

# **Typhlodessus monteithi n. gen., n. sp., a blind terrestrial Dytiscidae (Coleoptera) from New Caledonia**

Autor(en): **Brancucci, Michel**

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*Typhlodessus monteithi* n. gen., n. sp., a blind terrestrial Dytiscidae  
(Coleoptera) from New Caledonia<sup>1</sup>

MICHEL BRANCUCCI<sup>2</sup>

Entomology Department, Natural History Museum, 4001 Basel, Switzerland

*Typhlodessus monteithi* n. gen., n. sp., the third known terrestrial Dytiscidae (Coleoptera), is described. It measures 1.25 mm, is blind and lives in the litter of a high-altitude rain forest of New Caledonia. Its position within the Hydroporinae is discussed; the habitus, underside, parameres and aedeagus are illustrated.

Since the description of the first terrestrial Dytiscidae, *Geodessus besucheti* BRANCUCCI, from the rain forests of the Himalayas (BRANCUCCI, 1979), another genus and species living in comparable conditions, *Terradessus caecus* WATTS, has been discovered and described from Australia (WATTS, 1982).

The two species *Geodessus besucheti* BRANCUCCI and *Terradessus caecus* WATTS have several features in common, such as their puncturation and setation: they appear to belong to the Bidessini and even to be closely related to other bidessine genera such as *Clypeodytes* or *Uvarus*, despite the absence of a certain number of characters, in particular the absence of striae on the pronotum or on the elytra.

*Typhlodessus monteithi* n. sp., a very different species, undoubtedly belongs to the Hydroporinae, but its position within this subfamily is not obvious: some features, such as the metacoxal processes or metatibiae, indicate the Bidessini, whereas others, such as the prosternal process or parameres, suggest the Hydroporini. The same problem has been discussed by ORDISH (1976) concerning the position of *Phreatodessus* and *Kuschelhydrus*.

*Typhlodessus* n. gen.

Type-species: *Typhlodessus monteithi* n. sp.

Small, unicolorous testaceous, flattened, costate and eyeless. Head without clypeal grooves and cervical stria. Joints of the antennae broadened. Eyes absent.

Pronotum strongly depressed on posterior half, and with protruding posterior angles.

Elytra with 5 costae (Fig. 1). Prosternal process very small, broadly triangular, strongly depressed, and narrowly rounded at apex. Metacoxal processes rather flat and situated almost at the same level as abdomen, not covering the proximal part of the metatrochanters.

Legs without swimming hairs. Metatibiae short.

Derivatio nominis: blind Hydroporinae.

<sup>1</sup>Présenté dans le cadre du «Symposium d'Entomologie aquatique» lors de l'Assemblée annuelle de la S.E.S. les 23 et 24 mars 1985 à Lausanne.

<sup>2</sup>Mr. A. CORAY, Scientific Illustrator, made the illustrations. This was possible through a grant from the Swiss National Foundation for Scientific Investigation (request Nr. 3.625-0.84)

Affinities: The genus *Typhlodessus* can be separated from *Geodessus* and *Terradessus* by the absence of impressed punctures and by the presence of costae on the elytra, and by the prosternal process which is narrow, strongly depressed and similar to that of *Kuschelhydrus* and *Phreatodessus*.

Systematic position: As mentioned above, the systematic position of this genus is not obvious. On the one hand, the metacoxal processes are reminiscent of those of other Bidessini, even if they are not as extremely flattened. The metatibiae are very short and slightly curved, and would also suggest a position within the Bidessini. On the other hand, the strongly depressed prosternal process is very unlike the usual form of the process in this tribe and resembles more closely that of the hypogean New Zealand species *Phreatodessus hades* and *Kuschelhydrus phreaticus*. The ground sculpture and the unsegmented parameres are also very similar.

*Typhlodessus monteithi* n.sp.

Body elongate (Fig.1), subparallel, testaceous, unicolorous.

