

GRIPHOMYIA
(DIPTERA, DOLICHOPODIDAE, PELOROPEODINAE)
A NEW GENUS FROM SOUTHERN THAILAND

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Abstract. *Griphomyia* gen. nov. with *G. gravicaudata* sp. nov. as type species, is described from rainforest in southern Thailand. Although it possesses a stalked hypopygium which is considered as an ancestral feature, the presence of symmetrically sclerotized pseudotracheae, denticulate epipharyngeal prongs, and a wing boss, all indicate that the new genus is quite derived. The morphology of the male genitalia places it rather in the Peloropeodinae with encapsulated hypopygium than in the Sympycninae with an apical, sessile hypopygium.

Key words: Diptera, *Griphomyia* n. gen, Thailand.

INTRODUCTION

The empidoid fauna of South Asia is very poorly known. As an example only 9 species of Dolichopodidae have been reported up to now from Thailand (DYTE, 1975), a figure which should be at least 50 times higher. It is not surprising, therefore, that even small collections yield numerous undescribed taxa.

The present study is a first contribution to the dolichopodid fauna of Thailand. Here we describe a new species belonging to a new genus. The stalked male genitalia would at first suggest that the genus is medeterine but examination of the mouthparts and other somatic characters shows that it is not. In fact considering the indistinct delineation of many subfamilies (ROBINSON, 1970; ULRICH, 1980), it is very difficult to place. The morphology of the male genitalia place it rather in the Peloropeodinae with encapsulated hypopygium than in the Sympycninae with an apical, sessile hypopygium.

MATERIAL AND METHODS

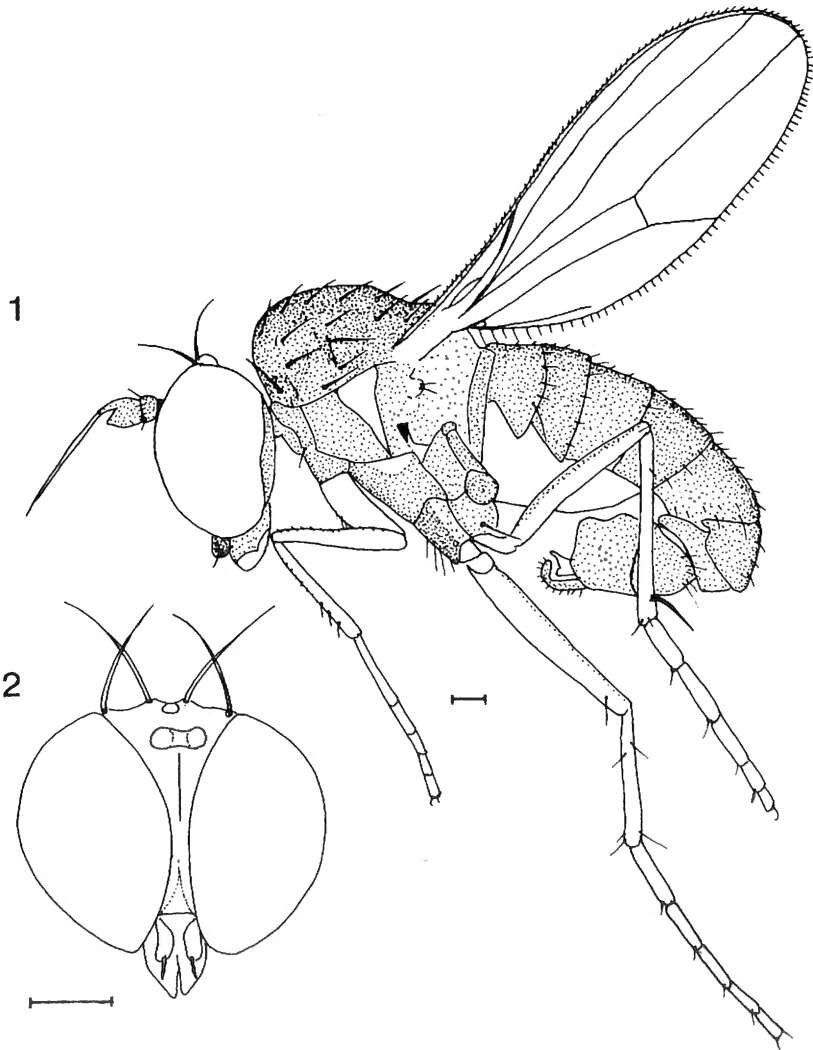
Material was collected by the first author in South Thailand by net sweeping along the banks of small rivers in rainforests. The specimens are preserved in alcohol in the collections of the Koninklijk Belgisch Instituut voor Natuurwetenschappen in Brussels. In the description of the hypopygium, the terms dorsal (D) and ventral (V) refer to the morphological position prior to the rotation of the male genitalia.

