light brown, somewhat lighter laterally.

Head. Median ocellus slightly smaller than laterals. Lateral ocelli separated from the eye margin for a distance of about 2.5 times their diameter. Frons with 14 setae in front of ocelli. Frontal suture short, produced halfway along the distance from frontal tubercle towards median ocellus. Frontal tubercle broad, bilobate. Stipes with 7 setae. Fused face-postclypeus 1.4 times as long as broad, with 12 setae. Anteclypeus ovate, about 1.2 times as long as broad, with 28 setae. Relative lengths of the palpomeres: 1 : 1.2 : 1.6 : 3.1 : 6.4. Sensory pit on third palpomere shallow. Lacinia tapered, about as long as first palpomere, with a few small trichia.



Figs. 7-9. Male terminalia of *Sciophila suthepensis* sp. n. - 7, tergite 9, dorsal view; 8, gonostylus, dorsal view; 9, gonocoxite and proctiger, dorsal view.

Thorax. Anepisternum with 15 setae situated anterodorsally. Katepisternum bare. Laterotergite with 7 setae. Mediotergite with 4 lateral and 4 posterior setae. Metakatepisternum bare.

Wings. Wing length 2.43 mm. Length to width 3.0. Sc 0.39 times as long as wing. Sc-r located in front of Rs. M-petiole about as long as r-m. M-basis 0.54 times as long as CuA-petiole. CuA-ratios: 0.63 and 0.44. Anal vein well developed, 1.20 times as long as CuA-petiole.

Legs. Apical triangular, depressed area on fore tibia with one distinct row of setae, and no setae above these. Ratio femur to tibia: 0.93; 0.88; 0.85. Ratio tibia to tarsus: 1.11; 1.43; 1.71. Spur lengths: 2.2; 2.4, 3.5; 2.4, 3.3.

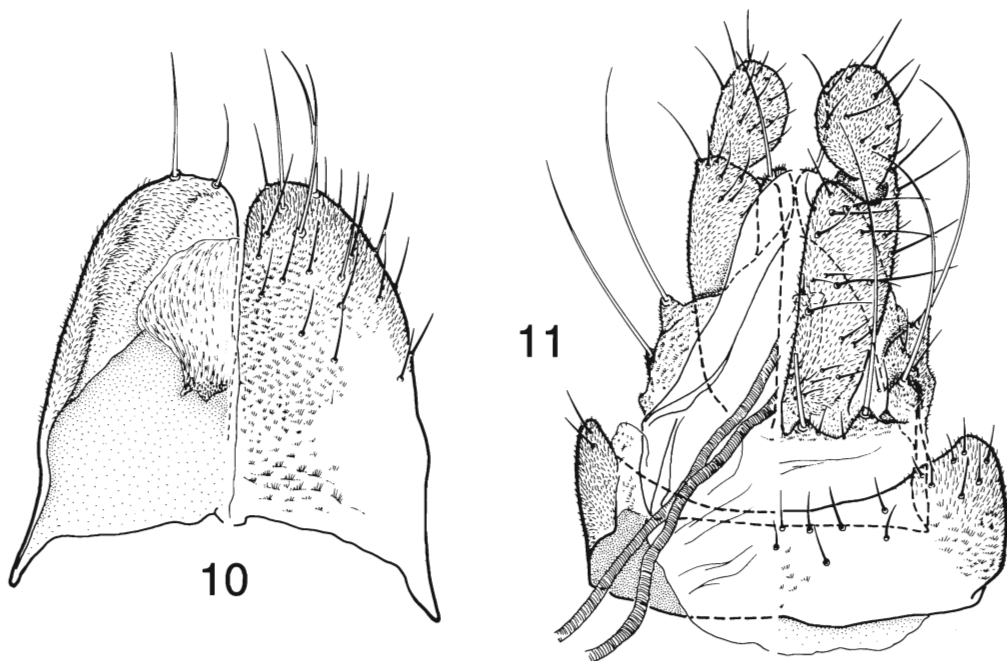
Abdomen. Sternite 8 about as long as sternite 7, and 2.3 times as long as tergite 8.

Terminalia (figs. 5, 6). Gonocoxites narrow and elongated, fused medioventrally for a very short distance only. Gonostylus with a distinct, elongated ven-

tral lobe. Three long and thick tube-like megasetae situated dorsally, and two more on the apicoventral surface of the ventral lobe. Apical portion of gonostylus with numerous dark, rather long-stalked furcated megasetae. One pair of lateral parameres only, very short, not protruding beyond the gonocoxal apodemes; parameral apodemes well developed. Aedeagus short, aedeagal apodemes apparently forming a transverse bridge between the two parameral apodemes. Tergite 9 about 1.3 times as long as broad. Two very long setae situated lateroventrally. Proctiger situated above the parameres and aedeagus, distinctly connected to the gonocoxal apodemes. Hypoproct weakly sclerotized, with 2 posterior setae.

