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A peculiar new genus of lebiine ground beetles from Australia (Coleoptera: Carabidae: Lebiinae)

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Abstract

A new genus and species, *Crassagena depressa* gen.n., sp.n. (Coleoptera: Carabidae), is described from north-eastern Queensland (Australia). The species belongs to the lebiine subtribe Pericalina according to structure of the labium and of the stylomeres. Although habits and life history of the new species are unknown, the remarkably depressed body shape suggests a mode of life in crevices, most probably in or under bark.

Key words: Coleoptera, Carabidae, Lebiinae, Lebiini, Pericalina, *Crassagena*, Australia, taxonomy, new genus, new species.

Introduction

Among specimens borrowed from the Australian National Insect Collection, Canberra (ANIC), for a revision of the Australian species of the lebiine genus *Anomotarus* CHAUDOIR, a single specimen of very peculiar shape and colouration was detected that does not belong to the mentioned genus, nor even to the same subtribe. Since no related genera are known and the peculiar body shape and colouration suggests a specialized mode of life, a new genus and species are described, although a single specimen only is recorded so far.

Methods

Measurements were taken using a stereo microscope with an ocular micrometer. Length has been measured from apex of labrum to apex of elytra. Length of orbit was taken from posterior margin of eye to the position where the orbital curvature meets the neck. Length of pronotum was measured along midline, width of base at the position of the posterior lateral setae.

The habitus photograph was obtained with a digital camera using ProgRes Capture Basic and AutoMontage and subsequently was worked with Corel Photo Paint 10.

I am greatly indebted to Mr. T. Weir, Canberra, for the kind loan of the specimen.

Crassagena gen.n.

TYPE SPECIES: *Crassagena depressa* sp.n., by present designation.

ETYMOLOGY: The name is a combination of *crassa* (Latin: thick) and *gena* (Latin: cheek) and refers to the much enlarged, quadrangular orbits of the single known species. The gender is feminine.



Fig. 1: *Crassagena depressa* sp.n., holotype (length: 4.45 mm).

DIAGNOSIS: Genus of tribe Lebiini and subtribe Pericalina. Small species, whole body remarkably wide and depressed; upper and lower surfaces sparsely pilose; head very wide bearing large, protruding eyes and short though very wide and rather quadrangular orbits; neck only about half as wide as head; labrum elongate, anteriorly narrowed, but apex straight; mandibles fairly short and stout with short, impilose scrobe; mentum with shallow, triangular convexity, with two mental setae; submentum with two elongate setae; ligula narrow and elongate, with narrow, bisetose apex; paraglossae membranous, far surpassing ligula, almost meeting in middle; lacinia elongate, with sharp apex, inner margin with a fringe of elongate setae; all palpomeres of both palpi sparsely pilose, apical palpomeres rather thick but with acute apex; antenna short, three basal antennomeres sparsely pilose, apical antennomeres densely pilose; pronotum wide, trapezoidal, lateral margins bisetose; elytra short and wide; apex obliquely rounded; striae very shallow, intervals coarsely punctate; marginal setae elongate; metepisternum elongate; terminal abdominal sternum in female quadrisetose; legs rather short and stout, femora remarkably thick, sparsely pilose; tarsi short, impilose on upper surface; 4th tarsomeres not excised at apex; lower surface of 5th tarsomeres with few setae; claws rather small, with 2–3 small teeth in basal half; male genitalia so far unknown; stylomere 1 asetose at apex, stylomere 2 short, curved, with obtusely rounded apex, with two ventro-lateral and one dorso-median ensiform setae, apparently without any nematiform seta.

DISTRIBUTION: North-eastern Queensland, Australia.

RELATIONSHIPS: Although the new genus belongs to the subtribe Pericalina, its relationships within this subtribe remain obscure (see remarks).



Figs. 2–3: *Crassagena depressa* sp.n.; 2) labium (scale: 0.25 mm); 3) stylomere (scale: 0.1 mm).

***Crassagena depressa* sp.n.**
(Figs. 1–3)

TYPE LOCALITY: Mt. Webb, north of Cooktown, north-eastern Queensland, Australia.

TYPE MATERIAL: **Holotype:** ♀, “15.03S 145.09E 3 km NE of Mt. Webb QLD 1-3 Oct. 1980 T. Weir” (Australian National Insect Collection, Canberra).

DIAGNOSIS: See genus diagnosis, elytra yellow with large, dark, oval-shaped patch in apical half covering outer half from middle of 3rd interval to margin.

DESCRIPTION (female): Measurements: Length: 4.45 mm; width: 1.85 mm. Ratios: Length eye/orbit: 1.9; width/length of pronotum: 1.60; width widest diameter/base of pronotum: 1.33; width pronotum/head: 1.02; length/width of elytra: 1.40; width elytra/pronotum: 1.55.

Colour (Fig. 1): Anterior half of head, and orbits dark piceous, middle of vertex, anterior margin of clypeus, labrum, mandibles, and antennae reddish-piceous. Palpi light reddish with yellow apices. Elytra yellow, with a large, oval-shaped, dark patch in apical half that covers the outer half of either elytron from middle of 3rd interval to margin though leaves the very margin narrowly yellow. Lower surfaces of head and pronotum reddish-piceous with slightly lighter prosternum, abdomen yellow. Femora yellow, though knees piceous and tibiae and tarsi reddish-piceous. Pilosity yellow.