SYSTEMATICS

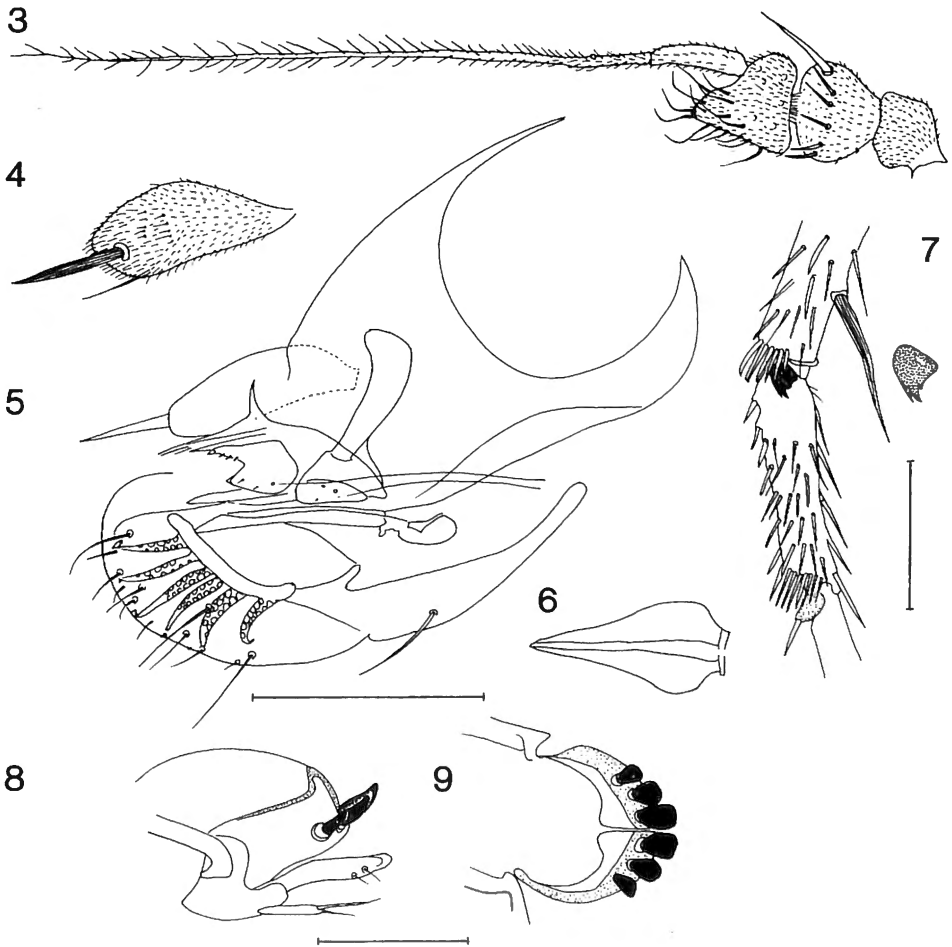
Griphomyia, gen. nov., Peloropeodinae

Figs 1-15

[Gender feminine; derivatio nominis: Gr. γρίφοζ, a riddle]

Type species: *Griphomyia gravicaudata* sp. nov.

