

A FEMALE SAND FLY (DIPTERA: PSYCHODIDAE – PHLEBOTOMINAE)
SIMILAR TO *BRUMPTOMYIA SPINOSIPES* (FLOCH & ABONNENC, 1943)

PAUL WILLIAMS

Departamento de Parasitologia, Instituto de Ciências Biológicas da Universidade Federal de Minas Gerais,
Caixa Postal 2486, 31 270 Belo Horizonte, MG, Brasil

A description is given of a female sand fly (Diptera: Psychodidae – Phlebotominae) similar to Brumptomyia spinosipes (Floch & Abonnenc, 1943).

Key words: Diptera – Psychodidae – Phlebotominae – *Brumptomyia* – *spinosipes* – morphological description

Brumptomyia spinosipes (Floch & Abonnenc, 1943) is the only member of *Brumptomyia* França & Parrot, 1921, known from the female only. The only available description is that of Floch & Abonnenc (1943), republished (with a few additions and amendments) by Floch & Abonnenc (1952).

The collection of phlebotomine sand flies in the British Museum (Natural History) – BM (NH) – has a single slide-mounted specimen. In the upper left corner of the slide, there is a 1.3 x 0.7cm white label bearing, in print: “Ex Theodor/collection/BM 1981-152”. To the right of the coverslip, there is a 2.3 x 1.7cm white label bearing, in handwriting: “*P. spinosipes*/♀/French Guyana/Floch”. It is assumed that the handwriting is that of Professor O. Theodor. It is also assumed that the name “Floch” on the handwritten label indicates that Professor Theodor received the specimen from Dr H. Floch, one of the describers of the species. The BM(NH) specimen is not a type, but it can be considered as a well-authenticated voucher specimen of the species.

When a detailed examination was made of the BM(NH) specimen, it was found to differ in several respects from the descriptions published by Floch & Abonnenc (1943, 1952). The differences are mostly trivial but one, concerning the spermathecal ducts, is sufficiently interesting to warrant a detailed description of the specimen.

In presenting the description, it is assumed that the BM(NH) specimen represents an anom-

alous form of *B. spinosipes* or that the unusual form of the spermathecal duct was misinterpreted by Floch & Abonnenc (1943, 1952). Whenever possible, reference is made to both members of paired structures.

Brumptomyia spinosipes (Floch & Abonnenc, 1943)

Phlebotomus spinosipes Floch & Abonnenc, 1943 – *Institut Pasteur de la Guyane française et du Territoire de l'Inini*, Publication N° 61: 16-18 (♀). Type locality: not designated. Type material: deposited at Institut Pasteur de Guyane Française, but present whereabouts unknown. Floch & Abonnenc, 1952 – “Faune de l'Union française XIV”: 42 (♀ in key), 49 (Plate I, Fig. 3), 178 (♀), 179 (Fig. 78).

Description of the BM(NH) specimen (Fig.)