***Sciophila suthepensis* sp. n.**
(figs. 7 - 11)

Type material. - Holotype ♂: Thailand, Chiang Mai region, Doi Suthep, 9-15.04.1991, G. Söli (Malaise trap)



Figs. 10-11. Female terminalia of *Sciophila suthepensis* sp. n. – 10, sternite 8, left: dorsal view, right: ventral view; 11, tergite 8 and proctiger, left: ventral view, right: dorsal view.

(ZMBN No. 225). Allotype ♀: Thailand, Chiang Mai region, Doi Suthep, 15.04.1991, J. Kjørandsen (ZMBN). Paratype: ♂, as for allotype (ZMBN).

Diagnostic characters. – Third palpomere with a distinct sensory pit; lateral ocelli widely separated from eye margin. Males with 4-5 black spine-like setae attached to the posterodorsal portion of tergite 9.

Etymology. – Named after the type locality, the mountain Doi Suthep.

Description

Male (n=2). – Total length 2.6-3.2 mm. Flagellum 1.22-1.28 mm, or 1.5 times as long as scutum and scutellum together.

Coloration. Head and antennae brown, mouthparts light brown. Thorax and abdomen brown. Legs yellowish to light brown.

Head. Median ocellus slightly smaller than laterals. Lateral ocelli separated from the eye margin for a distance about 4 times their diameter. Frons with 25-34 setae in front of ocelli. Frontal suture complete. Frontal tubercle broad, bilobate. Stipes with 7-10 setae. Fused face-postclypeus 0.9-1.0 times as long as broad, with 18-23 setae. Anteclypeus ovate, about 0.9 times as long as broad, with 31-42 setae. Relative

lengths of the palpomeres: 1 : 1.0 : 1.3-1.5 : 2.3-2.8 : 5.1-5.3. Sensory pit on third palpomeres distinct and deep. Lacinia tapered, about as long as first palpomere, with a few small trichia.

Thorax. Anepisternum with 8-9 setae situated anterodorsally. Katepisternum bare. Laterotergite with 6-7 setae. Mediotergite with 6-7 lateral and 2-4 posterior setae. Metakatepisternum bare.

Wings. Wing length 2.07-2.25 mm. Length to width 2.3. Sc 0.35-0.38 times as long as wing. Sc-r located in front of Rs. M-petiole slightly shorter than r-m. M-basis 0.53-0.55 times as long as CuA-petiole. CuA-ratios: 0.71-0.76 and 0.54-0.56. Anal vein well developed, 1.09-1.15 times as long as CuA-petiole.

Legs. Apical triangular, depressed area on fore tibia with one distinct row of setae, and 4-6 weak, thin setae above these. Ratio femur to tibia: 0.91-0.97; 0.93-0.97; 0.87-0.88. Ratio tibia to tarsus: 1.18-1.21; 1.58-1.59; 2.02-2.12. Spur lengths: 2.4-2.5; 2.8, 3.3-3.5; 2.4-2.6, 3.4-3.6.

Abdomen. Sternite 8 about 0.6 times as long as sternite 7, and 4.0 times as long as tergite 8.

Terminalia (figs. 7-9). Gonocoxites rather narrow, separated by a weakly sclerotized area medioventrally. Each gonocoxite with a small setose knob ventrobasally, and a thin, rounded rim above the gonocoxal

apodeme. Gonostylus with numerous dark furcated megasetae, and some longer tube-like setae ventrally. Two pairs of parameres present, the lateral pair less developed than the median. Median parameres partly fused with the basal portion of aedeagus, each thin and curved. Aedeagus small, not protruding beyond the median pair of parameres. Tergite 9 about as long as broad. 4-5 bristle-like setae present posterodorsally. Proctiger situated above the parameres and aedeagus. Hypoproct weakly sclerotized, with 8-9 setae posteriorly.

Female (n=1). – Total length 3.2 mm. Flagellum 0.89 mm, or about as long as scutum and scutellum together.

Coloration. As for males.

Head. Position of ocelli as in males. Frons with 29 setae in front of ocelli. Stipes with 10-12 setae. Fused face-postclypeus 0.9 times as long as broad, with 20 setae. Anteclypeus 0.9 times as long as broad, with 35 setae. Relative lengths of the palpomeres: 1 : 1.0 : 1.3 : 2.7 : 5.7.

Thorax. Anepisternum with 12 setae situated anterodorsally. Laterotergite with 6-7 setae. Mediotergite with 5-7 lateral and 3 posterior setae. Katepisternum and metakatepisternum bare.

Wings. Wing length 2.29 mm. Length to width 2.33. Sc 0.38 times as long as wing. Sc-r located slightly in front of Rs. M-petiole about as long as r-m. M-basis 0.60 times as long as CuA-petiole. CuA-ratios 0.83 and 0.68. A well developed, 1.00 times as long as CuA-petiole.