Head (Figs. 1–2): Very wide and remarkably depressed, almost as wide as pronotum. Eyes very large, almost twice as long as orbits, though laterally but little protruding over orbits. Orbits short, very wide, divided from eyes by a shallow incision, posterior margin oblique though convex. Neck only half as wide as head at widest diameter, separated from vertex by a transverse, shallow, very narrow sulcus. Labial palpus even in female not widened, and with acute tip. Antenna short, barely attaining base of pronotum, median antennomeres barely longer than wide. Posterior supraorbital seta situated at posterior margin of eye, in a shallow depression. No distinct frontal ridge present, though inside of eye a shallow sulcus visible. Surface with coarse and sparse punctation that leaves an impunctate, glabrous space on middle of vertex, with sparse, erect pilosity, and with highly superficial, isodiametric microreticulation on labrum,

clypeus, and anterior-median part of frons. Rest of surface without traces of microreticulation, very glossy.

Pronotum (Fig. 1): Short and wide, somewhat rhomboidal, little cordiform, widest very close to apex. Apex concave, apical angles slightly protruded though widely rounded off. Lateral margins anteriorly convex, in posterior half very gently sinuate, basal angles distinct though somewhat obtuse at tip, base laterally oblique, in middle gently concave. Surface remarkably depressed. Apex indistinctly margined, base more distinctly margined. Lateral marginal channel very narrow, little widened towards basal angles. Anterior marginal seta situated very close to apex, at widest diameter, posterior marginal seta situated at basal angle. Median line distinct, complete, little impressed though in a shallow, rather wide depression, no transverse sulci visible. Basal grooves moderately deep, about circular. Surface with sparse, coarse, somewhat irregularly distributed punctation and sparse, short, somewhat declined pilosity. Microreticulation absent, surface very glossy.

Elytra (Fig. 1): Short and wide, gently widened towards apex, surface very depressed. Humeri evenly rounded, basal margin attaining scutellum. Lateral margin very slightly sinuate in front of middle, apical angles widely rounded off. Apical margin barely excised, slightly oblique, incurved towards suture. Lateral channel narrow throughout. Striae not impressed, though intervals very gently raised. Microstructure of surface consisting of two irregular rows of very coarse punctures between intervals, microreticulation absent, surface very glossy. 3rd interval with two seta-bearing punctures that lie behind the basal third and in front of the apical third and are situated just outside the 2nd interval. Setae erect, considerably longer than the surrounding pilosity. Whole surface covered by moderately dense, somewhat inclined pilosity. Series of marginal setae consisting of six subhumeral, one intercalar, four subapical, and one apical seta(e), the last one situated at the end of 3rd interval. Setae apparently very elongate (but most of them broken).

Hind wings fully developed.

Lower surface: Thoracic sterna, lower surface of head, and abdomen with sparse and short pilosity, only episterna impilose. Metepisternum very elongate, almost 3 x as long as wide at apex. Terminal abdominal sternite quadrisetose.

Legs: Rather short and stout, in particular femora remarkably thick and sparsely pilose. Tarsi short, upper surface impilose, 5th tarsomere bisetose at either margin of lower surface. Tarsal claws of moderate size, with 2–3 small teeth.

Stylomeres (Fig. 3): As in genus diagnosis.

Variation: Unknown.

Distribution: North-eastern Queensland, Australia. Known only from type locality.

Collecting circumstances: Unknown.

Etymology: The species name refers to the remarkably depressed body.

Remarks

The structure of the mouth parts, in particular that of the labium, and of the stylomeres suggest a position of the new genus within the lebiine subtribe Pericalina in the sense of BALL (1975) and LORENZ (1998, 2005). At the same time, certain peculiar character states of body shape obscure the position within the subtribe, and no closely related genera can be enumerated at present.

Although the configuration of the stylomeres probably is plesiomorphic within the subtribe, the strikingly wide and depressed body and the cheek-like orbits are highly apomorphic and suggest strong adaptations to a quite special habitat that presumably is narrow crevices of any sort, though most probably in or under the bark of trees. Since it is not known, whether the single specimen was captured in rain forest or rather in open tropical eucalypt savannah, this question must be left open so far. Tentatively, the narrow crevices under loose bark of certain bark shedding eucalypts or those in the bark of rough barked eucalypts and/or acacias seem to constitute the most likely habitats for this extremely depressed species. The conspicuous cheek-like orbits are more difficult to explain, because nothing is known about the habits of this species. However, this shape of orbits either suggests a mode of life that is specialized in an unknown way, or it may be simply the only way to place the mandibular musculature when the head is so much depressed as it is in this species.

It seems that Australia has generated a couple of lebiine species of comparable, extremely depressed body shape that belong to quite different subtribes: for example a new genus of uncertain dromiine affinities (BAEHR, in press) and another new genus of anomotarine affinities (BAEHR, in prep.) that both live in the deep cracks of rough barked mallee eucalypts and acacias in moderately arid areas of north-eastern and southern Australia, respectively. At least in the mentioned new anomotarine species the orbits are similarly quadrangular and cheek-like as in *Crassagena* which probably would corroborate the opinion expressed above.

The striking colouration of the elytra is unique so far in Australia. Comparable elytral patterns are known to me only from the lebiine genus *Lebidia* MORAWITZ of mainland Asia. In both genera this pattern is a sort of face-like colouration with the dark patches in the apical part of the elytra representing eyes, and one might speculate that this could serve as an aposematic pattern, even when the "face" in *Crassagena* seems to be very small, perhaps too small to be effective. However, as Moore (in litt., cited and discussed in BAEHR 2005: 227) pointed out, such vivid patterns could give some protection against birds or small lizards who seek their food in and under bark of trees.

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Artikel/Article: [A peculiar new genus of lebiine ground beetles from Australia \(Coleoptera: Carabidae: Lebiinae\) 1-5](#)