REDEFINITION OF THE GENUS PHANUROMYIA DODD (HYMENOPTERA: SCELIONIDAE)

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Abstract.—The concept of the Australian genus Phanuromyia Dodd is expanded to include 9 species: P. hirtentata n. sp., P. flavescens (Dodd) new combination, P. hysteroptera (Bin) new combination, P. recinatoata Dodd, P. obscuripes (Pélov) new combination, P. ovicida (Pélov) new combination, P. palicirina (Dodd) new combination, P. rufobasalis Dodd, and P. serrata (Ogloblin) new combination. Representatives have been found worldwide, but the greatest diversity is in the Old World. The known hosts are eggs of Isididae and Fulgoridae (Hemiptera: Fulgoromorpha). The genus is contrasted with the crocutiata species group of Telenomus, another group also known to attack species of fulgoromorpha.

The genus Phanuromyia Dodd (Hymenoptera: Scelionidae, Telenominae) was described in 1914 on the basis of a single specimen captured in south Queensland, Australia. The primary feature that caught Dodd’s eye was the elongate ovipositor: “I have not previously seen, nor have I come across a record of, any Scelionid with a truly exerted ovipositor, that is with the valves exerted, and thus, I think that character alone all sufficient to form a quite distinct new genus.” Most scelionids with the Cerastesceus type ovipositor (Austin and Field, 1997) have the apparatus fully retracted into the metasoma when not in use or with only the very tips of the gonopods exposed. Although the long ovipositor is unusual, it is not as rare as Dodd believed. After study of the holotype (Johnson, 1988a), the type species, P. rufobasalis Dodd, seems to be rather exceptional, with characters that are found in many other species. Thus, it would have been easy to subsume Phanuromyia into the chaos of the large genus Telenomus Haliday (>600 described species, see Johnson, 1992), except for the discovery of species from tropical Australia and southeast Asia that are very similar to P. rufobasalis, but also display a number of characters that we consider to be plesiomorphic for the subfamily as a whole. By starting with that set of features, it appears that quite a number of species belong to this same lineage.

Our objective here is to characterize this lineage, and we have chosen to continue to formally recognize it as a separate genus. We find it difficult to unambiguously define the limits of Phanuromyia because the characters are effaced, reduced, or otherwise somehow lost in many of the smaller species. If one subscribes to the notion that a valid genus must be separated from others by a discrete set of characters, a “gap,” then Phanuromyia must inevitably fall as a junior synonym of Telenomus. However, by that standard, nearly all genera of telenomines would be lost. We propose, rather, the hypothesis that Phanuromyia is a monophyletic group within the subfamily and to recognize it as a distinct genus. A diagnosis of the group, a generic synonymy, a list of species already described, and a description of one of the new, plesiomorphic species are provided. We postpone the presentation of a modified key to genera of Telenominae for the time being, as there are yet several more distinct lineages that are undescribed, and the development of such a key is part of an ongoing collaboration with Dr. L. Masner (Ottawa).
MATERIALS AND METHODS

Specimens for this study were obtained from the following institutions (with codens in parentheses following Ameis et al., 1997): BMNH: The Natural History Museum, London, United Kingdom; OSUC: The Ohio State University Insect Collection, Columbus, Ohio, USA; CNIC: Canadian National Collection of Insects, Ottawa, Ontario, Canada. Measurements and figures were made from digital photographs produced using a JVC KY-F70B® digital camera and AutoMontage® software.

Phanuromyia Dodd


**Description.** Gena below compound eye distinctly expanded, bulging; head in frontal view usually nearly round; compound eyes usually rather small; in lateral view intersection of malar sulcus with compound eye nearly perpendicular, in frontal view malar sulcus intersection clearly anterior to posterior margin of eye, malar sulcus strongly curved, gena clearly visible below; vertex rounded, without hyperoccipital carina, in dorsal view anterior margin of head usually strongly rounded; lateral ocellus contiguous with inner orbit; frons usually convex, with only weakly impressed antennal scrobe, often sculptured throughout; apex of clypeus often protruding into medial point; compound eyes often bare; female antennal clava 5-segmented, clavomeres transverse to quadrate in shape; notauli usually absent; diagonal line of mesepisternal foveae usually present between apex of acetabular and mesepisternal pit, sometimes indicated merely as an impressed line; T1 sometimes produced into medial horn; T2 striate basally, often with elongate reticulate microsculpture through most of its length; ovipositor often exserted distinctly beyond apex of metastoma; color usually dark brown to black, but many species with metastoma partially or completely yellow.

