

NOTES ON THE MORPHOLOGY OF THE MALE COPULATORY
APPARATUS IN THE AGROMYZIDAE
(DIPTERA)

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ABSTRACT—The difference in position and appearance of the parts of the phallosome between their retracted and extended conditions is pointed out and figured for *Liriomyza quadrata* (Malloch). The new terms *proepiphallus* and *metepiphallus* are proposed for divisions of the epiphallus, and *pileus ejaculatorius* for a sclerotized cap-like part of the ejaculatory bulb. Drawings of other parts of the postabdomen, supplementing existing data, are given for *L. quadrata* and also *L. braziliensis* (Frost).

Hennig's work on the acalyptate postabdomen (see Steyskal, 1957, for summary; also Hennig, 1958) has provided an extensive general basis for an understanding of these parts, and Nowakowski (1962) has refined the terminology and provided some of the best and most detailed illustrations of the phallosome.

While preparing dissections of the postabdomen of *Liriomyza quadrata* (Malloch), I noted that an outward thrust on the phallopodeme produced an extensive change in the appearance and relative position of the parts of the rest of the phallosome, resulting in a condition that would likely be attained for copulation. The resting or retracted condition and the extended position are shown in figures 2b₁ and 2b₂, respectively. The resting condition is the one usually obtained when preparing the postabdomen for examination and is the one usually drawn for publication. Sometimes, however, the phallosome is drawn in a partially extended condition wherein the parts must surely suffer some displacement from the fully retracted condition. Nowakowski's figures (1962, p. 104) of *Napomyza xylostei* (Kaltenbach) and *Phytomyza periclymeni* Meijere are drawn in the extended condition.

Nowakowski (1962, p. 90) has summarized the latest terminology of the parts of the phallosome, with a fairly complex structure posterior to the phallophore merely designated epiphallus. I have noted that the shape of the structure immediately posterad of the phallophore (fig. 2b₂, pp) is of considerable value in species discrimination, at least in the genus *Liriomyza*, and I therefore here propose that it be termed *proepiphallus* (fig. 2b₂, pep) to distinguish it from the part posterior to it, which may be termed *metepiphallus* (fig. 2b₂, mep). These two

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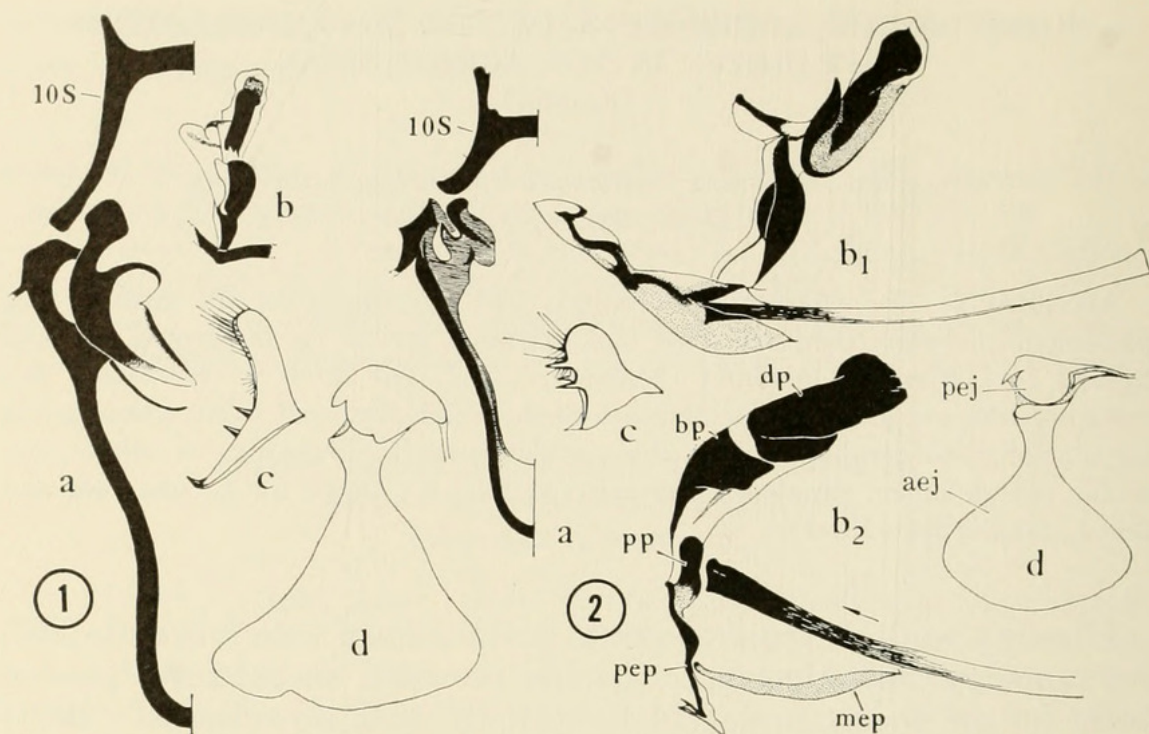