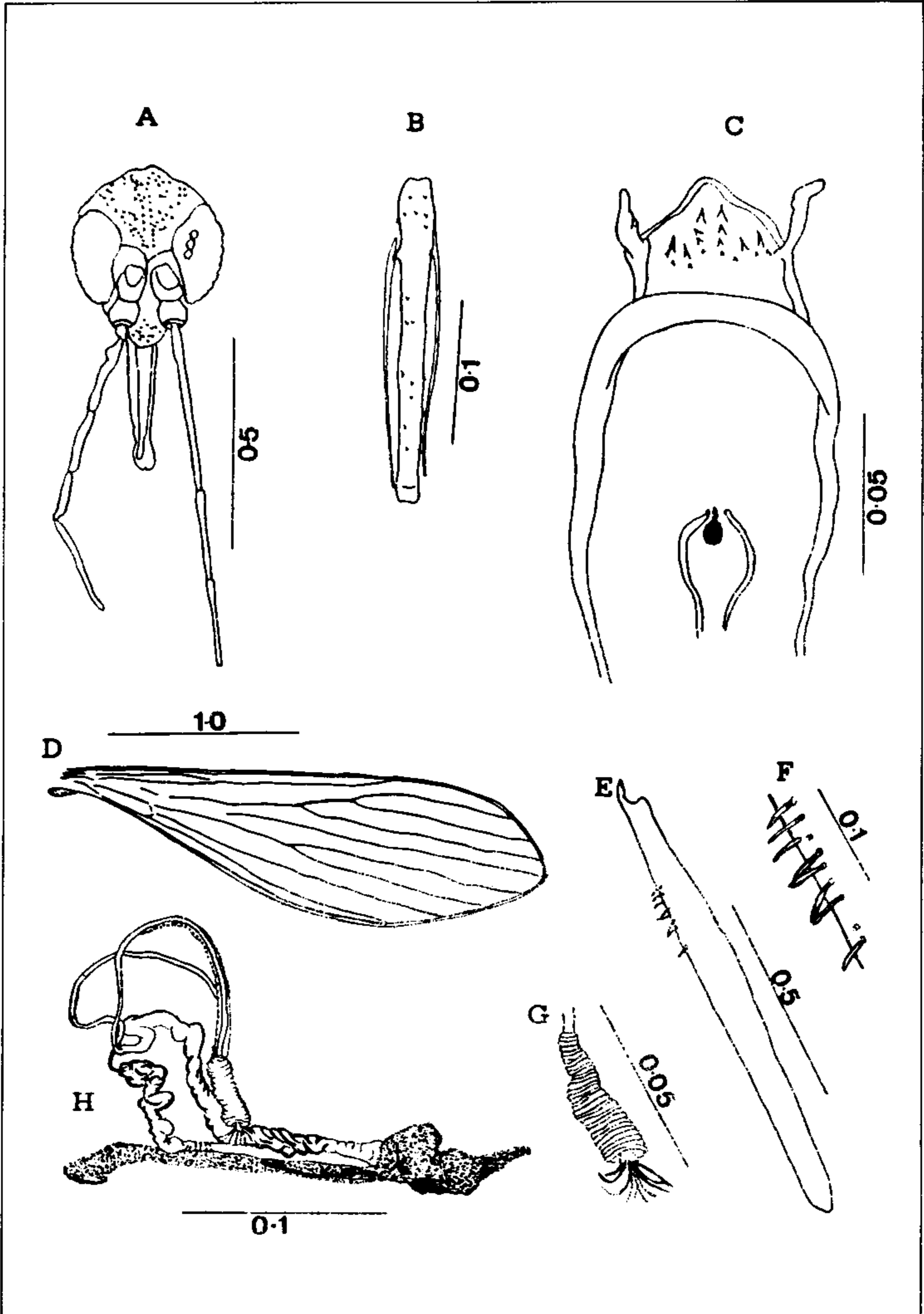
Large, pale sand fly: interocular suture complete.

Head height, including clypeus: 0.43mm; maximum width of head: 0.35mm; eye height: 0.25/0.24mm; eyes separated by a space of 0.10mm, equivalent to the diameter of five eye facets. Clypeus: 0.12mm long. Labrum, from the distal margin of the clypeus: 0.27mm long. Lengths of flagellomeres: I – 0.40/0.41mm; II – 0.21/0.22mm; III – 0.21/0.22mm; IV – 0.19/0.19mm. Other flagellomeres missing from both antennae. Flagellomere I extending slightly beyond the distal tip of the labrum. Ascoids, each with a short posterior spur, paired on flagellomeres I-IV. On flagellomere II, inner ascoid (visible on one only) arising at 0.03mm from the proximal articulation, 0.18mm long and with the posterior spur not clearly visible; outer ascoid arising at 0.04/0.05mm from the proximal articulation, 0.16/

This work was financed by Conselho Nacional de Desenvolvimento Científico e Tecnológico (CNPq).

Received February 1, 1988.

Accepted May 31, 1988.



Brumptomyia ?spinosipes (Floch & Abonnenc, 1943), female A: head and appendages. B: flagellomere II. C: cibarium. D: wing. E: hind femur. F: armature of hind femur. G: spermatheca. H: spermatheca, spermathecal ducts, genital fork. Scale lines in mm.

0.16mm long, with posterior spurs slightly less than 0.01mm (about 0.008/0.008mm). Palpal length: 0.73/0.59mm, one palp with an incomplete palpomere 5. Complete palp extending almost to the middle of flagellomere III and with a palpal formula of 1-4-2-3-5. Lengths of palpomeres: 1 – 0.06/0.05mm; 2 – 0.14/0.12mm; 3 – 0.17/0.17mm; 4 – 0.12/0.10mm; 5 – 0.24/0.15mm (incomplete). Palpal sensillae (Newstead's scales) not visible but their sockets, on one palpomere 3, situated between 0.04 and 0.08mm from the proximal articulation. Cibarium with a small salivary pump (0.03mm long, 0.02mm at its widest), a complete cibarial arch (flared laterally and extending, medianly, almost to the level of the cibarial teeth), armed only with horizontal teeth, and with a pronounced posterior bulge. Cibarial armature consisting of two median, longitudinally arranged rows, each with four teeth, with two large teeth on each side of the median rows and, anteriorly, scattered denticles. Pharynx 0.20mm long, 0.09mm at its broadest, with smooth ridges posteriorly.

