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A new species of the genus *Microlestodes* Baehr from South-east Queensland, Australia

(Coleoptera, Carabidae, Lebiinae)

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Abstract

A new species of the lebiine genus *Microlestodes* Baehr, 1987 is described from Lamington National Park in south-eastern Queensland, Australia: *M. ibiscae* **sp. n.** The new species is closely related to *M. atrifasciatus* (Sloane, 1910) from north-eastern Queensland, but is easily distinguished by larger size, different colouration of the elytra, and the denticulate apex of the aedeagus. It is inserted in the key to the genus *Microlestodes* (Baehr 1987: 29).

Introduction

The new species was discovered during examination of the carabid samples collected in the course of the IBISCA Queensland Project (Investigating the Biodiversity of Soil and Canopy Arthropods). This project is carried out by a great number of scientists and volunteers under the direction of staff of Griffith University, Brisbane, and Queensland Museum, Brisbane, since July 2006 in Lamington National Park in south-eastern Queensland, Australia, at the Queensland/New South Wales border. The project is devoted to general and systematic sampling of plants and invertebrates in four altitudinal zones (from 300-1100 m) in this large, rain forest capped plateau, with the objective to examine the effects of the recent climatic changes on fauna and flora, based on a general species inventory. Focus is laid upon possible changes of altitudinal zonation of species due to global warming.

Lamington National Park includes 206 km^2 of mostly subtropical rain forest and ranges from almost sea level to slightly above 1.100 m. The volcanic plateau is dissected by many deep valleys, most of which open to the north. At lower altitude and on slopes exposed to the north and west some sclerophyll forest exists, whereas the plateau and the eastern slopes of the valleys are grown with montane subtropical rain forest which at the highest tops changes into temperate *Nothofagus* rain forest.

Methods

Description and measurements follow the style used in my revision of the genus *Microlestodes* (Baehr 1987). Length has been measured from apex of labrum to apex of elytra; length of pronotum was measured along midline.

For dissection of the male genitalia the male holotype was soaked over night in a jar under wet atmosphere, then the genitalia were removed and subsequently cleared in hot KOH. The habitus photograph was captured with a digital camera using ProgRes Capture Basic and AutoMontage and was subsequently improved with Corel Photo Paint 11.

The holotype of the new species is stored in Queensland Museum, Brisbane (QM), the paratype in the working collection of the author at Zoologische Staatssammlung, München (CBM).

Genus *Microlestodes* Baehr, 1987

Baehr, 1987: 28; Baehr 1990: 183; Lorenz 1998: 447.

Type species: *Microlestes macleayi* Csiki, 1932 (= *Dromius humeralis* Macleay, 1871); by original designation.

This genus of rather small lebiine beetles was erected by Baehr (1987) for four Australian and one New Guinean species which formerly were included in the almost worldwide distributed genus *Microlestes* Schmidt-Göbel, 1846. *Microlestodes* differs from *Microlestes* mainly by the presence of three impilose basal antennomeres instead of two, and by the structure of the paraglossae which are free and do not encircle the glossa, as in *Microlestes*. Baehr (1987, 1990) described 8 additional species from Australia, and also the subgenus *Cyclolestodes* Baehr, 1987 for *M. ovatus* Baehr, 1987. Species of *Microlestodes* occur everywhere in Australia, but most species apparently posses rather restricted ranges, while one species [*M. macleayi* (Csiki, 1932)] is very widely distributed.

During daytime the species apparently hide on the ground, under stones, in leaf litter, and in earth cracks, commonly near water, but also in rather dry environments, as well as on the floor of tropical to temperate rain forest and sclerophyll forest. Apart from the short-winged *M. ovatus*, all species are fully winged. In open tropical and subtropical areas they are commonly attracted to light, sometimes in large numbers.

Microlestodes ibiscae sp. n.

Figs 1-3

Holotype: ♂ , QLD: 28.193°Sx153.128°E Lamington NP. IBISCA Qld Plot# IQ-700-C. rainforest. 19 Oct 2006. 20844 Thompson&Burwell. 748m. litter sample - SE side (QMT156260).
Paratype: 1 ♀, same data (CBM).

Etymology. The name refers to the IBISCA Queensland project.

Diagnosis. Distinguished from the most similar species *M. atrifasciatus* (Sloane, 1910) by the different colour pattern of the elytra and by their isodiametric and very distinct microreticulation which gives the surface a remarkably dull structure. From the southern *M. zonatus* Baehr, 1987 distinguished likewise by the colour pattern of the elytra and by wider pronotum. From both species further distinguished by the conspicuously denticulate apex of the aedeagus.