Fig. 1. *Liriomyza braziliensis* (Frost): a, half of hypandrium, including postgonite, and 10th sternum (10S); b, aedeagus in retracted condition; c, surstylus; d, sperm pump. Fig. 2. *L. quadrata* (Malloch): a, half of hypandrium, including postgonite, and 10th sternum; b₁, phallosome in retracted condition; b₂, phallosome in extended condition (bp, basiphallus; dp, distiphallus; mep, metepiphallus; pep, proepiphallus; pp, phallophore; arrow indicates direction of thrust resulting in this condition); c, surstylus; d, sperm pump (pej, pileus ejaculatorius; aej, apodema ejaculatorium).

structures together evidently constitute the epiphallus as understood by Hennig (1958, p. 540), the proepiphallus being the anterior side and the metepiphallus being the posterior side of the cuticular fold called the epiphallus.

The surface of the ejaculatory bulb opposite the ejaculatory apodeme is usually sclerotized in the Agromyzidae, in which condition I suggest that it be termed *pileus ejaculatorius* or ejaculatory cap (fig. 2d, pej).

The parts of the inner copulatory apparatus mesad of the gonites, the phallosoma or phallosome, may be tabulated as follows:

Aedeagus = distiphallus (with hypophallus + paraphalli) + basiphallus

Phallophorus (phallophore)

Phallapodema (phallapodeme, aedeagal apodeme)

Epiphallus = proepiphallus + metepiphallus

Ductus ejaculatorius (ejaculatory duct)

Ejaculator spermaticus (sperm pump) = pileus ejaculatorius (ejaculatory cap) and/or bulbus ejaculatorius (ejaculatory bulb) + apodema ejaculatorium (ejaculatory apodeme)

I take this occasion also to show some details of the postabdomen of *L. quadrata* (Malloch) in fig. 2, as well as similar details in *L. braziliensis* (Frost) in fig. 1, supplementing the figures given by Spencer (1963, pp. 365 and 358 resp.). Both of these species are pests of potato plants in Pichincha, Ecuador, and the specimens from which the drawings were made were received from that locality through Dr. Gualberto Merino M., of the Instituto Nacional de Investigaciones Agropecuarias, Quito, Ecuador.

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NEW SPECIES OF BAT MITES FROM SOUTHEAST ASIA AND THE
PACIFIC REGION, WITH A NOTE ON PERIGLISCHRODES GRESSITTI
BAK. & DELF.

(ACARINA: SPINTURNICIDAE)¹

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ABSTRACT—Two new species and one new subspecies of bat mites are described from Southeast Asia and the Pacific region. These are *Ancystropus nakatae*, n. sp., *Meristaspis hardyi*, n. sp., and *M. jordani philippinensis*, n. ssp. *Periglischrodes gressitti* Bak. and Delf., which is a nasal mite, is transferred from Spinturnicidae to Rhinonyssidae.

Rudnick (1960) reviewed the family Spinturnicidae and recognized three species of bat mites from Southeast Asia and the Pacific region. Delfinado and Baker (1963) and Baker and Delfinado (1964) reported 15 species and two subspecies of these mites from the above regions of which 11 were not previously known. The author, while working with the collection of B. P. Bishop Museum, Honolulu, Hawaii, discovered two additional species and one subspecies that are described here as new. Length of sternal shield and length and width of tritosternum are taken in the middle of the shield; the width of sternal

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