The smallest Cyrtoscydmini of Australia: revision of *Microscydmus*
Sauley & Croissandeau and *Penicillidmus* gen. n.
(Coleoptera, Staphylinidae, Scydmaeninae)

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**Abstract**

The Australian members of *Microscydmus* are revised, and a new subgenus *Scydmomicrus* subgen. n. is established to accommodate seven species: *M. (Sc.) australiensis* Franz (type species of *Scydmomicrus*), *M. (Sc.) nasicornis* Franz, *M. (Sc.) capitiseboraci* sp. n., *M. (Sc.) queenslandicus* sp. n., *M. (Sc.) styxius* sp. n., *M. (Sc.) edithensis* sp. n., and *M. (Sc.) tooloomensis* sp. n. A new *Microscydmus*-like genus, *Penicillidmus* gen. n., is described to include *Penicillidmus masseyensis* sp. n. (type species of *Penicillidmus*) and *P. unicolor* sp. n. Species of *Microscydmus* and *Penicillidmus* are distributed along the eastern coast of Australia, from the northern Cape York to northeastern New South Wales, and females of an undescribed *Microscydmus* are recorded from southern New South Wales. The revised taxa comprise the smallest Australian Cyrtoscydmini, with body lengths of only 0.50–0.65 mm (*Microscydmus*) and 0.83–0.86 mm (*Penicillidmus*). For comparative purposes, morphological details of the type species of *Microscydmus* (*M. nanus*), are described, and structures of the new subgenus and new genus are illustrated. Variations of character states within *Microscydmus* found among Australian species are discussed.

**Key words:** Insecta, Coleoptera, Staphylinidae, Scydmaeninae, Cyrtoscydmini, *Microscydmus*, *Scydmomicrus*, *Penicillidmus*, Australia, taxonomy

**Introduction**

Species of Cyrtoscydmini can be as small as 0.5–0.7 mm, and genera that include such tiny beetles are difficult to study. Most previous authors assigned newly described species to genera basing predominantly on several characters observable on dry-mounted specimens. When dealing with beetles that measure a half-millimeter, frequently with deflexed heads that make the bodies seem even shorter, such an approach leaves a very limited number of available characters to examine. These include typically the general body shape, the shape of the head and position of the compound eyes; the shape and composition of the antennal club; the shape and structures of the pronotum (e.g., presence/absence of lateral carinae, ante-basal pits and grooves); and the number of basal elytral foveae. In rare cases, when specimens were dissected, also the male genital structures were included in diagnoses. But often new species were described on the basis of females only (e.g., all hitherto known Australian species of *Microscydmus* Sauley & Croissandeau, 1893 (Franz 1975)). In the smallest Cyrtoscydmini the body shapes are relatively uniform, the head is often deflexed and difficult to examine, especially with card-mounted specimens; the pronotal carinae, pits, grooves and impressions are difficult to observe on a tiny and sometimes densely setose prothorax; the elytrial foveae can be concealed by the pronotal base overlapping the base of the elytra; and preparation of the aedeagus may result in detaching and losing the parameres or distorting the median lobe, which in the smallest species is usually thin-walled and fragile. These problems become evident in revisions of previously described genera and commonly, dorsal characters are insufficient for generic diagnoses or even misleading. Examples of previously ill-defined taxa whose descriptions were based mostly on dorsal characters can be found in the recent revision of several Neotropical genera, comprising small species (0.54–0.73 mm in length): *Microraphes* Franz, 1980, *Heteroscydmus* Franz, 1980, *Mimoscydmus* Franz, 1980 and *Amimoscydmus* Jałoszyński, 2013 (the latter established for a species previously included in *Mimoscydmus*) (Jałoszyński 2013a). Important ventral
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