

## The Neotropical species of *Sciophila* MEIGEN (Diptera, Mycetophilidae)

[Die neotropischen Arten der Gattung *Sciophila* MEIGEN (Diptera, Mycetophilidae)]

by

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### Abstract

The four known Brazilian species of *Sciophila* MEIGEN, described but not figured by EDWARDS (1940), are redescribed and their male genitalia figured. Lectotypes are designated for three of these species. The Chilean species *S. ocreata* PHILIPPI, 1865 is treated similarly for comparison. A close relationship between these species is suggested. *Sciophila ocreata* is newly recorded for Juan Fernandez Island and is confirmed to be conspecific with a species recently found to be established in New Zealand.

### Key words

Diptera, Mycetophilidae, *Sciophila*, taxonomy, key to species, South America

### Zusammenfassung

EDWARDS (1940) beschrieb die vier bislang aus Brasilien bekannten Arten der Gattung *Sciophila* MEIGEN ohne Abbildungen. In vorliegender Arbeit werden diese Arten nachbeschrieben und die Genitalapparate der Männchen abgebildet. Es erfolgt die Festlegung von Lectotypen für drei der vier Arten. Aus Vergleichszwecken wird die chilenische *Sciophila ocreata* PHILIPPI, 1865 ebenfalls betrachtet. Vermutlich sind die Arten eng miteinander verwandt. *Sciophila ocreata* wird von Juan Fernandez Island erstmals gemeldet und die Art erweist sich als konspezifisch mit Individuen einer Spezies, die sich neuerdings in der Fauna Neuseelands etabliert hat.

### Stichwörter

Diptera, Mycetophilidae, *Sciophila*, Taxonomie, Bestimmungsschlüssel, Südamerika

### Introduction

It was recently discovered that three introduced species belonging to non-native genera of Mycetophilidae were becoming established in New Zealand (TOFT & CHANDLER 2004). Two of these (*Leia arsona* HUTSON, 1978 and *Sciophila parviareolata* SANTOS ABREU, 1920) were previously known from Europe and the Atlantic Islands, but the third was another *Sciophila* species which was evidently not one known from the Holarctic Region. Checking this against the literature on *Sciophila* species from other Regions suggested that it was most likely to be close to the species described from South America. This was mainly indicated by the short and emarginate tergite 9, a condition described for some of the species from this Region but not found in many species from other Regions. The Palaearctic species *S. varia* WINNERTZ, 1865 and the Chinese species *S. lobula* WU, 1995 have an emarginate tergite 9 but differ most obviously in the presence of strong setae on the lateral lobes of this tergite and in the much larger number of apically expanded and branched setae on the gonostylus. The Mexican species *S. arnaudi* ZAITZEV, 1982 has a short emarginate tergite 9 with only fine setae but again has a larger number of branched setae on the gonostylus (although in this case only 14 according to the figure by ZAITZEV 1982).

Fortunately material of six South American species was included in the collection of the Natural History Museum, London (BMNH) and it was quickly possible to confirm by comparison that the New Zealand material belonged to the Chilean species *S. ocreata* PHILIPPI as identified by FREEMAN (1951).

The genus *Sciophila* is richest in known species in the Holarctic Region and a revision of the species from that Region was provided by ZAITZEV (1982) who dealt with 81 species of which 13 were Holarctic, 42 Nearctic and 26 Palaearctic in distribution; of the Nearctic species one was from northern Mexico (Sonora) and the Palaearctic species included 4 from Nepal and one from Kashmir. Since then 8 more of the Nearctic species have been confirmed to be Holarctic. Also 15 further Palaearctic species have been described by BECHEV (1988), BLAGODEROV (1990, 1992), CHANDLER (1987, 1994, 2001), CHANDLER & BLASCO-ZUMETA (2001), KURINA (1991), MATILE (1983), POLEVOI (2001), ZAITZEV (1994) and ZAITZEV & ØKLAND (1994). The Chinese species were revised by WU (1995), who recognised 12 species of which 8 were described as new. Thus there are at least 104 species in the Holarctic Region (21 Holarctic, 34 Nearctic and 49 Palaearctic).

The Oriental and Afrotropical faunas are poorly known. SØLI (1995) described three species from Thailand and regarded the only previously described Oriental species, *S. bicolor* BRUNETTI (1912), based on two females from India, as a nomen dubium. SØLI (1997) dealt with the Afrotropical fauna of *Sciophila*, recognising 20 species in three species groups, 18 of them described as new. None of the species from these Regions has a strongly emarginate tergite 9. No species of *Sciophila* are known to be endemic to the Australasian Region.