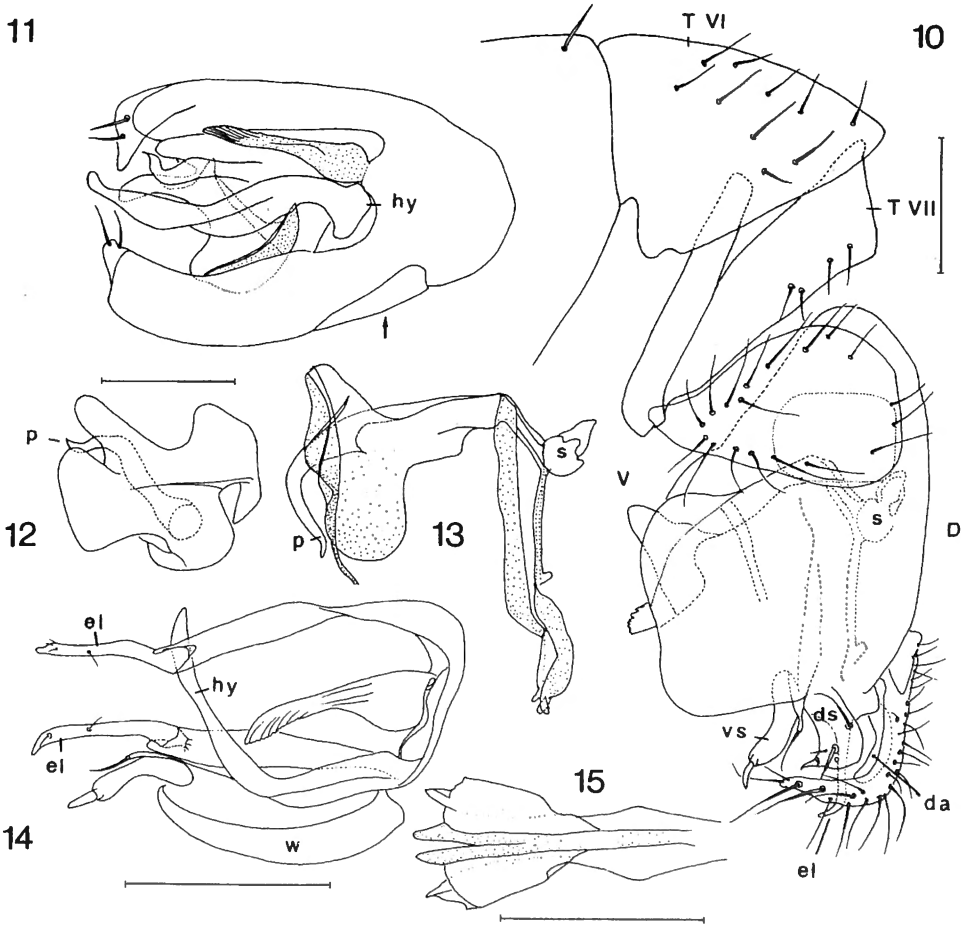
Figs 1-2. — *Griphomyia gravicaudata* gen. nov. sp. nov., male — 1. habitus. — 2. head in front.
(Scale: 0.1 mm)



Figs 3-9. - *Griphomyia gravicaudata* male - 3. antenna - 4. palp - 5. mouthparts - 6. hypopharynx - 7. tip of hind tibia and metatarsus posteriorly with detail of multidenticulate plate; female - 8. ovipositor laterally - 9. tip ovipositor dorsally. (Scale: 0.1 mm)

Diagnosis

Small flies (less than 2 mm) with a rather hunch-backed appearance and very sparsely bristled legs. Vertex rounded, occiput flat. Pseudotracheae symmetrically sclerotized. Antennae short; arista dorsal. Thorax with a flattened area in front of scutellum. Acrostichals very short, uniseriate; 5 dorsocentrals. Hind coxa with a feeble exterior bristle. Mid femur with a distinct anterior preapical; hind femur with a weak anterior preapical. First segment of hind tarsus shorter than second segment. Hypopygium relatively large, stalked. Segment VII long, tergum bristled.



Figs 10-15. - *Griphomyia gravicaudata*, male genitalia - 10. stalked hypopygium laterally (D: dorsal; V: ventral) - 11. hypopygium ventrally, arrow indicates foramen - 12. aedeagus dorsally - 13. aedeagus laterally, connected to sperm pump (S) and dorsal appendage - 14. epandrium ventrally - 15. tip of dorsal appendage ventrally (da: dorsal appendage; el: epandrial lobes; hy: hypandrium; p: penis; s: sperm pump; vs: ventral surstylius; w: wall of epandrium). (Scale: 0.1 mm)

Description

Head, seen from in front, nearly round (Fig. 2). Vertex evenly rounded, surpassing upper level of eyes, with a low ocellar callus. Upper postcranium convex above neck, flattened upwards. Frons moderately wide, narrowing towards antennae. Face narrowing downwards beneath antennae and slightly widening again towards clypeus. Palpi and rostrum small. Pseudotracheae symmetrically sclerotized (Fig. 5). Hypopharynx straight in profile; its base widened (Fig. 6). Epipharyngeal sclerites with 3 prongs. 2 not very long, diverging ocellars; 2 converging verticals, about as long as the ocellars, inserted high on

vertex near eye margins; 2 tiny postocellars; no postverticals. Postoculars very short, uniseriate. *Antennae* short (Fig. 3). First segment small, deeper than long, bare. Second segment larger and deeper than first segment, deeper than long, with very short marginal bristles, that are longest on upper side. Third segment short, triangular, with blunt apex; arista dorsal.

