

# FRAGMENTA FAUNISTICA

Fragm. faun.	Warszawa, 30.12.2003	46	203–208
--------------	----------------------	----	---------

R. Henry L. DISNEY

## Revision of *Gymnoptera* LIOY (Diptera, Phoridae)

**Abstract:** The six known species are reduced to three by the proposal of *G. orientalis* (MEIJERE), *G. molluscovora* (BOHART) and *G. neotropica* BORGMEIER as synonyms of *G. simplex* (BRUES). A key to both sexes of the three species now recognised is provided.

**Key words:** *Phoridae*, *Gymnoptera*, new synonyms, key

**Author's address:** University Museum of Zoology, Downing Street, Cambridge CB2 3EJ, UK

The distinctive scuttle fly genus *Gymnoptera* LIOY is unlikely to be confused with any genus other than *Conicera* MEIGEN and *Darwiniphora* SCHMITZ. Furthermore, the latter is probably only a subgroup within *Conicera* (BORGMEIER 1963). The males of both differ from *Gymnoptera* by their characteristic surstyli (figured in DISNEY 1983 and 1994). Both sexes of *Gymnoptera* differ in having only one dorsal bristle, instead of two, on the hind tibia.

*Gymnoptera* currently includes two European species and four tropical species (BORGMEIER 1968). The former were keyed by DISNEY (1983), but the separation of the females did not allow for a greater degree of variation than was evident in the available material at the time. This is remedied below.

The four tropical species were all poorly described in the light of current knowledge. Furthermore they were all described from one sex only. The missing sexes of two were subsequently described. In the first case (SCHMITZ 1929) the first tropical male was described. In the second case (BORGMEIER 1960) the subsequently described female was not compared with those females previously described. Furthermore BORGMEIER (1969) described the female again as if for the

first time, evidently forgetting that he had already done so, and again failed to compare it with the previously described females. COLYER (1956) attempted to make sense of this situation by making careful wing measurements of limited material of voucher specimens of the three tropical species then known. While he reported small differences, his samples were too small for these to be of statistical significance. Prompted by the acquisition of three females and a male recently collected in the Seychelles, in this paper I reconsider the problem where Colyer left off for lack of sufficient material, particularly the lack of associated males and females.

*Gymnoptera simplex* (BRUES)

*Conicera simplex* BRUES 1905: 553 (female only). SCHMITZ 1927: 76. Male, SCHMITZ 1929: 123.

*Syneura orientalis* MEIJERE 1907: 255 (female only). SCHMITZ 1929: 123. **Syn. n.**

*Parafannia molluscovora* BOHART 1947: 414 (female only). COLYER 1956: 238. **Syn. n.**

*Gymnoptera neotropica* BORGMEIER 1958: 307 (male only). Female, BORGMEIER 1960: 287 and 1969: 6. **Syn. n.**

I have examined the holotype female of *G. orientalis* from a rat corpse in Java. It is the same species as the females from the Seychelles collected by Dr Justin Gerlach (see below). I have likewise examined the holotype female and a paratype female of *G. molluscovora* from Guam. These also prove to be *G. simplex*.