PAPAVERO (1978) included 17 species under *Sciophila* in the Catalogue of Mycetophilidae of the Americas south of the United States, 10 of them from the Chilean subregion. However, there is doubt as to the identity or generic assignment of a majority of these as they had been described only briefly by earlier authors. FREEMAN (1951) discussed the species described from the Chilean subregion by WALKER (1837), BLANCHARD (1852), PHILIPPI (1865) and BIGOT (1888), making tentative suggestions as to their correct genus. In most cases this was *Mycomya* and only two species, *S. antarctica* WALKER and *S. ocreata* PHILIPPI (the latter based on his identification of fresh material in the BMNH collection) were retained by him in *Sciophila*. PAPAVERO (1978) provisionally retained eight other species of uncertain genus in *Sciophila* although one of these, *S. tristis* BIGOT, 1888 could not belong there as it lacks Sc1 according to the figure by BIGOT (1888).

Of the remaining seven species listed by PAPAVERO, only five are certainly correctly placed; of these EDWARDS (1940) described four from Brazil and SHAW (1940) one from Costa Rica. The two remaining are *S. paranensis* (LYNCH ARRIBALZAGA, 1892), described from both sexes from Argentina and probably correctly placed, and *S. popocatepetli* BELLARDI, 1859, based on a female from Mexico. Thus only six valid species of *Sciophila* can be certainly recorded from South America (two from the Chilean subregion and four Neotropical species from Brazil) and there is one further Neotropical species from Costa Rica.

FREEMAN (1951) stated that the genitalia of the holotype and only known specimen of *S. antarctica* WALKER, 1837, described from the Straits of Magellan, were damaged and figured what remained. This showed 8 long setae set on cones on the ventral margins of the gonocoxites, a structure not resembling any other known species of the genus. He identified two males and a female from Chile as *S. ocreata* for which he described and figured the gonostylus but did not mention the form of tergite 9. EDWARDS (1940) described the genitalia of the four Brazilian species, mentioning that tergite 9 was emarginate in some of them, but did not provide figures. SHAW (1940) figured only the gonostylus of the Costa Rican *S. cinctifemur* SHAW, which shows some resemblance to *S. ciliata* EDWARDS among the Brazilian species; however, *cinctifemur* was described as mainly yellow in colour and the form of tergite 9 was not mentioned.

Study of the type material of EDWARDS' species indicated that they are similar to each other in many respects but could be readily distinguished on structure of the male genitalia as well as

some external characters, as described by EDWARDS. These species and *S. ocreata* are re-described here and their genitalia figured. In addition to the specimens mentioned by FREEMAN (1951) from mainland Chile, the BMNH collection also included some specimens from Juan Fernandez Island, collected in 1951 and determined as *S. ocreata* by Paul FREEMAN in 1953. To fix the identity of these species, lectotypes are designated for the three species for which a type specimen was not indicated by EDWARDS.

The holotype of *S. antarctica* (in BMNH) has also been examined; it is a typical *Sciophila* species in external characters but no further conclusions could be drawn on the anomalous genital structure and more material will be necessary to establish its taxonomic position, so it cannot be considered further here.

### Diagnosis of Neotropical species of *Sciophila* MEIGEN

The five species treated here are all rather similar in size and appearance and in most respects are typical members of the genus *Sciophila*. They have the following characters in common: Mainly brownish in coloration with some paler yellowish markings, wing length 2.3–3.2mm. Palpus and antenna slender. Thorax with long bristling on mesonotum and scutellum, a group of short bristles on anepisternum and long setae on laterotergite and mediotergite. Wing with practically uniform covering of both short macrotrichia and minute microtrichia. All veins bear short setae throughout their length. Vein Sc1 ends in costa, with short vertical Sc2 (= sc-r) near its middle and ending in R close to base of Rs (may be just before or beyond). Portion of Rs before crossvein r-m short and vertical. Vein R4 usually present and vertical, parallel with base of Rs to form an almost rectangular small radial cell. Crossvein r-m is short and diagonal. Stem of median fork also short, this fork always long and complete. Posterior fork with a longer stem, its branches sometimes complete but anterior branch abbreviated basally in some species. Tergite 9 short and transverse with shallow to deep emargination medially; bearing only fine setae. Gonocoxites deeply divided medially, almost to base ventrally. Gonostylus with a ventral lobe bearing 3 long setae apically and long or short setae on other surfaces, and a dorsal lobe bearing 8–14 stout black setae, which are apically expanded into a number of slender branches.

