

# *Riegerochterus baehri* gen. nov. and spec. nov., the first fossil velvety bug (Hemiptera: Heteroptera, Ochteridae) from Dominican Amber\*

YURI A. POPOV & ERNST HEISS

## Abstract

An inclusion in Miocene Dominican amber contained a well preserved velvety shore bug (Ochteridae), *Riegerochterus baehri* gen. nov., spec. nov., which is described and figured in this article. This is the first fossil representative of the family recorded from Cenozoic, as all previously described taxa are much older, e.g. from the Early Jurassic of England and the Late Jurassic-Early Cretaceous of China. It is distinguished from all extant genera of Ochteridae by several distinct characters that are shortly discussed. Figures and photos of representatives of fossil (*Riegerochterus*) and recent (*Megochterus*, *Ochterus* and *Ocyochterus*) genera are provided.

**Keywords:** Hemiptera, Heteroptera, Ochteridae, Dominican Amber, new genus, new species.

## Kurzfassung

***Riegerochterus baehri* gen. nov. and spec. nov., die erste fossile Ochtheride (Hemiptera: Heteroptera, Ochteridae) aus Dominikanischem Bernstein**

Eine Inkluse Dominikanischen Bernsteins enthält ein gut erhaltenes Exemplar der Familie Ochteridae, welches als *Riegerochterus baehri* gen. nov., spec. nov. in dieser Arbeit beschrieben und abgebildet wird. Dieses ist der erste fossile Beleg dieser Familie aus dem Känozoikum. Alle früheren Meldungen stammen aus viel älteren geologischen Formationen, wie jene von England (Unterer Jura) oder China (Oberer Jura – Untere Kreide). Sie unterscheidet sich von allen rezenten Gattungen der Ochteridae durch mehrere Merkmale, die diskutiert werden. Abbildungen und Fotos der fossilen Gattung *Riegerochterus* nov. gen. werden vorgelegt und zum Vergleich mit solchen von Vertretern der rezenten Gattungen *Megochterus*, *Ochterus* und *Ocyochterus* ergänzt.

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## Introduction

The Ochteridae (velvety shore bugs) are a small predominantly tropical nepomorphan family containing only three recent genera (*Ochterus*, *Megochterus* and *Ocyochterus*), with some 55 described species (ANDERSEN & WEIR 2004). Almost all belong to the cosmopolitan genus *Ochterus* LATREILLE, 1807, predominantly occurring throughout the warm-temperate regions of the world. In the tropics Ochteridae are mainly replaced by the family Saldidae (SCHUH & SLATER 1995). The monotypic genus *Ocyochterus* DRAKE & GÓMEZ-MENOR, 1954 is only known from South America (Ecuador), and the genus *Megochterus* JACZEWSKI, 1934, with two endemic species from Australia (BAEHR 1989, 1990a, 1990b). They have a long “probing” rostrum used for feeding on immobile or dead soil microfauna and performing the role of scavengers (RIEGER 1976). They move and jump quickly and live usually at the edge of running freshwater. There they occur on sandy or stony shores with little vegetation (ANDERSEN & WEIR 2004). They feed on small Diptera larvae which live in the pits of sand deposits along the water course (POISSON 1957), but also on various crayfish side-swimmers of the genus *Gammarus*. The Biology of Ochteridae has also been treated by CHAMPION (1901), TAKAHASHI (1923), SCHELL (1943), JACZEWSKI (1934), BOBB (1951), KORMILEV (1971), POPOV (1971), MENKE (1979), BOULARD & COFFIN (1991), ANDERSEN & WEIR (2004) and KANYUKOVA (2006).

These bugs are one of the most ancient representatives of shore dwellers and may be regarded as an initial group of Heteroptera (POPOV et al. 1994). Records of fossil Ochteridae are rather scarce and the oldest representative of

\* Dr. CHRISTIAN RIEGER, honouring his 70<sup>th</sup> birthday.

this family is the Early Jurassic *Propreocoris maculatus* POPOV, DOLLING & WHALLEY, 1994, from the Lower Lias of Charmouth fauna in England. More recently a series of velvety shore bugs was collected from an Upper Mesozoic formation in North-Eastern China. One species was described as *Pristinochterus zhangi* by YAO, CAI & REN 2007, from the Late Jurassic-Early Cretaceous (Yixian Formation), another from Early Cretaceous (Jiufotang Formation) by YAO et al. 2007. Further new taxa *Pristiochterus ovatus* YAO, REN & SHIH, 2011, *Floricaudus multilocellus*, YAO, REN & SHIH, 2011, and *Angulochterus quadrimaculatus* YAO, REN & SHIH, 2011, were described from the Yixian Formation of north-eastern China. Earlier *Meropachys dubius* POPOV, 1986, from the Late Cretaceous of West Mongolia was placed in the Mesozoic Iygaeoid family Pachymeridiidae, but more probably it also belongs to Ochteridae.

