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## A Second *Terradessus* Species from Australia (Coleoptera, Dytiscidae)

by M. Brancucci & G.B. Monteith

**Abstract:** The authors describe a fifth terrestrial Dytiscidae. The new species, *Terradessus anophthalmus* n.sp., is the second species attributed to the genus *Terradessus*. Notes on the distributions are given and the habitus and aedeagus of both species are illustrated.

**Key words:** Coleoptera Dytiscidae – *Terradessus* – terrestrial – Australia, Queensland

In 1979, the senior author (BRANCUCCI, 1979) described the first terrestrial Dytiscidae, *Geodessus besucheti* Brancucci, a rain forest of the Himalayas. Three years later, WATTS (1982) published the description of a new genus and new species from Australia, *Terradessus caecus* Watts. Three years elapsed before a third terrestrial dytiscid was discovered and described, from New Caledonia (BRANCUCCI, 1985): *Typhlodessus monteithi*. Recently, BALKE & HENDRICH (1996) published the description of a second *Geodessus* species, *G. kejvali*, from Southern India. In the present paper an additional species from Australia is described, which undoubtedly belongs to the genus *Terradessus*. This species is thus the fifth terrestrial dytiscid. As in *Terradessus caecus* Watts and *Typhlodessus monteithi* Brancucci, the new species is blind and wingless.

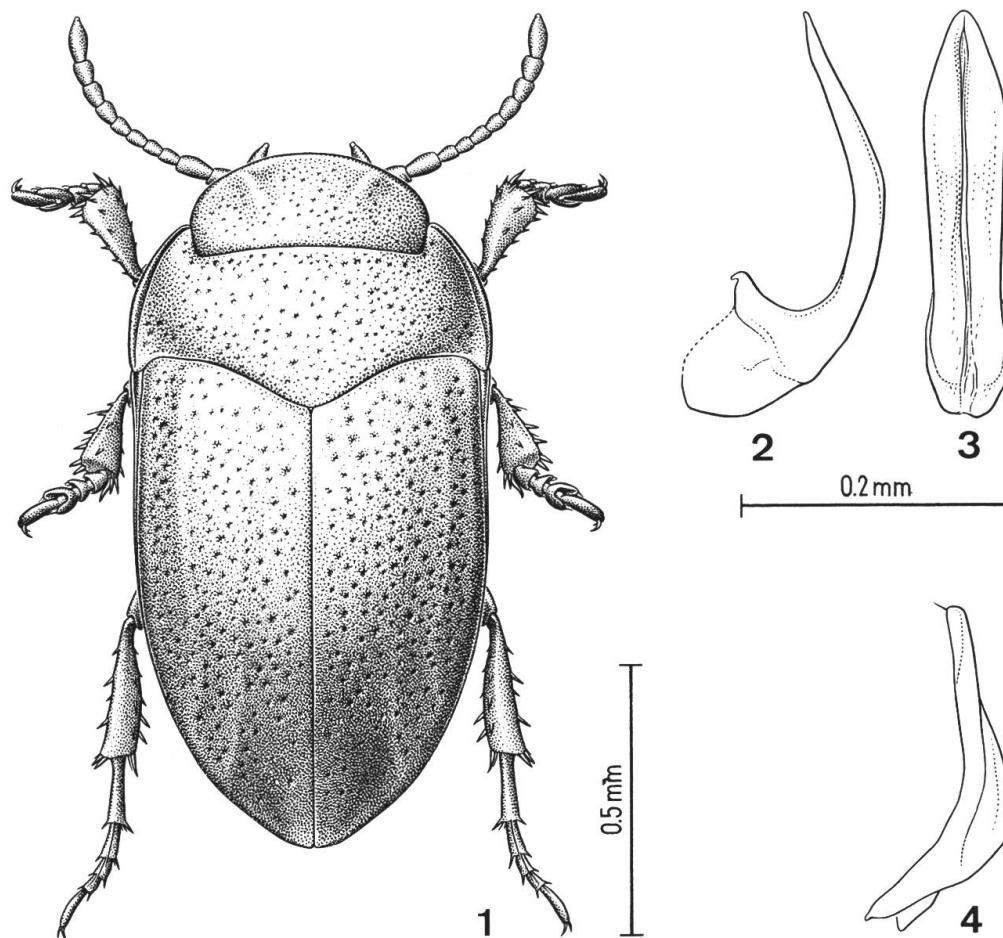
### ***Terradessus* Watts**

Type species: *Terradessus caecus* Watts, by original designation.