The non-genitalic characters are in common with many other species of the genus. Some species lack microtrichia on the wing membrane but macrotrichia are always present. Presence of a small radial cell and a complete posterior fork are characteristic of most *Sciophila* species. Vein R4 may be more or less fused with the base of Rs or absent on one wing in occasional specimens. The anterior branch of the posterior fork may be abbreviated in some other species. The form of tergite 9 varies greatly in the genus and is diagnostic of many species. The modified setae on the gonostylus are also present in most species although varying greatly in size and number; in some Afrotropical species they are also present on tergite 9. Females were associated with some of the species by EDWARDS and females found in New Zealand are assumed to be *S. ocreata* but as with other members of this genus, few specific characters can be discerned and determination is dependent on association with males, on which the following key and descriptions are based.

### Key to males of *Sciophila* species of South America

- 1 Tergite 9 truncate apically, but only slightly emarginate (Figs 3, 5). Ventral lobe of gonostylus large and broadly rounded (Figs 1, 4) ..... 2

- Tergite 9 deeply emarginate medially, with apically rounded lateral lobes (Figs 8, 10, 12) ..... **3**
- 2** Wing (Fig. 13) with anterior branch of posterior fork abbreviated basally and vein R<sub>4</sub> absent. Gonostylus with modified setae deeply branched and strongly splayed (Fig. 4). Antenna with flagellomeres pale basally, dark apically ..... *cincticornis* EDWARDS
- Wing with posterior fork complete and R<sub>4</sub> present (as in Fig. 14). Gonostylus with modified setae not deeply splayed (Figs 1–2). Antenna with flagellomeres uniformly dark ..... *ciliata* EDWARDS
- 3** Tergite 9 with narrow lateral lobes and wide medial excavation (Fig.12). Gonostylus with dorsal and ventral lobes subequal (Fig. 11). Wing with posterior fork complete and R<sub>4</sub> present (Fig. 14) ..... *ocreata* PHILIPPI
- Tergite 9 more squat with broad lateral lobes (Figs 8, 10). Gonostylus with ventral lobe larger than the dorsal lobe bearing modified setae (Figs 6, 9) ..... **4**
- 4** Wing with posterior fork complete. Gonostylus with 14 modified setae (Figs 6–7) ..... *fidelis* EDWARDS
- Wing with anterior branch of posterior fork abbreviated basally. Gonostylus with 8 modified setae (Fig. 9) ..... *fractinervis* EDWARDS

***Sciophila ciliata* EDWARDS, 1940**

(Figs 1–3)

**Type material:** EDWARDS referred to 10 males, 9 females, “various dates”. From the syntypes in BMNH a male labelled Brasilien [= Brazil], Nova Teutonia, 27°11' B, 52°23' L, 1.8.1938, leg. F. PLAUMANN and labelled as a syntype by J. E. CHAINEY in 1996, is here designated lectotype.

**Description**

**Male. Head** dark brown, face yellowish. Palpus dark brown. Antenna with scape, pedicel and base of first flagellomere yellow, flagellum otherwise brown. Intermediate flagellomeres about 1.5 times as long as broad, with short pale pubescence little more than half diameter of flagellomeres in length.

**Thorax** dull brownish dorsally, paler on humeral areas and on pleura; bristling light brown. **Legs** yellow including all coxae but hind femur brownish apically. Tibial spurs and tarsi more brownish. **Wing** yellowish, with vein Sc beyond fork and radial sector brown. Vein Sc2 level with base of Rs (at middle of radial cell according to EDWARDS). R4 present, forming quadrate radial cell. Stem of median fork shorter than r-m. Base of posterior fork level with or just beyond middle of median fork, so posterior fork rather short (EDWARDS noted that it was shorter than in most European species) with branches complete. Haltere yellow with brown knob.

**Abdomen** brown, with tergites 3–7 yellow on up to basal half (EDWARDS stated hind margins of tergites sometimes narrowly and indistinctly pale). Tergite 9 (Fig. 3) small and short, its posterior margin only shallowly emarginate with a blunt pale coloured median projection. Gonostylus (Figs 1–2) with a small dorsal lobe bearing 8 relatively short modified setae and a large broadly rounded ventral lobe, which is strongly setose, with the setae on its margins almost forming a regular comb.