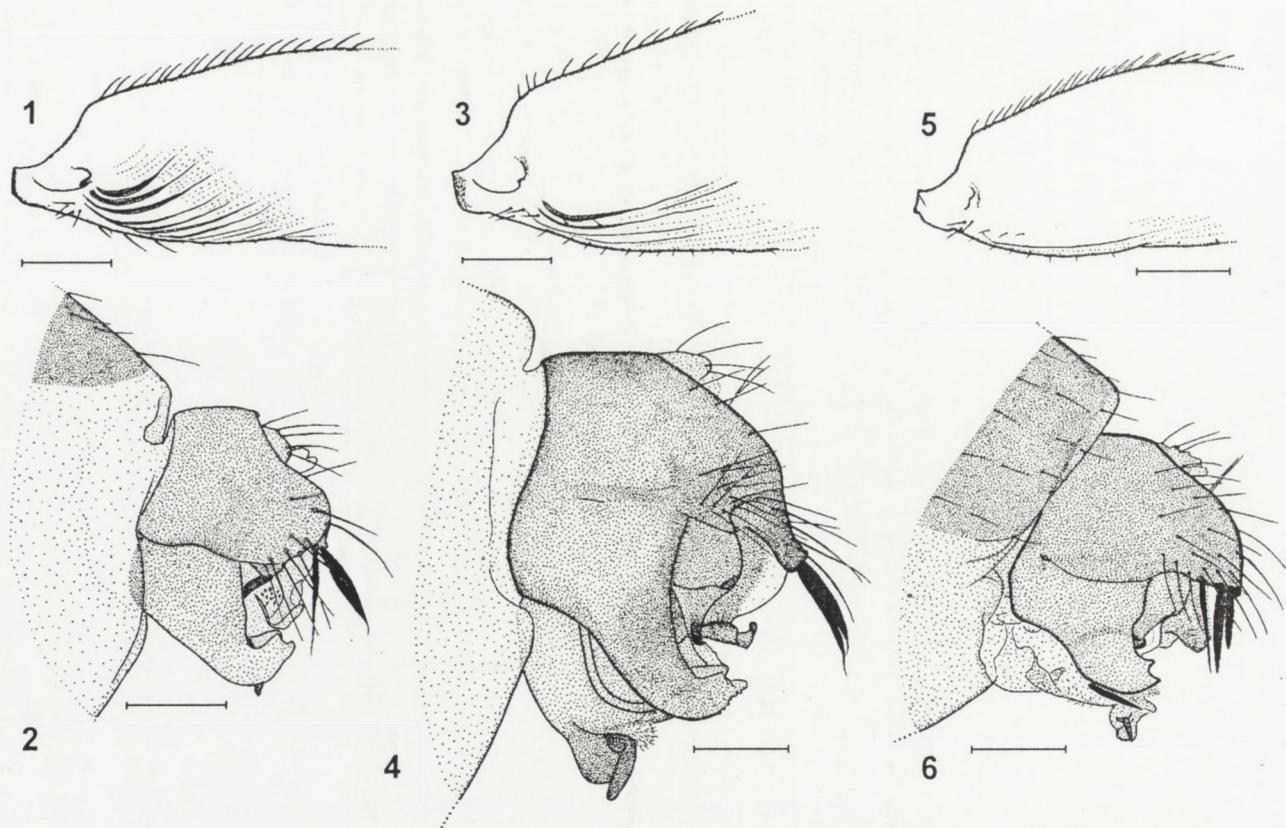
Colyer's specimens were slide mounted in De Faure's medium. Unfortunately he employed 22.5 mm diameter coverslips for the whole mounts of the flies. These over large coverslips have caused considerable distortion. His use of 16 x 16 mm coverslips for the wings while excessive have been acceptable, due to the two dimensional nature of the wings. His material comprises a male and female of *G. simplex* from the Bismarck Archipelago; a male and female of *G. orientalis* from Java; and a female of *G. molluscovora* from Guam. Both males are conspecific with the male from the Seychelles and his three females are likewise conspecific.

BORGMEIER's (1958, 1960, 1969) descriptions of *G. neotropica*, especially his figure of the male hypopygium, provide no distinctions from *G. simplex* other than occurrence in a different biogeographic region.

I formally propose the synonymy of *G. molluscovora*, *G. neotropica* and *G. orientalis* with *G. simplex*.

**New material examined.** 2 females, Nigeria, Calabar, 1–2 February 1985, at dead snails, *Archachatina marginata* (SWAINSON), J. Reid (Cambridge University Museum of Zoology – 19–5). 1 male, 3 females, Seychelles, Conception Is., 7 October 2002, on rotten potatoes, J. Gerlach (CUMZ – 8–148).

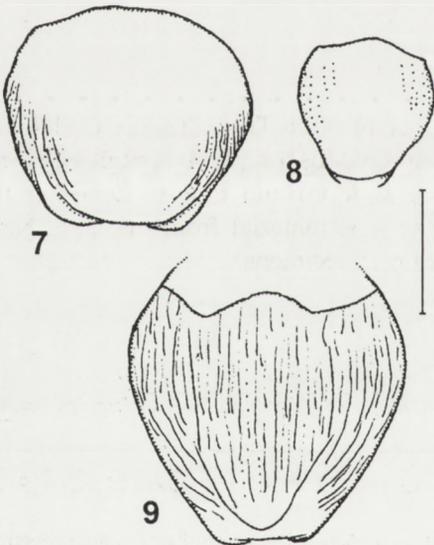
**Natural history.** This species has previously been reared from dead molluscs (BOHART 1947), including from *Achatinia fulica* BOWDICH (BEAVER 1987), and also dead beetles, including *Scarabeidae* and *Calosoma* sp. (*Carabidae*) (BORGMEIER 1960, 1969). MEIJERE (1907) reported females on carrion and the female from Java referred to above was from a dead rat.