Head broad; eyes absent, only a small rounded black spot visible at anterior corner of the usual eye-position. No distinctly impressed clypeal grooves visible. Ground-sculpture consisting of very small polygonal meshes on the disc, of slightly larger ones on the clypeus and vertex, and of several large punctures on the lateral part. A slight depression present on the vertex on each side of the middle. Antennae short; joint 1 and 2 long and broad; joints 3–5 very small, globular; joints 6–10 progressively broadened; joint 11 elongate, distinctly broadened at middle.

Pronotum transverse, twice as broad as long, widest in anterior half, strongly depressed on posterior half, particularly near the posterior margin just before the posterior angles, produced antero-laterally along side of head. Anterior margin slightly rounded. Lateral margins finely bordered, slightly converging posteriorly, suddenly curved just before the anterior angles. Posterior margin convex and rounded at middle, becoming concave before reaching the posterior angles. Posterior angles acute, projecting on to elytra. Surface sculpture alutaceous, consisting of small polygonal meshes. Several large punctures also present along anterior margin and a few at middle of posterior half.

Elytra parallel-sided on anterior 2/3, evenly tapering in posterior part, and broadly rounded at apex; with 5 costae, a weak sutural one, a long strong discal one that almost reaches the apex, a short but strong sublateral one (1/3 of elytral length), a long strong lateral one reaching and bordering the apex, and a weak one between the sublateral and the epipleura. Ground-sculpture alutaceous, consisting of small, weakly impressed polygonal meshes. Wings atrophied.

Profemora thin in proximal part, strongly broadened at middle. Tibiae and tarsi without swimming hairs. Metatibiae short. Metatrochanters broadly triangular. Metasternal wings very short. Metacoxal lines absent. Metacoxal processes broad, deeply excavated at sides; posterior margin rounded. Anal sternite transversely depressed (Fig. 2). Entire underside very sparsely and finely puncturate, alutaceous, with weak and obsolescent microreticulations.

Parameres elongate, with an inner tooth slightly below apex (Fig. 3). Aedeagus, in dorsal view, elongate; margins parallel in basal part, slightly broadened after middle, gently converging anteriorly and rounded at apex (Fig. 5). In lateral view, very thin, slightly curved, flat in apical third (Fig. 4).

Total length: 1.25 mm; width: 0.55 mm.

♀. Unknown.

