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Exocelina ransikiensis sp. nov. from the Bird's Head of New Guinea (Coleoptera: Dytiscidae: Copelatinae)

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Abstract. *Exocelina ransikiensis* sp. nov. is described from the eastern part of the Bird's Head Peninsula, New Guinea (West Papua Province, Indonesia). It is the eighth *Exocelina* Broun, 1886 species known from the peninsula, and clearly differs from the other species, all of which belong to the *E. ekari*-group, by its smaller size and shape of the male antennae and genitalia. Based on our study of the morphological characters and molecular phylogenetic analysis, we propose a separate species group for it. Important diagnostic characters (dorsal habitus and coloration, as well as the shape of the male antennae, protarsomeres 4–5, median lobe, and parameres) of the new species are illustrated.

Key words. Coleoptera, Dytiscidae, Copelatinae, *Exocelina*, new species, Bird's Head Peninsula, New Guinea

Introduction

Exocelina Broun, 1886 currently includes 91 species known from New Guinea (Balke 1998, 1999, Shaverdo & Balke 2014; Shaverdo et al. 2005, 2012, 2013, 2014, 2016a,b). All seven species known from the Bird's Head (including northwestern islands) to date belong to the *E. ekari*-group (Shaverdo et al. 2012, 2016a). Here, we describe *Exocelina ransikiensis* sp. nov., which has a continuous outline of the median lobe of the male genitalia and, thus, cannot be placed into the *E. ekari*-group, representatives of which are characterized by discontinuous outline of the median lobe (Shaverdo et al. 2012, 2014). Study of other morphological characters (e.g., habitus, dorsal surface sculpture, shape and setation of the male genitalia) shows that it cannot be grouped with any other known *Exocelina* species. Therefore, we introduce a species group for it that is also supported by a recent

molecular phylogenetic analysis placing the species in a more isolated position, but close the *E. ekari*-group (Toussaint et al. 2014).

Material and methods

Measurements were taken with a Wild M10 stereomicroscope. The following abbreviations were used: TL (total body length), TL-H (total body length without head), 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 drawing, antenna, protarsus, 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 CS 5.1.

The terminology to denote the orientation of the genitalia (ventral for median lobe and dorsal and external for paramere) follows Miller & Nilsson (2003). The terminology of the structure of the prosternum follows Larson et al. (2000).

The present work is based on material from the following collections:

CASK Andre Skale collection, Hof/Saale, Germany;
MZB LIPI Division of Zoology, Museum Zoologicum Bogoriense, Cibinong, Indonesia;
NHMW Naturhistorisches Museum Wien, Vienna, Austria;
ZSM Zoologische Staatsammlung München, Munich, Germany.

Species description

Exocelina ransikiensis sp. nov.

(Figs 1–8)

Exocelina undescribed sp. MB1269: Toussaint et al. (2014): Supplementary figs 1–4, Tab. 2.

Type locality. New Guinea, Bird's Head Peninsula, approximately 10 km NW from Ransiki, Kali Way, 01°25′03″S, 134°01′49″E, 1300 m a.s.l.

Type material. Holotype: ♂, West Papua, ca. 10 km NW Ransiki, Kali Way, 1300 m, 01°25′03″S, 134°01′49″E, 03.III.2007 (MZB). Paratypes: 6 ♂♂ 2 ♀♀, with the same label data as in the holotype (CASK, NHMW, ZSM). 1 ♂, West Papua, old road Ransiki to Anggi, 1160 m, 01°25′53.6″S, 134.02′45.6″E, Balke (BH 03, M.Balke 1269), (ZSM). All types are provided with red printed labels.

Diagnosis. Small, with oblong habitus; coloration red to reddish brown; dorsal surface with strong punctation and microreticulation, matt; pronotum with distinct lateral bead; male antennomeres simple; male protarsomere 4 with large, thick, strongly curved anterolateral hook-like seta; median lobe with continuous outline, slightly tapering in ventral view and with curved apex in lateral view; paramere without notch on dorsal side, with thin, sparse, inconspicuous setae. All these characters can be used to separate the new species from the representatives of the *E. ekari*-group co-occurring geographically and ecologically with it. Males of all *E. ekari*-group species from this region have evidently modified antennomeres, thus, the new species can be easily distinguished even from the species with strong punctation and microreticulation of the dorsal surface, e.g., *E. anggiensis* Shaverdo, Hendrich & Balke, 2012.