Thorax, measured from the anterior edge of the mesonotum to the posterior margin of the scutellum: 0.63mm long. Mesonotum lightly infuscated, only slightly darker than the pale pleura. Pleura with 15/12 upper and 6/6 lower episternal setae. Wing length: 2.56mm; maximum wing width: 0.80mm; ratio of wing length: maximum width – 2.86:1. Lengths of wing sections: R_2 (*alpha*) – 0.83mm; $R_2 + 3$ (*beta*) – 0.29mm; $R_2 + 3 + 4$ (*gamma*) – 0.34mm; R_1 rip (*delta*) – 0.21mm. Wing pattern: *alpha* > *gamma* > *beta* > *delta*, with *alpha* 2.86X *beta*, *beta* 0.85 of *gamma*, and *delta* 0.25 of *alpha*. Lengths of femora, tibiae and basitarsi: foreleg (one missing) – 1.00mm, 1.45mm, 0.90mm; midleg – 0.97/0.95mm, 1.64/1.63mm, 1.02/0.99mm; hindleg – 1.12/1.13mm, 1.84/1.90mm, 1.14/1.15mm. Hind femora armed with blunt, short, stout setae, each about 0.04mm long, one femur bearing nine of such setae arranged at intervals of about 0.04mm in a longitudinal row between 0.28 and 0.43mm from the proximal articulation.

Abdomen 2.38mm long, generally pale but with the tergites tinged brown. Genital fork: 0.23mm long, moderately chitinized. Spermathecae (superimposed and only one shown in Fig. -H) situated about the middle of the genital fork stem; roughly carrot shaped, 0.04mm long, 0.01mm wide at the distal end,

gradually tapering towards the junction with the spermathecal duct, with about 30 annulations, the most distal not noticeably larger than the others. Spermathecal duct 0.52/0.54mm long, composed of a narrow distal portion (0.32/0.34mm long) with refringent walls and partly surrounded by a thin tubular envelop, and a broader proximal section (0.20/0.20mm long, about 0.01mm wide) with membranous walls. Spermathecal ducts 13.25/12.75X the lengths of their respective spermathecae. Common spermathecal duct lacking. Combined lengths of spermathecae and ducts 2.43/2.52X the length of the genital fork.

DISCUSSION

Professor A. V. Martins (oral communication) has expressed doubts about the inclusion of *spinosipes* in *Brumptomyia*. The BM(NH) specimen labelled as *spinosipes* belongs to the genus *Brumptomyia* for the following reasons: the head has complete interocular sutures and a small clypeus; the ascoids have short posterior spurs; the cibarium is armed with horizontal teeth only, with the median teeth arranged in two longitudinal rows; spermathecae are carrot shaped and distinctly annulated.

Based on the measurements of the palps, thorax, wings, hindlegs and abdomen given by Floch & Abonnenc (1943, 1952), the BM(NH) specimen is larger; the ascoids are somewhat shorter; the arrangement of cibarial teeth differs slightly; the hind femur bears fewer blunt spines; the spermathecae, though of comparable length, have about 30 instead of 20 annulations. All of these differences could represent intraspecific variations.

The descriptions of Floch & Abonnenc (1943, 1952) make no reference to the coloration of *B. spinosipes*. The BM(NH) specimen is a generally pale sand fly, with the mesonotum but lightly infuscated. It is, in fact, the palest *Brumptomyia* seen by the present writer.

Based on the only published descriptions (Floch & Abonnenc, 1943, 1952), *B. spinosipes* is unique amongst females of *Brumptomyia* by possessing a common spermathecal duct. The BM(NH) specimen does not have a common duct. Instead, the individual spermathecal ducts consist of a narrow distal portion and a broader proximal part. The broader proximal portion of the ducts, if superimposed, could be misinter-

puted as a common duct. A re-examination of the spermathecal ducts of the type specimen, if it can be found, would be useful. Alternatively, additional studies on specimens from French Guiana would be helpful, if only to establish the relative proportions of forms conforming with the original description and those agreeing with the BM(NH) specimen.