Wing length 3.0–3.2 mm.

***Sciophila cincticornis* EDWARDS, 1940**

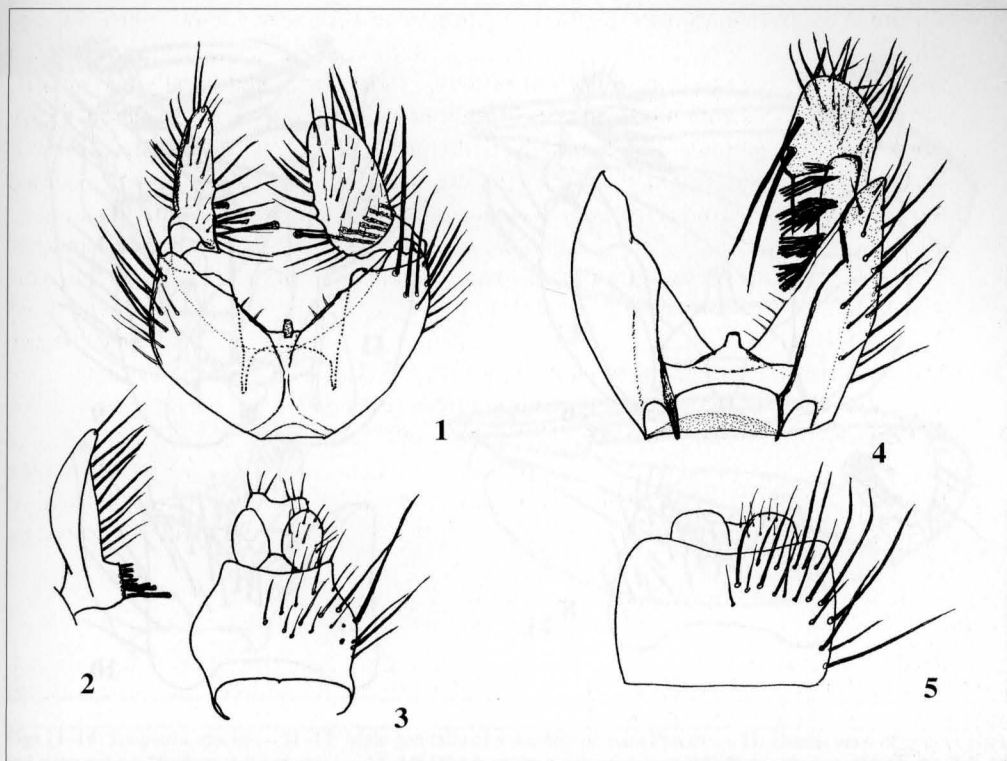
(Figs 4–5, 13)

**Type material:** EDWARDS stated 6 males, 6 females, various dates. From the syntypes in BMNH a male, of which he had made a genitalia preparation in Canada balsam, labelled Brasilien [= Brazil], Nova Teutonia, 27°11' B, 52°23' L, 27.9.1938, leg. F. PLAUMANN and labelled as a syntype by J. E. CHAINEY in 1996, is here designated lectotype.

**Description**

**Male. Head** greyish, face grey dusted on yellowish ground. Palpus dark brown. Antenna with scape and pedicel yellow; flagellomeres all yellow on basal two fifths to a half, dark brown apically, flagellomeres 12–13 more narrowly yellow.





**Figs 1–5:** Male genitalia of *Sciophila* species: – 1–3: *S. ciliata* EDWARDS: – 1: Ventral view of gonocoxites and gonostyli; – 2: Internal lateral view of gonostylus; – 3: Tergite 9 and cerci. – 4–5: *S. cincticornis* EDWARDS: – 4: Dorsal view of gonocoxites and gonostyli; – 5: Tergite 9 and cerci.

**Thorax** brown, grey dusted; bristling yellow. **Legs** yellow including all of coxae and hind femur. **Wing** (Fig. 13) yellowish with Rs and r-m darker than other veins. Vein Sc2 meets R distinctly basal to base of Rs. Vein R4 absent (on both wings in all examples seen by EDWARDS). Stem of median fork about equal to r-m. Posterior fork begins not far beyond level of base of median fork, but anterior branch incomplete basally. Haltere yellow with brown knob.