Description

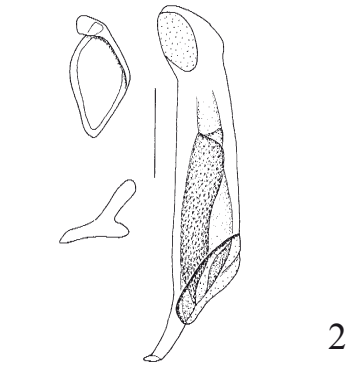
Measurements. Length: 3.9-4.2 mm; width: 1.7-1.85 mm. Ratios: Width/length of pronotum: 1.40-1.42; widest diameter/width of base of pronotum: 1.13-1.16; length/width of elytra: 1.45-1.48.

Colour (Fig. 1). Head and pronotum black or dark piceous, margins and basal angles of pronotum inconspicuously paler. Elytra yellow, with a wide, slightly oblique and somewhat serrate black fascia in apical half and with an indistinct, dark spot at base of 3rd interval. Labrum reddish, palpi reddish though basal palpomere of both palpi yellow. Antenna reddish, two basal antennomeres yellow. Legs including coxae pale yellow, though apex of tibiae, and tarsi piceous. Lower surface black, on pronotum dark piceous, though metasternum and first visible abdominal sternum in middle, and laterally partly pale yellow. Also epipleurae of pronotum and elytra contrastingly pale yellow.

Head (Fig. 1). Slightly narrower than pronotum. Eyes large, moderately protruded, orbits short, oblique and slightly convex. Clypeal suture distinct, labrum transverse, rectangular, 6-setose. Mandibles rather short. Mentum edentate. Palpi of normal shape. Antenna short, pilose from 4th antennomere, median antennomeres slighty longer than wide. Surface without any wrinkles, with very distinct, coarse, isodiametric microreticulation and with scattered punctures which are difficult to distinguish, rather dull, but slightly sericeous.

Pronotum (Fig. 1). Wide, much wider than long, little narrowed towards basal angles, rather depressed, widest slightly behind anterior fourth. Apex wide, concave, apical angles protruded, obtuse. Lateral margins

1



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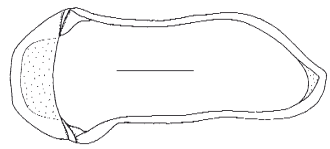

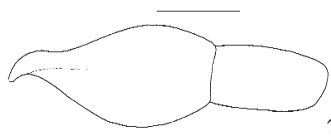

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Fig. 1. *Microlestodes ibiscae* **sp. n.** Habitus. Length: 4.2 mm. **Fig. 2.** *Microlestodes ibiscae* **sp. n.** Male aedeagus in lateral view and parameres. Scale: 0.25 mm. **Fig. 3.** *Microlestodes ibiscae* **sp. n.** Female gonocoxites. Scale: 0.1 mm.

evenly but gently convex, very slightly sinuate in front of the obtuse basal angles. Base in middle protruded, laterally obliquely convex. Apex not margined, lateral margin narrow, marginal channel narrow and very shallow, base inconspicuously margined. Median line impressed, narrow, not attaining apex nor base. Anterior and posterior transverse sulci barely indicated, basal grooves very shallow. In anterior half on either side with a shallow though distinct, circular pit. Anterior marginal seta situated at widest diameter, posterior seta at basal angle. Surface with distinct, coarse, isodiametric microreticulation and with scattered punctures which are difficult to distinguish, rather dull, but slightly sericeous.

Elytra (Fig. 1). Comparatively elongate, laterally little convex, widest slightly behind middle, surface depressed. Humeri widely rounded, apex gently concave, lateral apical angles rounded, sutural angle shortly rounded. All striae impressed, finely punctate, but intervals absolutely depressed. 3rd interval with two setiferous punctures in apical half, located at anterior and posterior margins of the dark vitta, respectively. Punctures inconspicuous and setae very short. Series of marginal setae consisting of 5 basal, 6-7 apical setae, and 2 setae at apex near suture; setae, if still present, very elongate. Surface with very distinct, coarse, isodiametric microreticulation which give it a markedly dull appearance that is more sericeous only on the dark vitta. Each interval with an uniseriate row of fairly distinct punctures.

Lower surface. Whole surface with very fine, superficial microreticulation, glossy. Metepisternum elongate, slightly less than 2.5 x as long as wide at anterior margin. Two terminal abdominal sterna in middle with extremely short, almost invisible pilosity. Terminal sternum in both sexes bisetose.

Legs. Of average size. 5th tarsomeres with few setae on lower surface. Tarsal claws denticulate. Three basal tarsomeres of male protarsus slightly widened and biseriately squamose.