Small species, wingless and eyeless. Head without cervical stria. Pronotum strongly bordered, without striae. Elytra without striae. Epipleura broad at base. Prosternal process compressed laterally. Metacoxal lines obsolescent, interrupted anteriorly. Metasternal processes broad. Metacoxae and sternites with large but obsolescent and sparse punctures. Pro- and mesotarsi with the 4th joint reduced and concealed within the 3rd. Femora and tarsi without swimming hairs. Aedeagus symmetrical in dorsal view.

Parameres unisegmented.

Distribution: North Queensland, Australia.



Figs 1–4: *Terradessus caecus* Watts. 1, Habitus. 2, Aedeagus in lateral view. 3, Idem in dorsal view. 4, Right paramere.

### ***Terradessus caecus* Watts**

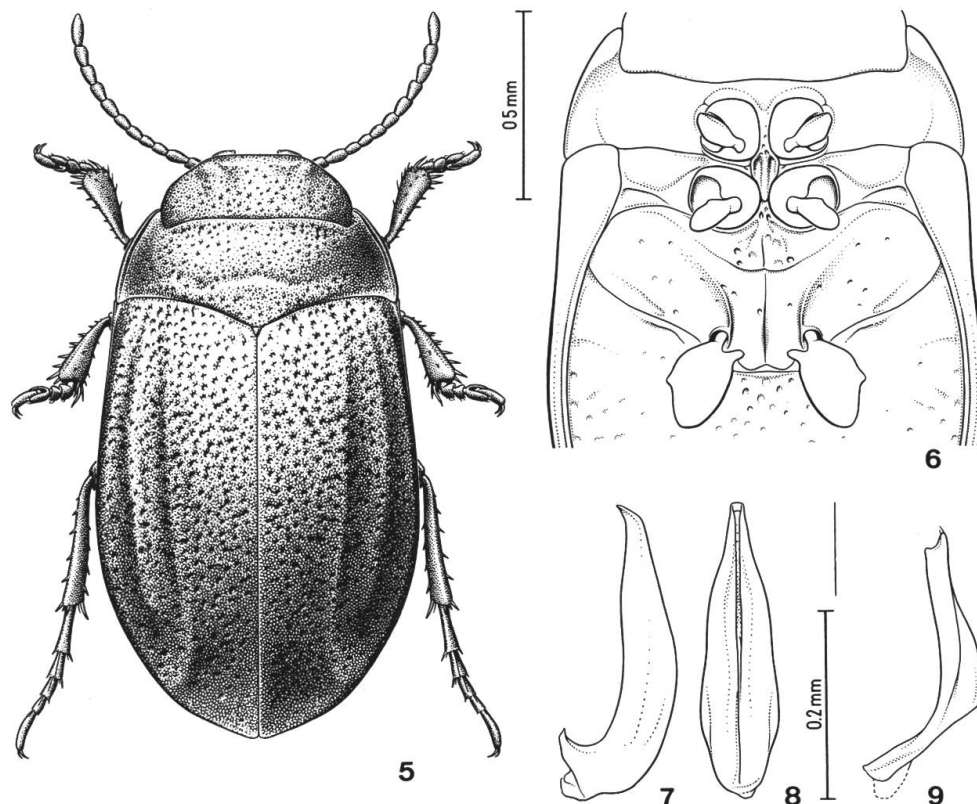
Figs 1–4.

*Terradessus caecus* Watts, Mem. Qd Mus. 20(3): 527–531.

Habitus (Fig. 1). Aedeagus (Figs 2–3). Parameres (Fig. 4).