**Abdomen** dark brown. Tergite 9 (fig. 5) short and broad, only slightly emarginate medially. Gonostylus (Fig. 4) with dorsal lobe elongate, with 8 modified setae arranged medially in 3 pairs, these setae strongly splayed apically so that the many slender branches are more obvious, ventral lobe broad with the 3 internally directed setae strong.

Wing length 2.9 mm (not stated by EDWARDS).

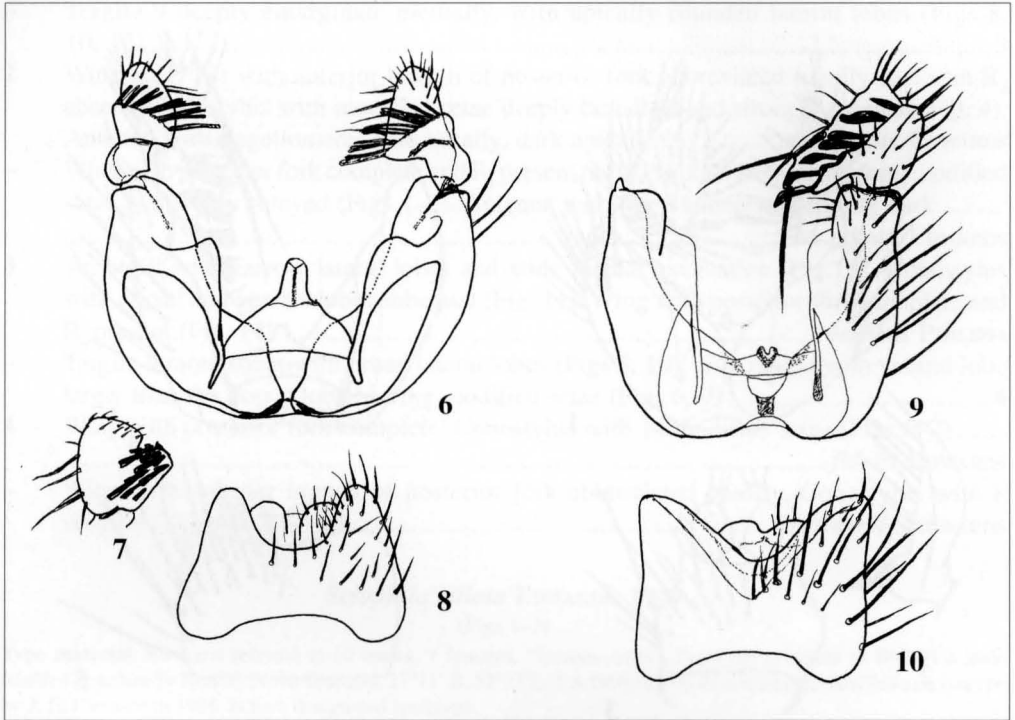
### *Sciophila fidelis* EDWARDS, 1940

(Figs 6–8)

**Type material:** EDWARDS based this species on 2 males and 2 females but did not refer to the female in his description. He indicated that the male dated 1.8.1938 was the “type” and this specimen bears “Type” and “Holotype” labels (BMNH).

#### **Description**

**Male. Head** dark brown, face slightly yellowish. Palpus blackish. Antenna with scape, pedicel and base of first flagellomere yellow, flagellum otherwise brown. Intermediate flagellomeres longer, about twice as long as broad, with short necks more distinct and whitish pubescence longer, up to diameter of flagellomeres in length.



**Figs 6–10:** Male genitalia of *Sciophila* species: – 6–8: *S. fidelis* EDWARDS: – 6: Dorsal view of gonocoxites and gonostyli; – 7: Internal view of gonostylus; – 8: Tergite 9 and cerci. – 9–10: *S. fractinervis* EDWARDS: – 9: Dorsal view of gonocoxites and gonostyli; – 10: Tergite 9 and cerci.

**Thorax** dull brownish dorsally, slightly paler on humeral areas and propleura; bristling light brown. **Legs** yellow with mid and hind coxae darkened apically and tip of hind femur narrowly darkened (according to EDWARDS; in holotype only fore femora and one tibia present, mid and hind legs missing). **Wing** similar to *S. ciliata*, with vein Sc beyond fork and radial sector brown. Posterior fork begins before level of middle of median fork, with both branches complete. Haltere yellow with brown knob. **Abdomen** dark brown. (tergites 1–4 missing from preparation in Canada balsam made by EDWARDS). Tergite 9 (Fig. 8) small and finely setose, with a deep median emargination, lacking the median projection found in *S. ciliata*. Gonostylus (Figs 6–7) with dorsal lobe longer than in *S. ciliata* and with 14 modified setae, ventral lobe not much longer and broadly rounded (with a patch of short stiff setae on upper margin at tip and with 3 long inwardly directed setae below). Wing length 2.6 mm (2–2.5 mm in EDWARDS).

