Exocelina kinibeli sp.n. from Papua New Guinea,  
a new species of the E. ullrichi-group  
(Coleoptera: Dytiscidae)

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Abstract

Exocelina kinibeli sp.n. (Coleoptera: Dytiscidae) is described from Papua New Guinea (Morobe Province) and placed into the E. ullrichi-group based on the structure of its male genitalia. An identification key to the three species of the group as well as new data on the distribution of E. kainantuensis (BALKE, 2001) and E. ullrichi (BALKE, 1998) are provided.

Key words: Coleoptera, Dytiscidae, Exocelina, new species, molecular phylogenetics, Papua New Guinea.

Introduction

A new species of the genus Exocelina BROUN, 1886 has been collected from the Morobe Province. This new species is morphologically similar to E. ullrichi (BALKE, 1998) and has two diagnostic characters of the E. ullrichi-group: parameres without long setae and median lobe of the aedeagus with a small apical notch ventrally. Therefore, it is considered to be the third member of this group. This is supported by molecular phylogenetic work grouping E. ullrichi and the new species together in one (rather isolated) clade (TOUSSAINT et al. 2014).

The Exocelina ullrichi-group was suggested by BALKE (1998) for two Papua New Guinea species: E. ullrichi and E. kainantuensis (BALKE, 2001). Recent fieldwork has revealed numerous specimens of E. ullrichi from new localities in the Eastern Highlands Province (EHP) of Papua New Guinea. So far, it has been known only from the type locality: Eastern Highlands Province, Kainantu area, Onerunka. Interestingly, this locality is the type locality of E. kainantuensis too, but since 1979, this species has never been found again there or recorded from other areas of the Eastern Highlands Province, despite the fact that the junior author has visited the type area many times.

Here, we describe the new species and provide an identification key to all three species of the E. ullrichi-group and a map of their distribution.


Material and methods

Studied specimens are deposited in the following collections:

NARI PNG National Insect Collection, Port Moresby, Papua New Guinea
NHMB Naturhistorisches Museum Basel, Switzerland
NMW Naturhistorisches Museum Wien, Vienna, Austria
ZSM Zoologische Staatssammlung München, Munich, Germany

All specimen data were quoted as they appeared on the labels attached to the specimens. The label text was cited using quotation marks. Comments in square brackets are ours. We extracted DNA and obtained sequence data for some of the specimens, marked with individual DNA
extraction numbers (e.g., “DNA M.Balke 1379”). These data were used for molecular phylogenetic work published in TOUSSAINT et al. (2014).

Measurements were taken using a Leica M205C stereomicroscope. The following abbreviations were used: TL (total body length), TL-H (total body length without head), and MW (maximum body width). Drawings were made with the aid of a camera lucida attached to a Leica DM 2500 microscope. For detailed study and illustration, protarsi and genitalia were removed and mounted on glass slides with DMHF (dimethyl hydantoin formaldehyde) as temporary preparations. The drawings were scanned and edited, using the software Adobe Illustrator CS5.1.


**Taxonomy**

**Exocelina kinibeli sp.n.**

ZooBank registration and life science identifier: urn:lsid:zoobank.org:pub:4A4A7BBA-8ACC-4702-AC99-858BFC30DB57

Wiki species page: http://species-id.net/wiki/Exocelina_kinibeli

**TYPE LOCALITY:** Papua New Guinea: Morobe Province, Menyamya, Mt. Inji, close to 07°14.81'S 146°01.33'E (actual locality canopy covered and without satellite contact).


**DIAGNOSIS:** Beetle medium-sized, dorsally dark brown, with coarse dense punctation, matt; pronotum with lateral bead; male antennomere 2 larger than other antennomeres, triangular, with rounded externdistal angle; male pro- and mesotarsosmeres 1–3 dilated, protarsomere 4 relatively broad, symmetrical, its anterior angle not expanded, with large, thick, strongly curved anterolateral hook-like seta; in lateral view, median lobe curved and strongly protruding apically, with tip small and sharply turned upwards forming ventral notch, as well as with dorsomedian setae; paramere without notch on dorsal side, with very short, sparse, thin setae. The species is similar to *E. ullrichi*, except for its smaller size, coarser and denser dorsal punctation, less enlarged male antennomere 2, protarsomere 4 symmetrical, its anterior angle not expanded, prosternal process distinctly convex, and more protruding apex of median lobe.

**DESCRIPTION:** Size and shape: Beetle medium-sized (TL-H 4.35 mm, TL 4.9 mm, MW 2.25 mm), with elongate habitus, broadest at elytral middle.

Coloration (Fig. 1): Head dark brown, slightly paler on clypeus and piceous behind eyes, with piceous V-shaped spot between eyes; pronotum dark brown, piceous along punctate anterior row and on disc; elytra dark brown, with some areas darker; head appendages yellowish red, legs darker, especially distally; the holotype slightly teneral, and coloration may be darker in general.