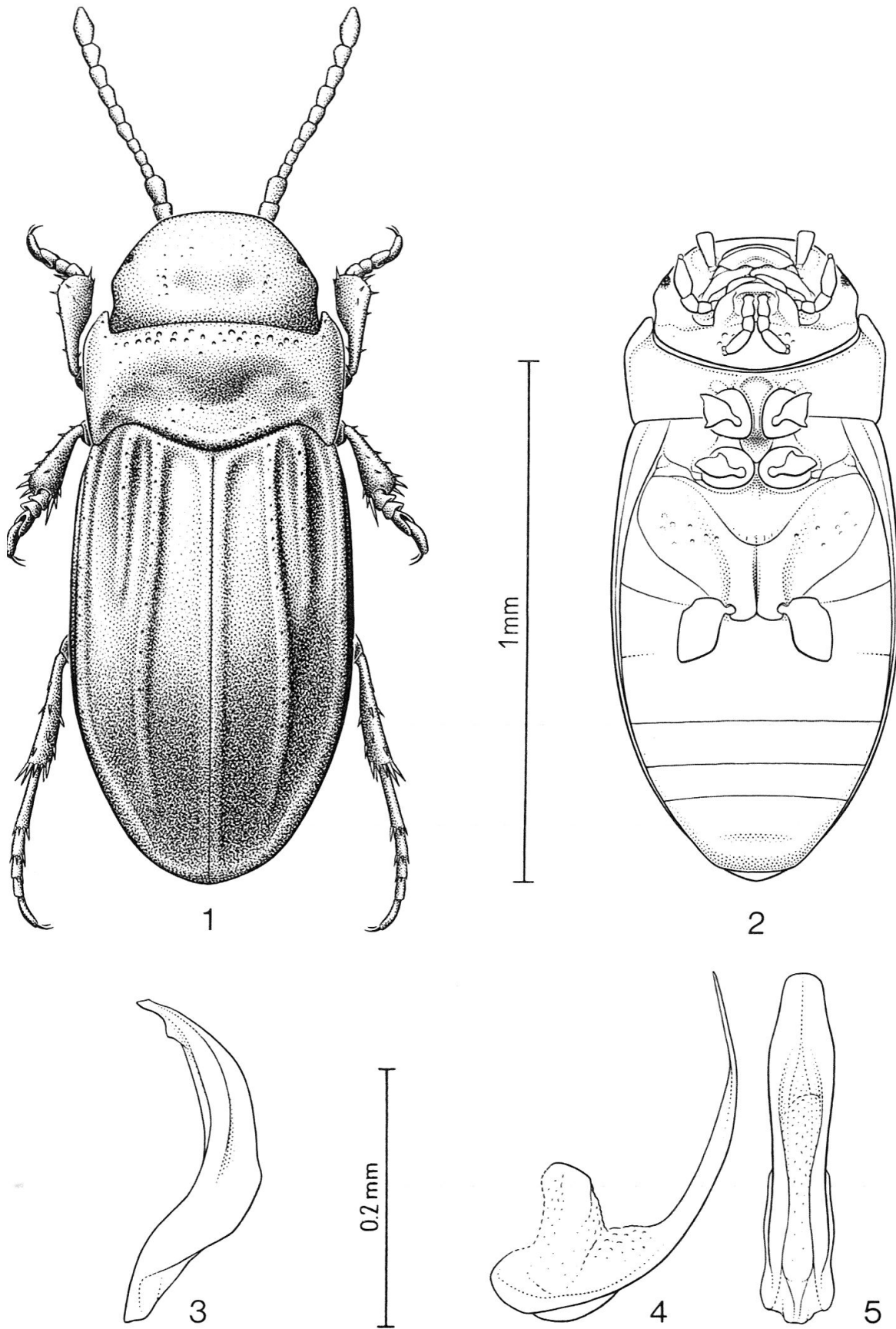


Fig. 1-5: *Typhlodessus monteithi* n. sp.: 1, Habitus. 2, Underside. 3, Right paramere. 4, Aedeagus in lateral view. 5, Aedeagus in dorsal view.

Holotype ♂ (Queensland Museum, Brisbane): New Caledonia, Mt. Panié, 20°35'S, 164°47'E, rain forest, 1300–1600 m, moss and litter, 15.V.1984, G.B. Monteith, Q.M. Berlesate No 649.

Derivatio nominis: Species named after Dr. G.B. MONTEITH (Queensland Museum, Fortitude Valley), who collected the holotype in New Caledonia.

Affinities: This species is unique in the Dytiscidae. The habitus, the aedeagus and even the parameres are very characteristic, and no obvious comparisons can be made.

#### CONCLUSION

*Typhlodessus monteithi* n. sp. is the third known terrestrial Dytiscidae. Like *Geodessus besucheti* BRANCUCCI and *Terradessus caecus* WATTS it does not have any swimming hairs on the legs, has also been collected in a high-altitude rain forest (between 1300 and 1600 m), and lives among moss and litter. Adaptation to the soil appears to have arisen independently in different groups of the Dytiscidae.

It is interesting to note that all 3 terrestrial Dytiscidae are characterized by the lack of swimming hairs, which contrasts with the cave or phreatic species in which the swimming hairs are well developed.

Morphologically, *Typhlodessus monteithi* n. sp. is not related to the 2 previously described terrestrial Dytiscidae or to the known phreatic species, including the two New Zealand species, *Phreatodessus hades* ORDISH and *Kuschelhydrus phreaticus* ORDISH. The absence of eyes in *T. monteithi* n. sp. as well as in the other terrestrial (*Terradessus caecus*), phreatic and troglobitic species has to be interpreted as a parallel development due to adaptation to their respective habitats. The strongly depressed pronotum is also unusual in Dytiscidae. Other features, such as the costate elytra, the transversely depressed anal sternite and the very short metasternal wings, are, with present knowledge, difficult to interpret in an evolutionary way.

However, the question of the position of this genus within the Hydroporinae remains open, and will only be resolved when more material becomes available and a morphological study can be made that takes into consideration the other highly specialised species. Perhaps the discovery of the larva would help with this.

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