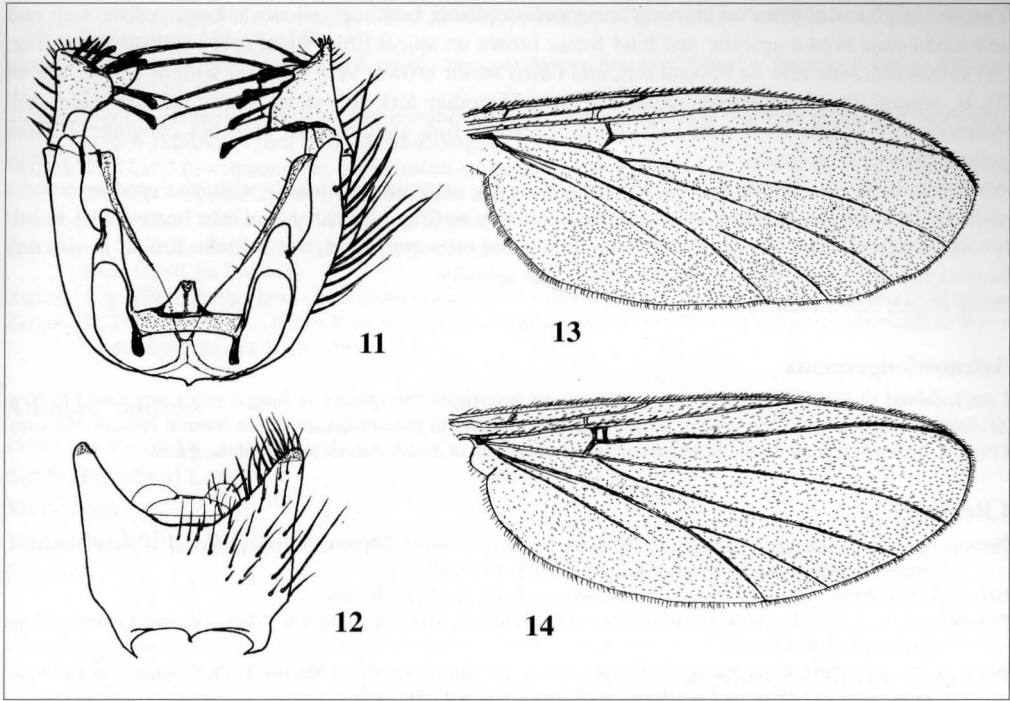
### *Sciophila fractinervis* EDWARDS, 1940

(Figs 9–10)

**Type material:** EDWARDS only referred to 10 males, 6 females, various dates. From the syntypes in BMNH a male labelled Brasilien [= Brazil], Nova Teutonia, 27°11' B, 52°23' L, 27.5.1937, leg. F. PLAUMANN and labelled as a syntype by J. E. CHAINEY in 1996, is here designated lectotype.

#### Description

**Male. Head** dark grey above, face yellowish. Palpus blackish. Antenna with scape, pedicel and base of first flagellomere yellowish; flagellomeres 2–5 indistinctly yellowish at base, darker distally, remaining flagellomeres all dark. Intermediate flagellomeres nearly twice as long as broad, with short but distinct necks and bearing pale pubescence nearly as long as their diameter.



**Figs 11–14:** *Sciophila* species: – 11–12: Male genitalia of *Sciophila ocreata* PHILIPPI: – 11: Dorsal view of gonocoxites and gonostyli; – 12: Tergite 9 and cerci. – 13–14: Wings of *Sciophila* species: – 13: *S. cincticornis* EDWARDS; – 14: *S. ocreata* PHILIPPI.

**Thorax** dark greyish brown, not much paler at sides; bristling yellowish brown. **Legs** yellow including all of coxae and hind femur. **Wing** with radial veins brown, but not much darker than other veins. Radial cell more quadrate than in other species, with Sc2 situated at its basal third. Stem of median fork a little longer than radial cell. Posterior fork begins at a level before the middle of the median fork, but its anterior branch is weak and incomplete basally. Haltere yellow with brown knob.