**Diagnosis.** *Phanuromyia* species with the sculptured frons may be distinguished from the genus *Trissolcus* Ashmead by the 5-segmented clava, the round head (usually strongly transverse in *Trissolcus*), the lack of a hyperoccipital carina, the right angle formed between the malar sulcus and the margin of the compound eye, and the bulging gena. *Trissolcus* species have a 6-segmented clava; a strongly transverse head in dorsal view, more or less triangular in frontal view; a hyperoccipital carina is often present, usually in conjunction with the presence of notauli; and the malar sulcus forms a strongly obtuse angle with the margin of the eye. Species of *Phanuromyia* with the frons smooth medially may usually be distinguished from *Telesonamus* by the bulging gena, and the distinctive reticulate microsculpture on T2. The perpendicular intersection of the malar sulcus with the margin of the compound eye seems to be very distinctive. In most telonemines, the gena behind the compound eye is more or less strongly raised, and the crevice between this ridge and the eye is confluent with the malar sulcus. The intersection of the malar sulcus with the eye is more or less a direct continuation of this crevice, sometimes practically straight, but sometimes forming a very obtuse angle.

**Hosts.** Several host records are known for specimens here placed in *Phanuromyia*; most are in the Auchenorrhyncha (Hemiptera), principally the families Issidae and Fulgoridae.
Phanuromyia sacchi (Oglablin), P. hysteropteri (Bin), P. oocidus (Pélov) and P. obscuripes (Pélov) were all reared from egg masses of Hysteropterum spp. (Issidae).

INCLUDED SPECIES

flavescens (Dodd, 1915), new combination. Original combination in Telenomus.
pulcherrima (Dodd, 1914b), new combination. Original combination in Telenomus; subsequent combination in Liophanetus by Kieler (1926).
rufibrasalis (Dodd, 1914a), new combination. Original combination in Telenomus.
sacchi (Oglablin, 1930), new combination. Original combination in Telenomus.

Discussion. Pélov (1975), in describing Issidotoelenomus as a new genus, recognized that his two species combined characters of both Telenomus and Trissolcus. His illustrations and descriptions are very detailed and informative; we feel that his taxa are easily recognizable and belong to the same group of species as Phanuromyia. However, Pélov’s work was written in the context of Kieler’s 1926 monograph and the subsequent work of Kozlov (1967 and following papers). None of these authors had the opportunity to examine the types of species and genera described by Dodd. The published descriptions of Dodd’s taxa are insufficient to confidently recognize them, and many of his genera were not properly recognized until the types were studied (e.g., Galloway and Austin, 1984). Kozlov and Kononova (1983) treated Issidotoelenomus as a junior synonym of Telenomus without any justification or comment. For different reasons than those of Pélov, we concur with the conclusion that these species should be recognized as a distinct genus in the Telenominae. The oldest name for this group, however, is Phanuromyia Dodd, and we therefore consider Issidotoelenomus to be a junior synonym.

As defined here, Phanuromyia is most diverse in the Old World, with the plesiomorphic species found in tropical Asia and north Australia. Johnson (1984) described the crassiclava species group of Telenomus, but this confused the species of Phanuromyia with another cluster of species, found most abundantly in the New World, also parasitizing the eggs of Puigoromorphida. The crassiclava group sensu stricto is very diverse and common in the Neotropics, becoming less abundant in North America, and fairly uncommon elsewhere. In particular, we have seen no specimens from Australia, although species are found in Sulawesi, Indonesia. The crassiclava group seems to be most closely allied with the New World parasitoids of Pteromalidae (Hemiptera, Heteroptera), the podisi group (Johnson, 1984).

The confusion with the Telenomus crassiclava group arose because of the similarity in the known hosts and in the usual presence of the diagonal chain of foveae on the mesepisternum between the apex of the acetabular carina and the mesepisternal pit. We believe that this line of foveae is plesiomorphic for the telenomines, as it may be found within the Psix group of genera (Psix Kozlov and Lé; Paratelenomus Dodd, Madugere Johnson, and Nippona Nixon) and in disparate species within Trissolcus. The crassiclava group species typically have
narrow mandibles, narrow genae, a smooth frons, a narrow vertex, often with a hyperoccipital carina, and a lack of microsculpture on T2 other than the ubiquitous basal striae. The most plesiomorphic species of Phanuromyia, such as that described below, have extensive sculpture on the frons and T2, the laterotergites of the first metasomal segment are setose, and the vertex is broadly rounded, often with the occipital carina interrupted medially. As the characters that set Phanuromyia apart are individually lost or retained, the genus inevitably begins to merge into the polyphyletic genus Telenomus. We suggest that this may indicate a means of teasing apart Telenomus and grouping together species and species groups into larger clades. The bulging gena is a feature that also characterizes the laricis species group, once described as the genus Vertuscosciphala Szabó, all of which attack eggs of Miridae (Hemiptera). The medially pointed clypeus is found in the phymatae group of species, including Pseudotelenomus Costa Lima, which parasitize the eggs of Reduviidac (Hemiptera), as well as the nigricostalis group, species attacking Rhopalidae (Hemiptera). Molecular characters may well be used to advantage to test the hypothesis that these species groups of Telenomus are more closely related to Phanuromyia than to other congeneric species. At this point a minimal roster of the primary lineages within the Telenominae would include the Psix group of genera (see Johnson, 1988b, Phanuromyia, Trissolcus, Aradocnus Masner, Pheidiaephorus Kozlov, Latonius Kononova, and the floridanus, podisi, crassicolana and longicornis species groups of Telenomus.