Legs. Apical triangular, depressed area on fore tibia with one row of setae, and no setae above these. Ratio femur to tibia: 0.95; 0.96; 0.88. Ratio tibia to tarsus: 1.16; 1.67; 2.06. Spur lengths: 2.3; 2.6, 3.4; 2.7, 3.6.

Terminalia (figs. 10, 11). Sternite 8 bearing two large and broad posterior lobes (gonocoxites 8) with numerous setae. A pair of well developed labia is present above and in between these lobes. Tergite 8 with some minute setae along posterior margin. Eight strong protuberances posterior of tergite 8, each with a very long, curved seta. The spermathecal ducts end separately in the gonopore. Epiproct reduced; hypoproct more or less triangular. A thin plate, sternite 10, is situated ventrally of the hypoproct. Cercus I elongated and separated to base; cercus II small, rounded.

DISCUSSION

As there have been no attempts to outline the phylogeny of the genus, it is difficult to comment on the systematic position of the three new species. Among the new species *S. fistulata* is similar to *S. nepalensis* Zaitzev, 1982, from Nepal, in having a well developed ventral lobe of the gonostylus. Furthermore, both

species have strongly reduced parameres. The presence of distinctly serrated setae along the posterior border of tergite 9 is a common feature of Holarctic species, present also in the three Nepalese species *S. admiranda* Zaitzev, 1982, *S. kashmirensis* Zaitzev, 1982 and *S. propria* Zaitzev, 1982, but absent in the species here described.

Among the 3 new species, *S. bilobata* and *S. suthepsensis* seem to be most closely related because of the presence of two pairs of parameres, a ventral protrusion where the two gonocoxites meet ventrally, and a rounded outgrowth close to the gonocoxal apodemes.

Judging from the present material, collected by use of sweep net and one Malaise trap operated for less than one week at one locality, specimens belonging to *Sciophila* do not appear particularly rare in the area. Lack of previous records of this genus from the Oriental region is thus probably best explained by the limited number of studies dealing with fungus gnats in this region.

ACKNOWLEDGEMENTS

My sincere thanks to Paul Beuk, Zoölogisch Museum, Amsterdam, and to E. J. van Nieukerken, National Museum of Natural History, Leiden, for commenting upon an earlier draft of the manuscript.

REFERENCES

- Brunetti, E. 1912. The Fauna of British India. Diptera Nematocera (excluding Chironomidae and Culicidae). – Reprinted (without year), Today & Tomorrow's Printers & Publishers, New Delhi, 582 pp +12 plates.
- Edwards, F. W. 1924. Notes on the types of Diptera (Mycetophilidae and Tipulidae) described by Mr. E. Brunetti. – Records of the Indian Museum 26: 291-307.
- Matile, L. 1989. Family Mycetophilidae. Pp. 135-145 in Evenhuis, N. L. (Ed.) Catalog of the Diptera of the Australasian and Oceanic Regions. – Bishop Museum Press and E. J. Brill. 1155 pp.
- Matile, L. 1990. Recherches sur la systématique et l'évolution des Keroplatidae (Diptera, Mycetophiloidea). – Mémoires du Muséum national d'Histoire Naturelle (Zoologie) 148: 1-682.
- McAlpine, J. F. 1981. Morphology and terminology – adults. Pp. 9-63 in McAlpine, J. F., Peterson, B. V., Shewell, G. E., Teskey, H. J., Vockeroth, J. R. & Wood, D. M. (Eds.) Manual of Nearctic Diptera. Vol.1. – Research Branch Agriculture Canada. Monogr. 27. Ottawa, Ontario.
- Papavero, N. 1978. Family Mycetophilidae. – A catalogue of the Diptera of the Americas south of the United States. 19E: 1-78. Museu de Zoologia, Universidade de São Paulo.
- Sæther, O. A. 1977. Female genitalia in Chironomidae and Other Nematocera: morphology, phylogenies, keys. – Bulletin of the Fisheries Research Board of Canada 197: 1-210.
- Tonnoir, A. L. 1929. Australian Mycetophilidae. –

- Proceedings of the Linnean Society of New South Wales
54: 584-614.
- Vockeroth, J. R. 1981. Mycetophilidae Pp. 223-247 in
McAlpine, J. F., Peterson, B. V., Shewell, G. E., Teskey,
H. J., Vockeroth, J. R. & Wood, D. M. (Eds.) Manual of
Nearctic Diptera. Vol.1. – Research Branch Agriculture
Canada. Monograph 27. Ottawa, Ontario.
- Zaitzev, A. I. 1982. Fungus gnats of the genus *Sciophila*
Meig. of the Holarctic. – Akademia Nauk USSR.
Moscow. 76 pp. (In Russian.)

Received: January 1995

Accepted: 15 June 1995