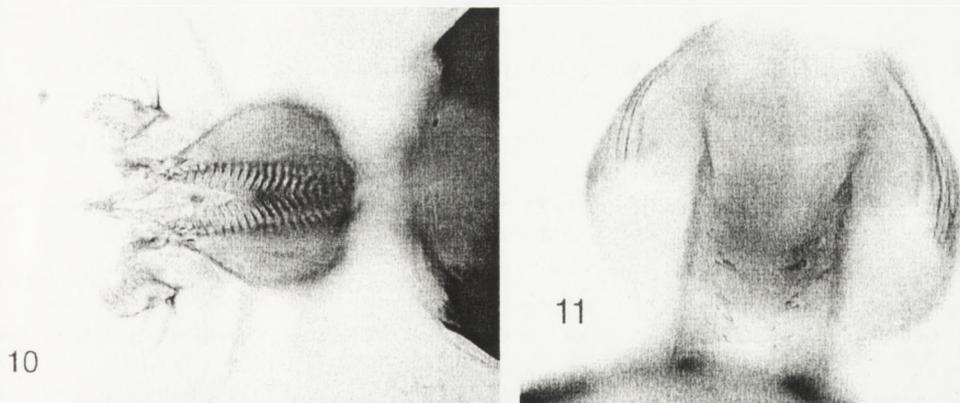
Figs 1–6. *Gymnoptera* males, posterior faces of bases of hind femora and left faces of hypopygia. 1–2 – *G. longicostalis*, 3–4 – *G. vitripennis*, 5–6. *Gymnoptera simplex*, Scale bars = 0.1 mm.

KEY TO SPECIES OF GYMNOPTERA

- 1. Male ..... 2
- Female ..... 4
- 2. Posterior face of hind femur with several furrows in basal third (Figs 1 and 3). The two thick spines of posterolateral region of left side of epandrium with pale, finely tapered, hair-like tips (Figs 2 and 4) ..... 3
- Hind femur with a single furrow at base (Fig. 5). The tips of the thick pair of spines of posterolateral region of epandrium with very short points only (Fig. 6) ..... *simplex* (BRUES)
- 3. Furrows at base of hind femur more numerous, the upper ones being directed more dorsally (Fig. 1). Hypopygium as in Fig. 2 ..... *longicostalis* SCHMITZ
- These furrows fewer and all directed more distally (Fig. 3). Hypopygium as in Fig. 4 ..... *vitripennis* (MEIGEN)
- 4. Labrum broader than long and with ridges of dorsal face restricted to outer thirds of distal half (Fig. 7); and hair combs of hypopharynx less than 10 each side and with far fewer hairs in each (Fig. 11) ..... *longicostalis* SCHMITZ
- Labrum at least as broad as long or longer than broad (Figs 8-9) and with fine ridges, which are sometimes very fine (Fig. 8), running the full length of dorsal face; and the two, opposed, rows of hair combs of hypopharynx (viewed by focussing down through labrum) number at least 20 each side (Fig. 10) ..... 5
- 5. Labrum much larger and with ridges on dorsal face of labrum stronger (Fig. 9). Costal section 2 lacks the dorsal row of costal cilia ..... *vitripennis* (MEIGEN)
- Labrum relatively small and ridges on dorsal face of labrum weaker (Fig. 8). Costal section 2 with at least six costal cilia in dorsal row ..... *simplex* (BRUES)



Figs 7-9. *Gymnoptera* females, labrum. 7 - *G. longicostalis*, 8 - *G. simplex*, 9 - *G. vitripennis*. Scale bar = 0.1 mm.



Figs 10–11. *Gymnoptera* females, hair combs of hypopharynx viewed by focussing down through labrum. 10 – *G. simplex*, 11 – *G. longicostalis*.

#### DISCUSSION

While *Gymnoptera simplex* is evidently a widely distributed breeder in small carrion in the tropics, the two European species are associated with the nests of social bees and wasps (DISNEY 1994). Thus *G. vitripennis* has been recorded in the nests of Vespidae, *Vespa crabro* L., *Paravespula germanica* (FABRICIUS) and *P. vulgaris* (L.), and *G. longicostalis* in nests of *Bombus terrestris* L. (not in sense proposed by DAY 1979, see PRYS-JONES & CORBET 1991) and *B. lucorum* (L.) (SCHMITZ, 1953).

