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Minute larvae of Leptotyphlinae (Coleoptera: Staphylinidae): description of three genera with discussion on the monophyly and phylogenetic position of the subfamily as inferred from larval morphology

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Abstract

External morphology of larvae belonging to three unidentified genera of the rove-beetle subfamily Leptotyphlinae (Coleoptera: Staphylinidae) collected in Mexico, Chile and Australia, respectively, is described and illustrated. Larvae of Leptotyphlinae can be distinguished from all other Staphylinoidea larvae by the combination of their small size (maximum documented head width 0.128 mm), along with complete absence of eyes, lyriform frontal ecdysial lines, long coronal suture extending for about 40% of head length, short antennae not longer than 1/3 of head length, non-serrate mandibles with a single pre-apical tooth, tibiotarsi swollen in middle with two ventral spines, and indistinctly articulated short urogomphi not longer than twice their basal width. At least some of these characters are likely to support monophyly of the subfamily. Leptotyphlinae are hypothesized to belong to the Staphylinine Group of subfamilies sharing with at least some of them the following larval characters: labrum fully fused with clypeus; posterior tentorial arms extremely thin, thread-like and more than 20 times longer than wide; posterior tentorial pits short, rounded to elongate; cardo lacking transverse sclerotized ridge. The sister-group relationships of Leptotyphlinae to a clade of Pseudopsinae+Paederinae+Staphylininae is hypothesized with the following larval characters in support: lyriform frontal arms; each maxilla articulated laterally to head capsule by a condyle; maxillary mala parallel-sided (=finger-shaped) and articulated to stipes. A larval identification key to all three presently described genera is given.

Key words: rove beetles, Staphylinidae, Leptotyphlinae, Neotyphlini, larvae

Introduction

Adult members of the rove-beetle subfamily Leptotyphlinae are elongate cryptic depigmented dwellers of deep soil (Fig. 1), and are rarely encountered in nature or collections. These blind and flightless beetles are small with body lengths between 0.8 and 2.1 mm (Pace 1996). Their small size and cryptic habits contribute to our lack of knowledge about this group. Members of Leptotyphlinae are rather uniform in shape and appearance. Five hundred and twenty five species of Leptotyphlinae are described and attributed to five tribes and 44 genera, among which 17 genera are monotypic, 19 others include between two and five species, six have between 10 and 29 species, while two large genera, *Entomoculia* Croissandeau, 1891 and *Leptotyphlus* Fauvel, 1874 account for almost 65% of species diversity with 122 and 203 species, respectively (Newton & Thayer 2005, updated). Judging by the existence of a number of known undescribed Leptotyphlinae species already in collections, and frequent new discoveries, it is plausible that the number of described taxa is far from final.

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