Description. ***Size and shape.*** Beetle small (TL-H 2.85–3.2 mm, TL 3.2–3.6 mm, MW 1.5–1.7 mm), with oblong habitus, broadest at elytral midlength; sides of elytra subparallel in teneral specimens. ***Coloration.*** Head yellowish red on clypeus and gradually darker posteriorly, dark brown behind eyes; pronotum reddish brown on disc and yellowish red on sides; elytra uniformly reddish brown to brown; ventrally yellowish red, slightly darker on metacoxal plates; head appendages yellowish to yellowish red, legs darker distally (Fig. 1). Teneral specimens paler to uniformly yellowish red.

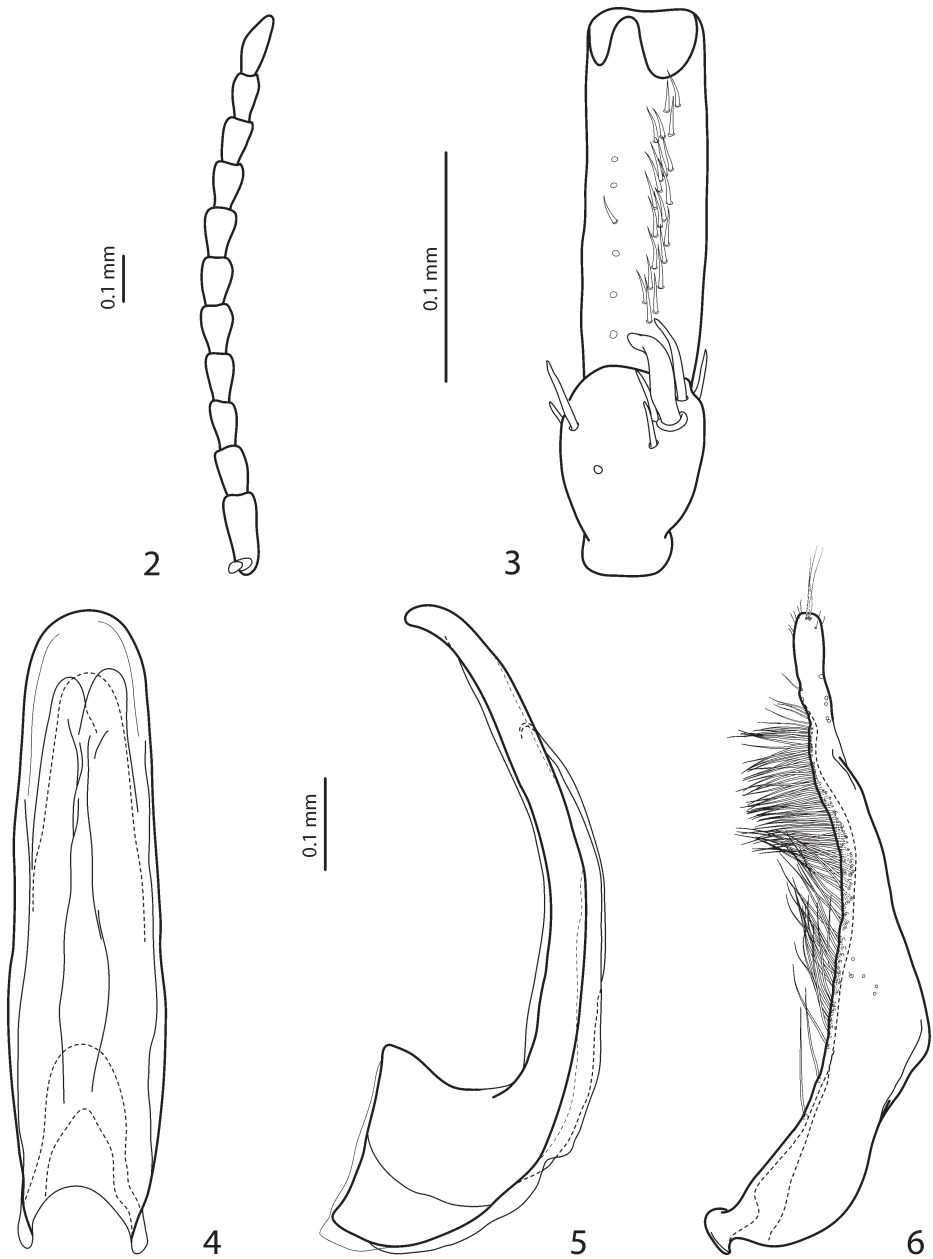
Surface sculpture. Head with dense and coarse punctation (spaces between punctures 1–2 times size of punctures); diameter of punctures equal to diameter of cells of microreticulation. Pronotum and elytra with dense and coarse punctation, slightly more evenly distributed than on head. Pronotum and elytra with strongly impressed microreticulation, dorsal surface matt. Head with microreticulation slightly stronger. Metaventrite, metacoxa, and abdominal ventrites distinctly microreticulate, but with cells of microreticulation larger than on dorsal side, making ventrum shinier. Metacoxal plates with longitudinal strioles and transverse wrinkles; abdominal ventrites with strioles. Ventrites with coarse but sparse punctation, almost invisible, denser and, therefore, more evident on metacoxal plates and two apical abdominal ventrites.