Thorax high-vaulted, with a flattened area in front of scutellum. Acrostichals very short, uniseriate. 5 dorsocentrals, the hindmost of which is a little longer than the four preceding ones, that are nearly equal in length. Humerus with 1 bristle and 1 small hair. 2 notopleurals, 1 posthumeral, 2 presuturals, 2 supraalar, 1 postalar. Scutellum with 2 not very long marginals, without laterals. One propleural bristle.

Legs long, slender, very sparsely bristled. Hind coxa with a thin, weak exterior bristle. A distinct anterior preapical on mid femur, and a weak anterior preapical bristle on hind femur. Mid tibia with 1 anterodorsal and 1 posterodorsal near base. Legs of ♂ unadorned. First segment of hind tarsus shorter than second segment.

Wing relatively short, with rounded apex. Apical part of m1+2 angled slightly upwards after tp, running from there to wing tip with a very feeble upward curvature; wing boss at middle of apical part of m1+2. r4+5 nearly straight, apically more or less parallel to m1+2. Distance between m1+2 and r4+5 greater than distance between r4+5 and r2+3. Anal vein present, running close to wing margin. Axillary lobe not developed (Fig. 1).

Abdomen of ♂ with 7, of ♀ with 5 visible segments, cylindrical, longer than thorax. Hypopygium rather large, stalked (Figs 1, 10). Segment VII long with tergum bristled. Epandrial foramen left lateral (Fig. 11). Base of epandrium (Fig. 14) with paired appendages, one presumed to be the hypandrium. Dorsad of these appendages a second set of long, extensions, probably homologous with the epandrial lobes, each composed of a basal segment articulating with an apical segment. Hypandrium articulating with base of epandrium (Fig. 14). Aedeagus irregularly multilobed with a central, twisted penis (Fig. 12). Dorsal and ventral surstyli present, attached to tip of epandrium. Dorsal appendage long, with an enlarged tip bearing spines (Fig. 15). Cerci centrally separated, square-shaped. Oviscapt with a row of 6 short, broad acanthae (Figs 8, 9).

Differential diagnosis:

The new genus can be distinguished from the other Peloroepodinae by the presence of a distinct anal vein which runs parallel to the hind margin of the wing, an undeveloped axillary wing lobe and a stalked hypopygium which lies free under the preabdomen.

Griphomyia gravicaudata, spec. nov.

(Figs 1-15)

Male

Body length 1.7 mm; wing length 1.3 mm.

Head. Frons and face with blackish ground colour. Eyes nearly touching each other below middle of face (Fig. 2). Palpi brown, each with a small, black apical bristle. Rostrum dark brown. Occiput black. Postoculars all black. *Antennae* (Fig. 3) dark brown. Third segment about as long as deep, triangular, with a rather blunt apex. Arista dorsal, more than 3 times as long as antenna, shortly pubescent; basal arista segment more than half as long as third antennal segment.

Thorax. Mesoscutum and scutellum greenish black, feebly shining. Pleurae brownish black to dark brown, partly with a green metallic gloss.

Legs. Fore coxa yellow, mid and hind coxae brown. Legs, including trochanters, yellow. Tarsi indistinctly darkened towards their tips. Fore leg: coxa anteriorly with few, very short, dark hairs; at apex a few short and weak bristles. Trochanter bare. Femur and tibia practically without bristles; tibia about as long as femur. Length of tibia and tarsal segments (in mm): 0.35: 0.21: 0.08: 0.07: 0.04: 0.05. Mid leg: coxa anteriorly with few, very short hairs. Trochanter with a very small bristle. Femur without bristles, except for a distinct anterior preapical and 1 or 2 tiny posteroventral preapical bristles. Tibia slightly longer than femur; 1 anterodorsal and 1 posterodorsal at basal fourth; a few short and thin apicals. Length of tibia and tarsal segments (in mm): 0.55: 0.24: 0.15: 0.11: 0.08: 0.07. Hind leg: coxa with a black exterior bristle; in some specimens a tiny second bristle. Trochanter bare. Femur without bristles, except for a tiny anterior preapical. Tibia slightly longer than femur; a tiny anterodorsal at basal fourth; 1 dorsal bristle near apex, preceded by some lengthened hairs. Tip of tibia with the usual posteroventral preapical comb and in addition a black denticulate plate (Fig. 7). Length of tibia and tarsal segments (in mm): 0.53: 0.16: 0.2: 0.15: 0.1: 0.07.