Aedeagus (Fig. 2). Genital ring narrow, narrowed to apex, slightly asymmetric. Aedeagus narrow and elongate, lower surface almost straight, apex elongate (in genus), slightly bent down, and with distinct, unciform, slightly transverse denticle on lower surface that is turned to the right side. Orificium moderately elongate, situated on upper surface. Internal sac with a large, coiled, finely denticulate piece. Left paramere large, triangular, right paramere very small.

Female gonocoxites (Fig. 3). Of dromiine shape. Both gonocoxites apically without setae, gonocoxite 2 moderately elongate, rectangular.

Variation. Very little variation noted.

Distribution. Lamington National Park at the Queensland/New South Wales border, south-eastern Queensland, Australia. Known only from the type locality.

Biology. Both specimens were collected from ground litter in montane rain forest on a south-easterly exposed slope at about 750 m.

Recognition

For identification of the new species couplet 9 in the key to the genus *Microlestodes* (Baehr 1987: 29) is easily reached which must be changed as follows. Figure captions from the mentioned key are inserted as B87 fig.:

9. Elytral vitta oblique (Fig. 1; B87 fig. 17); pronotum basally wide, faintly sinuate in front of the basal angles; apex of aedeagus denticulate or not ..... 9a.

– Elytral vitta wide, transverse, anterior margin slightly advanced at 5th interval (B87 fig. 23); pronotum basally narrower, not sinuate in front of the basal angles; apex of aedeagus not denticulate (B87 fig. 34) ..... *M. zonatus*

9a. Size smaller, body length <3.9 mm; elytra shorter, ratio l/w <1.42; elytral vitta narrower and more oblique, elytra near apex with a black spot on 4th interval (B87 fig. 17); microreticulation on elytra more superficial, slightly transverse, hence surface glossier; apex of aedeagus not denticulate (B87 fig. 33) ..... *M. atrifasciatus*

– Size larger, body length >3.9 mm; elytra longer, ratio l/w >1.45; elytral vitta wider and less oblique, elytra without apical spot (Fig. 1); microreticulation on elytra very distinct, isodiametric, hence surface remarkably dull; apex of aedeagus denticulate (Fig. 2) ..... *M. ibiscae* **sp. n.**

Remarks

Probably *Microlestodes ibiscae* **sp. n.** is most closely related to the northern *M. atrifasciatus* which bears a comparatively wide pronotum and a fairly similar colour pattern on the elytra. However, the aedeagus of *M. ibiscae*, although of similar narrow and elongate shape and with a likewise elongate apex, differs considerably in its markedly denticulate apex.

The northern *M. atrifasciatus* likewise has been mainly collected from the floor of rain forest, commonly at fairly high altitude in montane forest. Hence the collecting circumstances and probably also the habits of *M. ibiscae* are quite similar to those of *M. atrifasciatus*.

Both species belong to a fairly distinctive group within the genus *Microlestodes* which includes *M. zonatus* from south-eastern Australia and probably also the New Guinean *M. cinctus* (Darlington, 1968). The three Australian species are characterized by their mainly light elytra which bear a well delimited, striking, dark,

transverse or oblique vitta on the apical half of the elytra. The New Guinean *M. cinctus,* however, has four well delimited spots on prevailing dark elytra, but it shares the wide pronotum and the somewhat ovate shape of the elytra, present in the three Australian species. These four species apparently occur on the floor of rather dense forest, either rain forest or sclerophyll forest, whereas most other species of the genus (except the flightless *M. ovatus* from the south-eastern Australian mountain ranges) seem to prefer more open, even semiarid environments.

Although the very sparse material of the new species does not permit any final statements about its distribution, it seems conceivable, through comparison with other montane carabid species occurring on Lamington Plateau, that *M. ibiscae* is more or less restricted to that area and in future perhaps could be detected only in adjacent montane rain forest areas of the Border Range. Most probably this is another representative of a number of species which occur in this montane rain forest area that is famous for its large number of endemic species. Hence *M. ibiscae* once more validates Lamington Plateau and National Park as a hotspot of carabid evolution and diversity (see also Baehr 2005, 2008a, 2008b).

Acknowledgement

I am grateful to Geoff Monteith of Queensland Museum, Brisbane, for the kind loan of the specimens.

Zusammenfassung

Eine neue Art der Lebiini-Gattung *Microlestodes* Baehr, 1987 wird aus dem Lamington National Park in Südostqueensland, Australien, beschrieben: *M. ibiscae* **sp. n.** Sie ist am nächsten mit *M. atrifasciatus* (Sloane, 1910) aus Nordostqueensland verwandt, unterscheidet sich aber durch beträchtlichere Körpergröße, abweichende Färbung der Elytren und die zähnchenartige Spitze des Aedeagus. Die Art ist in den Bestimmungsschlüssel für die Gattung *Microlestodes* (Baehr 1987: 29) eingearbeitet.

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