**Abdomen** brown, with tergites narrowly paler on apical and basal margins. Tergite 9 (Fig. 10) similar to *S. fidelis*, short and emarginate medially but less setose with sparser bristling. Gonostylus (Fig. 9) with dorsal lobe bearing 8 modified setae, the ventral lobe broader and with longer and finer hairs apically than in *S. fidelis* and the 3 long internally directed setae well developed.

Wing length 2.3–2.6mm.

**Female** (described by EDWARDS as having antenna shorter than in male, flagellomeres with shorter pubescence and without necks, the first few largely pale but the rest all dark.)

### *Sciophila ocreata* PHILIPPI, 1865

(Figs 11–12, 14)

**Material:** 1 male, CHILE, Los Andes, 1–2.i.1977, leg. F. & M. EDWARDS, BM1927-63; 1 male, Juan Fernandez, Masatiera, 24.iii.1951, leg. P. G. KUSCHEL; 2 males, same data, 4.i.1952; 1 male, Juan Fernandez, Masatiera, Plazoleta, 200 m, 22.iii.1951, leg. P. G. KUSCHEL (BMNH); 2 males, 1 female, New Zealand, AK, ManurewaWiti, 92 Langley Road, 20 m, Mini Malaise trap, 20.i–3.iii.2003, leg. R. J. TOFT & S. HONA (author's collection).

#### Description

**Male. Head** dark brown dorsally, face yellowish brown. Palpus black. Antenna with scape, pedicel and base of first flagellomere brownish yellow, flagellum otherwise dark brown. Intermediate flagellomeres about twice as long as broad, with pale pubescence about two thirds diameter of flagellomere.

**Thorax** dark brown, paler on humeral areas and propleura; bristling yellowish. **Legs** yellow, with mid and hind coxae brown apically and hind femur brown on apical fifth. Tibial spurs yellow. **Wing** (Fig. 13) yellowish, with vein Sc beyond fork and radial sector brown. Vein Sc<sub>2</sub> level with or before base of Rs. R<sub>4</sub> present, forming quadrate radial cell. Base of median fork very short, not longer than radial cell. Posterior fork begins level with basal third of median fork and has both branches complete. Haltere yellow, brownish on knob.

**Abdomen** blackish. Tergite 9 (Fig. 12) short, strongly emarginate medially without a median process and with rounded finely setose lobes laterally. Gonostylus (Fig. 11) with dorsal lobe bearing 8–9 apically expanded and branched setae, of which the medial ones are paired; ventral lobe similar in size and bearing two thickened and one weaker long setae apically.

Wing length 2.5–2.8mm.

### Acknowledgements

I am indebted to Richard TOFT for the opportunity to investigate the species of fungus gnats introduced to New Zealand, which prompted the present study. I am also grateful to the authorities of the Natural History Museum, London, for kindly enabling me to examine the type material of South American *Sciophila* species.

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### Kurzmitteilung – Short note

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### Faunistik - Faunistics

Paläarktische Region – Palaearctic Region

## Faunistic and taxonomic notes on European Anisopodidae (Diptera)

[Faunistische und taxonomische Bemerkungen über europäische Anisopodidae (Diptera)]

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Neuchâtel (Switzerland)

### Introduction

The present records are gathered from various material collected in recent years by the author or received for identification. The only records included are those representing faunistic novelties in regard to the Fauna Europaea treatment of the family (DE JONG 2005).

### Depository of specimens

CGBD: collection Gerhard BÄCHLI, Dietikon, Switzerland  
CPCS: collection Peter J. CHANDLER, Slough, Berks, UK  
ETHZ: Entomologische Sammlung, Eidgenössische Hochschule  
Zürich, Switzerland  
MHNN: Muséum d'histoire naturelle, Neuchâtel, Switzerland  
MMFM: Museo municipal de Funchal, Madeira  
UMAF: Universidade da Funchal, Madeira

### New faunistic records

#### *Sylvicola cinctus* (FABRICIUS, 1787)

**Material studied.** BOSNIA-HERCEGOVINA. Dobro Polje, 1080 m, 25–28.VII.1984, 5 ♀♀, G. BÄCHLI; Tientište, 554 m, 22–25.VII.1984, 1 ♂, 2 ♀♀, G. BÄCHLI, all CGBD. – GREECE. Lakonias, Tayetos Oros, Paliopaneya, 7 km