Wing. Hyaline, very feebly brownish tinged. Tip about half as long as apical part of m_{3+4} . Halteres yellow. Squamae yellow, with black border, and black cilia.

Abdomen. Above blackish brown, feebly shining; sterna brownish; unsclerotized parts yellowish. Hairs on terga minute, black; hindmarginal bristles extremely short, black, longer only on first tergum. Hypopygium brownish black; cerci small, brown.

Female

Body length 1.55 mm; wing length 1.3 mm.

Resembles the male. Face at its narrowest point about as wide as the distance between the ocellar bristles. Palpi and rostrum slightly larger than in ♂ and more yellowish brown. Oviscapt yellow, with a row of 6 small black acanthae (in allotype: 2 black acanthae on each side, and 2 yellowish acanthae in the middle).

Type material:

Holotype male and allotype female: Thailand, Phang-nga, Ao Luk, 15.iv.1996 (swept along brook and swamp in rainforest, sample n° 96076; leg. P. GROOTAERT).

Paratypes. 11 ♂, 5 ♀ from same sample as holotype; Phang-nga, Sa Nangmanora, 14.iv.1996, 11 ♂, 5 ♀ (along water falls; sample n° 96074), 15.iv.1996, 10 ♂ (sample n° 96075); Bok kai waterfalls, 4.iv.1996, 2 ♂ (sample n° 96022).

DISCUSSION

It is not easy to determine the exact phylogenetic position of the new genus since it is commonly known that the division of the Dolichopodidae into subfamilies (ROBINSON, 1970; ULRICH, 1980) is far from satisfactory and the phylogeny of the subfamilies has hardly been studied. The definition of the Medeterinae (BICKEL, 1987a; GROOTAERT & MEUFFELS, 1997) is now well delineated although in the genus *Medetera* problems have still to be resolved. Also the Sciapodinae and their position have been clarified by BICKEL (1994). The morphology of the mouthparts helps also in the classification of the subfamilies (SATO, 1991).

The presence of a dorsal arista, symmetrically sclerotized pseudotracheae, epipharyngeal sclerites consisting of three prongs, and the presence of a wing boss all indicate that *Griphomyia* is a quite derived genus and so it does not belong to the ancestral groups such as the Medeterinae (BICKEL, 1987a), Achalcinae (GROOTAERT & MEUFFELS, 1997b) nor the Babindellinae (BICKEL, 1987b). Nevertheless, *Griphomyia* possesses some plesiomorphic characters such as the presence of a well sclerotized anal vein, a stalked hypopygium and the mesoscutum being flattened in front of the scutellum. These symplesiomorphies should not confuse the phylogeny. They simply persisted.

We assume that the presence of a wing boss is a unique apomorphic character which originated only once as a result of the disappearance of vein M2 (BICKEL, 1994: 28). This vein probably disappeared in other groups as well, but, as in the Medeterinae, without resulting in a wing boss. In its turn, the wing boss may disappear as well, as it does in the genus *Teuchophorus*, the sistergroup of *Sympycnus*, where the boss probably moved towards the cross vein resulting in a turning up of the base of the apical portion of vein M (MEUFFELS & GROOTAERT, 1986).

Griphomyia seems to fit best in the subfamily Peloroepodinae as proposed by ROBINSON (1970: 56). The latter subfamily is however not accepted by ULRICH (1980), who merged it again with the Sympycninae. The stalked hypopygium of *Griphomyia* is a plesiomorphic feature in comparison to the apical, sessile hypopygium of many Sympycninae and therefore it would be confusing to include *Griphomyia* into the Sympycninae. ROBINSON (1970) remarks that in the Peloroepodinae, Enliniinae and Medeterinae the penis-aedeagus mechanism is usually more distorted in shape and restricted to the middle and apical parts of the hypopygium. The Diaphorinae and Sympycninae, related sistergroups, have a rounded basal and ventral surface along which runs the penis-aedeagus system. A thorough revision of the more than 50 genera of the Sympycninae is urgently needed in order to redefine the subfamily and its boundaries.

NEGROBOV (1991) still accepts the Peloroepodinae and places even the genus *Acropsilus* in that subfamily. The latter genus which is very prolific in the Asiatic region, has comparable mouthparts and also a stalked hypopygium, the stalk composed of a long abdominal segment VII. Although there are many differences with *Griphomyia*, both genera have a curious dorsal preapical bristle on the hind tibia (GROOTAERT & MEUFFELS, in litt.) in common.

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