Surface sculpture (Fig. 1): Head with very dense, coarse, punctation (spaces between punctures 1–2 times size of punctures), only slightly finer and sparser anteriorly, between eyes forming two small areas of partly merging punctures; diameter of most of punctures equal to diameter of cells of microreticulation. Pronotum and elytra with slightly finer and more evenly distributed punctation than on head. Pronotum rugose posteriorly, left and right of median line. Head, pronotum, and elytra with strongly impressed microreticulation. Dorsal surface matt due to
strong punctation and microreticulation. Metaventrite and metacoxa distinctly microreticulate, metacoxal plates with longitudinal striales and transverse wrinkles. Abdominal ventrites with distinct microreticulation, numerous striales, and fine sparse punctation, coarser and denser on two last abdominal ventrites.

Structures. Pronotum with lateral bead. Base of prosternum and neck of prosternal process with distinct ridge, with anterolateral extensions. Blade of prosternal process lanceolate, relatively narrow, convex, with distinct bead and few setae; neck and blade of prosternal process evenly jointed. Abdominal ventrite 6 with 24–26 lateral striae on each side, slightly truncate apically. Antennomere 2 larger than other antennomeres, triangular, with rounded but not strongly protruding externodistal angle (Fig. 1). Pro- and mesotarsomeres 1–3 dilated. Protarsomere 4 relatively broad and symmetrical, its anterior angle not expanded, with one large, thick, strongly curved anterolateral hook-like seta. Protarsomere 5 simple, ventrally with anterior row of more than 50 long and posterior row of six shorter setae (Fig. 2). In lateral view, median lobe of aedeagus curved and strongly protruding apically, with tip small and sharply turned upwards forming ventral notch, as well as with dorsomedian setae (Figs. 4–5). Paramere without notch on dorsal side, with very short, sparse, thin setae (Fig. 3).

Female: Unknown.

HABITAT: The new species was collected from tiny water holes on red clay at the edge of a montane forest creek. The forest remnants along a summit ridge are surrounded by man-made grassland on very steep slopes. The new species was found associated with two species of the *E. ekari*-group (SHAVERDO et al. 2014, submitted).

DISTRIBUTION: Papua New Guinea: Morobe Province. The species is known only from the type locality (Fig. 6).

ETYMOLOGY: The species is named for Andrew Kinibel (Madang, Papua New Guinea), who collected the holotype together with the second author. The species name is a proper noun in the genitive case.

Key to species of the _Exocelina ullrichi_-group

This key is based mostly on the male characters. In many cases females cannot be assigned to species due to similarity of their external and internal structures (for female genitalia, see SHAVERDO et al. (2005: Figs. 17a–b) and SHAVERDO et al. (2013: Fig. 7C).

Females of *E. ullrichi* can be distinguished by the slightly enlarged antennomere 2 from the species, which are approximately the same size (e.g., *E. kainantuensis* and *E. knoepfchen* (SHAVERDO, HENDRICH & BALKE, 2012)) and by larger size and stronger dorsal punctuation from *E. miriae* (BALKE, 1998), which occurs often together with *E. ullrichi* and also has a slightly enlarged antennomere 2.


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2. Only male antennomere 2 modified: enlarged, triangular, with rounded externodistal angle (BALKE 1998: Fig. 13). Prosternum with distinct ridge, blade of prosternal process flat to convex (BALKE 1998: Fig. 23)........................................................................................................................................ 2
Fig. 1: Habitus of *Exocelina kinibeli* sp.n., holotype.
Figs. 2–3: Exocelina kinibeli sp.n. 2) protarsomere, ventral view, 3) paramere, external view.
Figs. 4–5: *Exocelina kinibeli* sp.n. 4) median lobe, lateral view, 5) median lobe, ventral view.

– Beetle smaller, TL-H: 4.35 mm. Male antennomere 2 less enlarged, with less protruding externodistal angle (Fig. 1). Protarsomere 4 symmetrical, its anterior angle not expanded (Fig. 2). Blade of prosternal process distinctly convex.  Median lobe and paramere as in Figs. 3–5 ......................................................................................... *kinibeli* sp.n.

**Faunistic notes**

*Exocelina kainantuensis* (BAKE, 2001)


*Exocelina kainantuensis*: NILSSON 2007: 34.


**ADDITIONAL MATERIAL EXAMINED:**


The species is known only from its type locality: Onerunka, Kainantu area, Eastern Highlands Province of Papua New Guinea.

*Exocelina ullrichi* (BAKE, 1998)


*Exocelina ullrichi*: NILSSON 2007: 34.


**ADDITIONAL MATERIAL EXAMINED:**

The species is widely distributed in the Eastern Highlands Province. It was very often found to be associated with *E. knoepfchen*, *E. miriae*, and one new species of the *E. ekari*-group (SHAVERDO et al. 2014, submitted).

Fig. 6: Map of Papua New Guinea showing distribution of *Exocelina kinibeli* sp.n. (red), *E. ullrichi* (blue), and *E. kainantuensis* (yellow).

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Zusammenfassung


References