Material examined: Watts described this species from 17 specimens from the 800m summit of Mt Sorrow at latitude 16°05'S near the coast of North East Queensland. The following 214 specimens have been collected since then. All are by berlese extraction of litter by Queensland Museum surveys within 4 km of the type locality: 4 km W Cape Tribulation (Site 8), 720m, 24.IX.1982 (25 ex.); same locality, 29.IX.1982 (19 ex.); same locality, 29.XII.1982 (1 ex.); 4.5 km W Cape Tribulation (Site 9), 760m, 28.IX.1982 (1 ex.); 5 km W Cape Tribulation (Site 10), 780m, 29–30.IX.1982 (15 ex.); same locality, 28.IX.1982 (7 ex.); same locality, I.1983 (5 ex.); same locality, 23.IV.1983 (2 ex.); 4.5–5 km W Cape Tribulation (Top Camp),

760–780m, 1.X.1982 (74 ex.); same locality, 28.IX.1982 (5 ex.); same locality, 4.X.1982 (3 ex.); Roaring Meg, 6 km W Cape Tribulation, 710m, 5.X.1982 (2 ex.); Mt Hemmant, SE slopes, 880m, 25.IV.1983 (19 ex.); Mt Hemmant summit, 1858m, 27.XI.1993 (36 ex.).



Figs 5–9: *Terradessus anophthalmus* n.sp. 5, Habitus. 6, ventral view. 7, Aedeagus in lateral view. 8, Idem in dorsal view. 9, Right paramere.

***Terradessus anophthalmus* n.sp.**

Figs 5–9.

Body broadly oval (Fig 5), testaceous-brown, distinctly darker on elytra except for the extreme base. Eyeless and wingless.

Head broad, eyes absent, their usual position indicated by a slight longitudinal swelling, lacking cervical stria. Clypeal grooves indistinctly bordered by a broad depression. Ground sculpture consisting of very small polygonal meshes and large punctures, particularly numerous on the posterior part of the head. Antennae short; joints 1 and 2 broad and long, joints 5–10 very small, almost spherical, joint 11 elongate, distinctly broadened at middle.

Pronotum transverse, 2.6 times as broad as long, widest near the posterior angles, convergent anteriorly, broadly bordered at sides. Lateral margins weakly but regularly rounded. Anterior margin

slightly rounded. Posterior margin strongly produced in the middle. Posterior angles acute. Surface sculpture consisting of small polygonal meshes and of evenly-distributed small punctures. Anterior row of punctures regular, in one line, becoming larger and confluent laterally. Posterior row of punctures uneven; punctures large, irregularly-distributed, confluent at sides.

Elytra (Fig 5) slightly rounded, slightly broadened after the middle, almost parallel-sided, evenly tapered on posterior 1/3, broadly rounded at apex, with 3 weak lateral costae. Ground sculpture consisting of small polygonal meshes and numerous medium-sized punctures covering the whole surface, becoming larger and confluent at sides.

Underside (Fig. 6) ferruginous-brown. Tibiae and tarsi without swimming hairs. Metasternal wings very short and narrow. Metacoxal lines short, interrupted anteriorly. Metacoxal processes broad, deeply excavated at sides. Metacoxa and sternites covered with an obsolescent and fine microreticulation and with large punctures. Sternites each with a transverse row of small punctures. Anal sternite broadly rounded on posterior margin.

Total length: 1.3–1.6 mm; width: 0.7–0.9 mm.

♂. Tarsi and mesotarsi indistinctly broadened. Protarsal and mesotarsal claws slightly stronger than in female. Aedeagus in dorsal view tapered at posterior 1/4, narrow and truncate at apex (Fig. 7); in lateral view shaped like a hook at apex (Fig. 8). Parameres unisegmented (Fig. 9).

♀. Similar to ♂.

Derivatio nominis: a blind species.

Types: Holotype ♂ (QM-Brisbane) and 4 paratypes (1 ♂ and 1 ♀, QM-Brisbane; 1 ♂ and 1 ♀, NHM-Basel); Locality: Australia, NE Qld, Thornton Peak, summit, via Daintree, rainforest, 1100–1300 m, sieved litter & moss, 24–27.IX.1984, G.B. & S.R. Monteith, Q.M. Berlesate No 662. 2 paratypes (1 ♀, QM-Brisbane; 1 ♂, NHM-Basel); Locality: Australia, NE Qld, Thornton Peak, 11 km NE Daintree, 16°10'S, 145°22'E, rainforest, 1100 m, sieved litter, 1.XI.1983, Monteith, Yeates & Thompson, Q.M. Berlesate No 620.