**Phanuromyia bidentata**, new species

Figs. 1–2

**Description.** Length: Holotype 1.28 mm (♀ range 1.01–1.28 mm, mean = 1.16 ± 0.10 mm; standard deviation, n = 12; ♂ range = 0.89–1.09 mm, mean = 1.02 ± 0.08; n = 4). **Head.** In frontal view nearly round, length from vertex to lower margin of gena 0.90 times maximum width (♀; 0.86–0.93, mean = 0.90 ± 0.02; ♂; 0.84–0.89, mean = 0.87 ± 0.02); eyes appearing glabrous, inner orbits distinctly diverging ventrally, eye height 1.37 times frons width (♀; 1.13–1.43, mean = 1.27 ± 0.1; ♂; 1.09–1.20, mean = 1.14 ± 0.04); prococellar pit absent; frons largely covered with cariaceous microsculpture, medially with transverse rugae on appendage insertions, below median ocellus sparsely setose, with glabrous median longitudinal belt one-third width of frons; genae appearing bulging in frontal view; vertex rounded onto ociput, cariaceous throughout, hyperoccipital carina absent; lateral ocellus contiguous with inner orbit; head width 1.70 times length in dorsal view (♀; 1.39–1.70, mean = 1.59 ± 0.09; ♂; 1.52–1.61, mean = 1.56 ± 0.04); occipital carina complete medially, crenulate, ventrally intersecting hyposternal carina at posterior mandibular articulation; in lateral view eye nearly round, cheeks bulging posteriorly below eye; gena largely cariaceous above, smooth below eye and near occipital carina; clypeus with pair of long submedial setae, flanked on each side by two distinctly shorter setae, anterior margin produced in acute medial tooth; mandibles narrow, subdentate; antenna 11-merous; A1 (including radicle)–A7 yellow, A8–A11 dark brown, contrasting sharply in color with basal antennomeres; claw formula A8–A11 1–2–2–1. **Mesosoma.** Mesoscutum scaly-reticulate throughout, notauli absent, anterior and lateral margins strongly costate; scutellum transverse, with long setae, disk smooth; dorsellum produced into foliaceous plate, base strongly costate, apical margin broadly excised medially; ventral lip of dorsellum smooth; lateral surface of pronotum with large smooth fusiform nervition, anterior margin of nervition marked by 4–5 large elongate pits; anterior margin of mesepisternum deeply costate, behind pronotum with narrow smooth area;
acetabular field small, round, finely coriaceous; anteroventral portion of meseptium smooth; episternal foveae present, deep; ventral portion of meseptium distinctly separating fore, mid coxae, short but longer than setae arising from its surface; mesopleural carina absent, anterior margin of mesopleural scrobe broadly rounded; mesopleural scrobe without microsculpture; pleural suture indicated by line of 8–9 deep, elongate pits, pits longest medially, shorter both above and below; mesepteron narrow, convex, smooth; posterior margin of meseptum costate; metapleuron margined anteriorly by 7 deep elongate pits, surface smooth, without microsculpture, glabrous, anteroventral corner extended anteriorly into acute point toward mid coxa. Metasoma elongate, length 2.00 times greatest width (♀: 1.57–2.26, mean = 1.81 ± 0.19; ♂: 1.61–1.78, mean = 1.70 ± 0.08); T1 humped medially,
relatively elongate, apical width 2.30 times medial length (♂: 2.07–2.96, mean = 2.48 ± 0.33; ♀: 2.82–3.16, mean = 2.98 ± 0.16), with elongate longitudinal costae through basal three-fourths, with two sublateral setae, six lateral setae on each side. Laterotergites densely setose; T2 medial length 0.86 times greatest width (♂: 0.82–0.98, mean = 0.88 ± 0.04; ♀: 0.94–1.04, mean = 0.99 ± 0.05), with arcuate row of deep, weakly elongate foveae anteriorly, fine longitudinal wrinkles extending from foveae through basal half of scutellum, merging with constricted sculpture posteriorly, entirely sculptured except for narrow fusiform basal band, apical transverse strip subequal in length to one-half length of T3, apical margin straight, laterotergites narrow, sparsely setose; ovipositor strongly extruded, length beyond apex of metasoma 0.49 times length of entire metasoma (0.08–0.57, mean = 0.34 ± 0.17). Color. Head, mesosoma, metasoma dark brown to shining black; wings hyaline throughout; legs with coxae yellow, often darkening to brown basally, apical tarsomeres brown, otherwise yellow; ♂ A1–A7 yellow, A8–A11 dark brown; ♀ A1–A2 yellow, A3–A12 dark brown.

**Diagnosis.** Distinguished from other *Phanuromyia* species by the medially excised dorsellar lamina and the broadly humped T1.


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**LITERATURE CITED**


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