#### ACKNOWLEDGEMENTS

My studies of *Phoridae* are funded by the Isaac Newton Trust (Trinity College, Cambridge). I am grateful to Dr H. de Jong (Zoölogisch Museum, Universiteit van Amsterdam), Nigel Wyatt (Natural History Museum, London) and also to Dr Brian Brown (Natural History Museum, Los Angeles; but for type material from the U. S. National Museum currently in his care) for the loan of critical specimens.

#### REFERENCES

- BEAVER R. A. 1987. Biological studies of non-muscid flies (Diptera) bred from mollusc carrion in Southeast Asia. *Japanese J. Sanit. Zool.* 38: 187–95.
- BOHART G. E. 1947. The phorid flies of Guam. *Proc. U. S. Natl Mus.* 96: 397–416.
- BORGMEIER T. 1958. Neue Beitrage zur Kenntnis der neotropischen Phoriden (*Diptera, Phoridae*). *Studia Ent., Petropolis* 1: 305–406.
- BORGMEIER T. 1960. Geflugelte und ungeflugelte Phoriden aus der neotropischen Region, nebst Beschreibung von sieben neuen Gattungen (*Diptera, Phoridae*). *Studia Ent., Petropolis* 3: 257–374.
- BORGMEIER T. 1963. New or little known *Coniceromyia*, and some other Neotropical and Paletropical *Phoridae* (*Diptera*). *Studia Ent., Petropolis* 6: 449–80.
- BORGMEIER T. 1968. A catalogue of the *Phoridae* of the world (*Diptera, Phoridae*). *Studia Ent., Petropolis* 11: 1–367.

- BORGMEIER T. 1969. Bredin-Archbold-Smithsonian Biological Survey of Dominica: The *Phoridae* of Dominica (*Diptera*). Smithsonian Contrib. Zool. 23: 1-69.
- BRUES C. T. 1905. *Phoridae* from the Indo-Australian region. Ann. Hist.-Nat. Mus. Natl. Hung. 3: 541-555.
- COLYER C. N. 1956. A new species of *Conicera* (*Diptera: Phoridae*) from Hawaii, with observations on the genera *Parafannia* Bohart and *Gymnoptera* Lioy. Proc. Hawaiian Ent. Soc. 16: 232-40.
- DAY M. C. 1979. The species of *Hymenoptera* described by Linnaeus in the genera *Sphex*, *Chrysis*, *Vespa*, *Apis* and *Mutilla*. Biol. J. Linn. Soc. 12: 45-84.
- DISNEY R. H. L. 1983. Scuttle flies *Diptera, Phoridae* (except *Megaselia*). Handbk. Ident. Br. Insects 10(6): 1-81.
- DISNEY R. H. L. 1994. Scuttle Flies: The *Phoridae*. Chapman & Hall, London, xii + 467 pp.
- MEIJERE J. C. H. de 1907. Studien über südostasiatische Dipteren. I. Tjds. Ent. 50: 196-264.
- PRŮS-JONES O. E. & CORBET S. A. 1991. Bumblebees. Naturalists' Handbooks. 6. Richmond Publishing Co. Ltd, London, 92 pp.
- SCHMITZ H. 1927. Revision der Phoridengattungen, mit Beschreibung neuer Gattungen und Arten. Nat. Maandbl. 16: 30-39, 45-50, 59-68, 72-79, 92-100, 110-116, 128-132, 142-148, 164, 176.
- SCHMITZ H. 1929. Revision der Phoriden. Ferd. Dummlers, Berlin, 211 pp + Taf I-II.
- SCHMITZ H. 1953. *Phoridae*. In: Lindner E (ed.), Die Fliegen der palaearktischen Region, 4(33) (Lieferung 171): 273-320 (1952).

## STRESZCZENIE

[Tytuł: Rewizja rodzaju *Gymnoptera* LIOY (*Diptera, Phoridae*)]

W wyniku rewizji, z sześciu znanych dotychczas gatunków rodzaju *Gymnoptera* LIOY, trzy: *G. orientalis* (MEIJERE), *G. molluscovora* (BOHART) i *G. neotropica* BORGMEIER okazały się synonimami tropikalnego *G. simplex* (BRUES). Dwa pozostałe, europejskie gatunki to *G. vitripennis* (MEIGEN) i *G. longicostalis* SCHMITZ. Dla wszystkich trzech opracowano klucz do oznaczania zarówno samców, jak i samic.