In French Guiana, *B. spinosipes* and *B. pintoii* (Costa Lima, 1932) were always collected together (Floch & Abonnenc, 1952) and they hinted that the two could be conspecific. Leger et al. (1977) considered this to be so, thus placing *B. spinosipes* in the position of a junior synonym of *B. pintoii*. They thought that the presence of the row of blunt spines on the hind femur of *B. spinosipes* (absent in *B. pintoii*) is an expression of sexual dimorphism.

It is difficult to concede that *B. spinosipes* is the female of *B. pintoii*. It is generally accepted that the lengths of the genital filaments of males of phlebotomine sand flies are comparable to the lengths of the spermathecal ducts of conspecific females. Floch & Abonnenc (1943) recorded the length of the spermathecal duct of *B. spinosipes* as 251 μm but this is the length of the "individual duct" of the left spermatheca depicted by Floch & Abonnenc (1952, Fig. 78M); the true lengths of the spermathecal ducts figured by Floch & Abonnenc (1952) are about 0.40/0.42mm long. This is still much shorter than the lengths (0.52/0.54mm) of the spermathecal ducts of the BM(NH) specimen.

For a species of *Brumptomyia*, *B. pintoii* has short genital filaments. In specimens from French Guiana (Floch & Abonnenc, 1952; Fig. 67F), the filaments are 0.60mm long; in material collected in Minas Gerais, Brazil, they are about 0.88mm long (Williams, unpublished observations). The genital filaments of *B. pintoii* are, therefore, greatly in excess of the maximum lengths of the spermathecal ducts of *B. spinosipes*.

Geographic records are also against *B. spinosipes* being conspecific with *B. pintoii*. *B. spinosipes* has been recorded only in French Guiana. There are no published records of female sand flies similar to the descriptions of Floch & Abonnenc (1943, 1952) (or to the BM(NH) specimen) from other parts of South America.

In contrast, *B. pintoii* has been recorded between French Guiana and the north of Argentina (Martins et al., 1978). The available data suggest that there are two widely separated populations of *B. pintoii*. One population encompasses French Guiana and northern Brazil (Amazonas, Mato Grosso, Pará, Rondônia). A more southerly population occurs in the Brazilian states of Mato Grosso do Sul, Minas Gerais, Rio de Janeiro and São Paulo, with a southward extension into northern Argentina (Misiones and Tucuman). It is unlikely that *B. spinosipes*, limited to French Guiana, is conspecific with the more widely distributed *B. pintoii*.

RESUMO

Descrição de uma fêmea de flebotomíneo (Diptera: Psychodidae – Phlebotominae) semelhante a *Brumptomyia spinosipes* (Floch & Abonnenc, 1943) – É apresentada a descrição de um espécimen fêmea semelhante à *Brumptomyia spinosipes* (Floch & Abonnenc, 1943) (Diptera: Psychodidae – Phlebotominae).

Palavras-chave: Diptera – Psychodidae – Phlebotominae – *Brumptomyia* – ?*spinosipes* – descrição morfológica

ACKNOWLEDGEMENTS

The Keeper of Entomology, British Museum (Natural History) provided space and facilities in the Museum. Dr A. J. Shelley, Medical Diptera Section, Department of Entomology, BM(NH), made all arrangements to examine material in the museum's collection.

REFERENCES

- FLOCH, H. & ABONNENC, E., 1943. Phlébotomes de la Guyane française V. *Inst. Pasteur Guyane française et de l'Inini*. Publ. No. 61: 30p.
- FLOCH, H. & ABONNENC, E., 1952. *Faune de l'Union française XIV. Diptères Phlébotomes de la Guyane et des Antilles françaises*. Paris – Librairie Larose: 207 p.
- LEGER, N.; ABONNENC, E.; PAJOT, F. X.; KRAMER, R. & CLAUSTRE, J., 1977. Liste commentée des phlébotomes de la Guyane française. *Cahiers O. R. S. T. O. M., série Entomologie médicale et Parasitologie*, 15: 217-232.
- MARTINS, A. V.; WILLIAMS, P. & FALCÃO, A. L., 1978. *American sand flies (Diptera: Psychodidae, Phlebotominae)*. Rio de Janeiro: Academia Brasileira de Ciências – 195 p.