Fig. 1. Habitus of *Exocelina ransikiensis* sp. nov., male.

Structures. Pronotum with distinct lateral bead. Base of prosternum and neck of prosternal process with broad, smooth ridge, rounded anteriorly, without anterolateral extensions. Blade of prosternal process lanceolate, broad, convex, with distinct lateral bead and very few setae laterally; neck and blade of prosternal process evenly jointed. Abdominal ventrite 6 broadly rounded.

Male. Antenna simple (Fig. 2). Protarsomere 4 simple, with large, thick, strongly curved anterolateral hook-like seta. Protarsomere 5 ventrally with anterior band of 22 short setae and posterior band of rather long 6 setae (Fig. 3). Abdominal ventrite 6 with 7–8 lateral striae on each side. Median lobe with continuous outline, slightly tapering in ventral view and with curved apex in lateral view (Figs 4, 5). Paramere without notch on dorsal side, with thin, sparse, inconspicuous setae (Fig. 6).

Female. Without evident differences in external morphology from males, except for not modified pro- and mesotarsi and abdominal ventrite 6 without striae.



Figs 2–6. *Exocelina ransikiensis* sp. nov., male. 2 – antenna; 3 – protarsomeres 4–5 in ventral view; 4 – median lobe in ventral view; 5 – median lobe in lateral view; 6 – paramere in external view.

Holotype. TL-H 3.15 mm, TL 3.6 mm, MW 1.7 mm. It is not a teneral specimen.
Etymology. The species is named after Ransiki Village. The name is an adjective in the nominative singular.
Collecting circumstances. The species is associated with running water, similar to nearly all other New Guinean *Exocelina* species (Shaverdo et al. 2012). Most specimens were sampled at the foot of a slope where collected (temporal and/or ground) water formed channel-like outflows, which were completely without vegetation and with a bottom of relatively solid ground with deep crevices. One beetle was collected from a forest stream.
Distribution and habitat. New Guinea: eastern part of the Bird's Head Peninsula. This species is known only from the Ransiki region: along the old road from Ransiki village to the Anggi Lakes.

Discussion

Since no described species with the distinct morphological similarly to the new one have been recovered and it is possible that some species morphologically similar to it could be discovered in the future, considering a low level of exploration of the water beetle fauna of the Bird's Head Peninsula and a high level of *Exocelina* endemism in New Guinea, we introduce the *Exocelina ransikiensis*-group with the following diagnostic characters:

- small size (TL-H 2.85–3.2 mm);
- habitus oblong and narrow;
- coloration red to reddish brown;
- dorsal surface matt, without striae or strioles, with strong punctation and microreticulation;
- male antennae not modified;
- pronotum with lateral bead;
- male protarsomere 4 not modified, with large, thick, strongly curved anterolateral hook-like seta;
- median lobe with continuous outline, slightly tapering in ventral view and with curved apex in lateral view;
- paramere without notch on dorsal side, with thin, sparse, inconspicuous, evenly spread setae.

Having males with unmodified antennae and a curved medial lobe, *E. ransikiensis* sp. nov. is somewhat similar to *E. aipomek* (Balke, 1998) and *E. santimontis* (Balke, 1998). However, these medium-sized, black, shiny species from Papua Province also have much denser and stronger setation of the parameres. Therefore, we suppose that *E. ransikiensis* sp. nov. is part of a unique lineage. Based on evidence from a molecular phylogenetic study (Toussaint et al. 2014), we also assume that it is closely related to the *E. ekari*-group, especially its basal representative *E. skalei* Shaverdo & Balke, 2014 and to *E. bagus* (Balke & Hendrich, 2001) (Balke 1998, 2001). Morphological differences of the new species from representatives of the *E. ekari*-group are discussed above ("Introduction" and "Diagnosis"). From *E. bagus*, the new species can be easily distinguished from the very distinct morphology of the former: male antennomere 4–6 excessively large and 3 and 7 strongly enlarged, different shape and setation of the male genitalia (see Balke 1998, under the name *Copelatus* (*Papuadytes*) *spe-*

ciosus Balke & Hendrich, 1998). Therefore, *E. bagus* can also be considered part of a separate lineage. Finally, *E. ransikiensis* sp. nov., *E. bagus*, and *E. ekari*-group form a monophyletic clade within the New Guinean *Exocelina* (Toussaint et al. 2014).

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