Affinities: The new species can easily be distinguished from *T. caecus* Watts by the body which is distinctly convex, slightly dilated posteriorly, by the elytra which are distinctly costate (Fig. 5) and by the aedeagus (Fig. 7–8).

Distribution: The biogeographic region of Queensland within which *Terradessus* occurs is known as the Wet Tropics Region and comprises a narrow zone of rainforested massifs which parallels the northern coast of Queensland between Cooktown (15°30'C) and Townsville (19°00'S). The Wet Tropics Region has been the subject of intensive surveys of ground insects by the Queensland Museum in the last decade. It has been divided into 19 mountain zones for the purposes of this survey. These zones are mapped and named by BAEHR (1995) in his review of the carabid genus *Philinis*. Of 563 leaf litter samples which have been processed from the 19 mountain zones *Terradessus* has only been located from the Thornton Zone (Zone 2). This zone is well demarcated by the deep valleys of the Bloomfield River to the north and the Daintree River to the south. *Terradessus* is paralleled by another relict, litter-inhabiting member of another family which is normally aquatic. This is the curious water bug *Austrovelia queenslandica* (Heteroptera: Mesoveliidae) which is also restricted to mountain rainforests of the Thornton Zone (MALIPATIL & MONTEITH, 1983).

Because of the nearness of the mountains to the sea the Thornton Zone has one of the highest rainfalls in Australia. Within the Thornton Zone there are two major mountain blocks, Thornton Peak (1300m) in the south, and the Mt Sorrow Tableland in the north. The Sorrow Tableland has peatis at Mt Hemmant (1065m), Mt Pieter Botte (960m), Mt Sorrow (800m) and Mt Halcyon (872m). The two blocks are separated by the 500m valley at the head of Noah and Roaring Meg Creeks. This valley also separates the ranges of the two species of *Terradessus* which approach to within about 5 km of each other. *Terradessus anophthalmus* is restricted to climb 1000m on Thornton Hill while *T. caecus* occurs from Mt Hemmant across Mt Sorrow to the upper valley of Roaring Meg Creek. It has not been detected on the western Mt Pieter Botte or the northern Mt Halcyon, both of which have lower rainfalls the rest of the Sorrow Tableland. *T. caecus* is strictly montane in distribution. In a transect study of insects along 10 sites from sea level to the summit of Mt Sorrow it was only detected at the top three sites, its lower limit of 720m being a little above the lower limit of regular fog precipitation which is linked with an altitudinal change in the ground insect fauna (MONTEITH, 1985).

### Key to the species of the genus *Terradessus*

- Body flat, broadest near the posterior angles of the pronotum (Fig. 1). Elytra without distinct lateral striae. Aedeagus rounded at apex in dorsal view (Fig. 3). ***T. caecus* Watts**
- Body convex, broad, broadest behind the middle (Fig. 5). Elytra with 3 lateral striae visible. Aedeagus narrow in apical part, truncated at apex (Fig. 8). ***T. anophthalmus* n.sp.**

Systematic position: As discussed by WATTS (1982), BRANCUCCI (1985) and BISTRÖM (1988), the systematic position of the genus *Terradessus* is uncertain. Characters such as the absence of a scutellum, the reduction of the 4th protarsal joint and even the general appearance suggest that this genus should be placed in the Bidessini. However, the most important character of this tribe is the two- or three-segmented paramere which is present in all genera but in *Terradessus* it is unisegmented. For this kind of morphology, which is also found in various cave dytiscids, SMRŽ (1982, 1983) created the tribe Siettitiini.

### Conclusion

The discovery of this species, the fifth within a few years, demonstrates how little is known about the fauna living in the soil. Similarly, the number of Dytiscid species known to live in phreatic waters is steadily increasing. However, each new discovery highlights very clearly the necessity for establishing the correct systematic position for all these genera and species. In the case of *Terradessus*, this is still not possible.

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