The age of Dominican amber is controversially discussed with an estimated age from Middle Oligocene to late Lower Miocene, i. e. 23-40 million years (GRIMALDI 1995). We support the conclusion that Dominican Amber in the Dominican Republic has most probably been formed 15 to 20 million years ago during the late Early Miocene through early middle Miocene (GRIMALDI 1995; ITURRALDE-VINCENT & MACPHEE 1996). The fossilized resin of Dominican Amber has a leguminous origin, and the Leguminosae tree *Hymenaea protera* POINAR, 1991, of the Early to Middle Miocene age is most probably the source of this resin collected in various sites of the Dominican Republic (ITURRALDE-VINCENT & MACPHEE 1996).

### Material and Methods

During the visit of one of the authors (Yu. P.) at the Staatliches Museum für Naturkunde Stuttgart, Germany, in 2004 and also due to the efforts of the Curator of fossil insects (mainly from the excellent large collection of Dominican amber) Dr. GÜNTER BECHLY (Paleontological Department, Amber Section) the bugs from the collection were studied and some of the more interesting Heteroptera were selected for identification and further publications (GOLUB et al. 2008; HERCZEK 2011).

### Taxonomy

Infraorder Nepomorpha POPOV, 1968  
 Superfamily Ochteroidea KIRKALDY, 1906  
 Family Ochteridae KIRKALDY, 1906

### *Riegerochterus* gen. nov.

Type species: *Riegerochterus baehri* spec. nov.

### Diagnosis

Clearly distinguished from the three extant genera of Ochteridae (*Ochterus*, *Ocyochterus* and *Megochterus*) by a combination of characters e.g. its small size (about 3 mm), the unusual configuration of angulate large eyes, wide carinate vertex, roughly punctate dorsal surface of body, the presence of an anal vein on hemelytral clavus and 11 cells of the membrane which have never been observed together in all these genera.

### Description

Small size, about 3.3 mm. Surface of pronotum, scutellum and hemelytra roughly and densely punctate.

Head rather broad, almost 3x as wide as long; frontal plate not produced above base of rostrum, not punctate, apically rather hatched; vertex large and broad, with three longitudinal parallel carinae; ocelli small, widely separated; eyes very large, of angular shape; antennae slender, segments I+II shortest and of almost equal length, III longest and thinnest, IV slender and shorter than III; rostrum long, reaching to 4<sup>th</sup> abdominal segment.

Pronotum 2.2x as wide as long; surface with some symmetrical wrinkles (fig. 1); lateral margins almost straight, not convex; posterior margin emarginated at middle.

Scutellum triangular, 1.5x as wide as long, shorter than pronotum.

Hemelytra largely punctate, with short dense hairs along distal part of anterior margin; clavus with distinct anal vein; membrane large, with 11 cells, 4 of which are small.

Legs: Hind tibia with a row of 6 acute spines on outer margin; claws straight, weakly curved.

Etymology: This genus is dedicated to our friend CHRISTIAN RIEGER (Nürtingen, Germany), an eminent heteropterist, on the occasion of his 70<sup>th</sup> birthday, who first became well known because of his classic monograph on the morphology of *Ochterus marginatus* (LATREILLE, 1804).

### Discussion

This peculiar ochterid bug is primarily characterized by its large head, the unusual configuration of the angulate large eyes (Fig. 1-3, Fig. 6-8), and wrinkled surface of pronotum. Therefore it differs from all recent and fossil velvety shore bugs. The number of 11 cells of the hemelytral membrane (figs. 5, 6) is only shared by the South Ameri-

can *Ocyochterus victor* (BOLIVAR, 1879). Species of the genus *Ochterus* show only 7 cells (figs. 4, 11) and *Megochterus* 20 cells (fig. 9). The small size of at least 3.3 mm of *Riegerochterus baehri* spec. nov. is typical for Australian species of *Ochterus* (BAEHR, 1989): *O. australicus* JACZEWSKI, 1934 (3.7 - 4.55 mm), *O. baehri baehri* RIEGER, 1977 (3.65 - 4.25 mm), *O. baehri riegeri* BAEHR, 1989 (3.5- 4.05 mm), *O. brachysoma* RIEGER, 1977 (3.45-3.85 mm) and *O. atridermis* BAEHR, 1989 (3.35-3.5 mm). However, the dorsal body surface of body, particularly of the hemelytra, of all these species are like other species always spotted.

One should also pay attention to the unusual "acutangulate" pronotum of *Ochterus acutangulus* (CHAMPION, 1901), (DRAKE 1952, fig. 1), from Central America, which greatly differs from a typical pronotal configuration of all species of the genus *Ochterus* and most probably must be transferred to a separate genus after a special morphological investigation.

***Riegerochterus baehri* spec. nov.** (figs. 1-3, figs. 6-8)

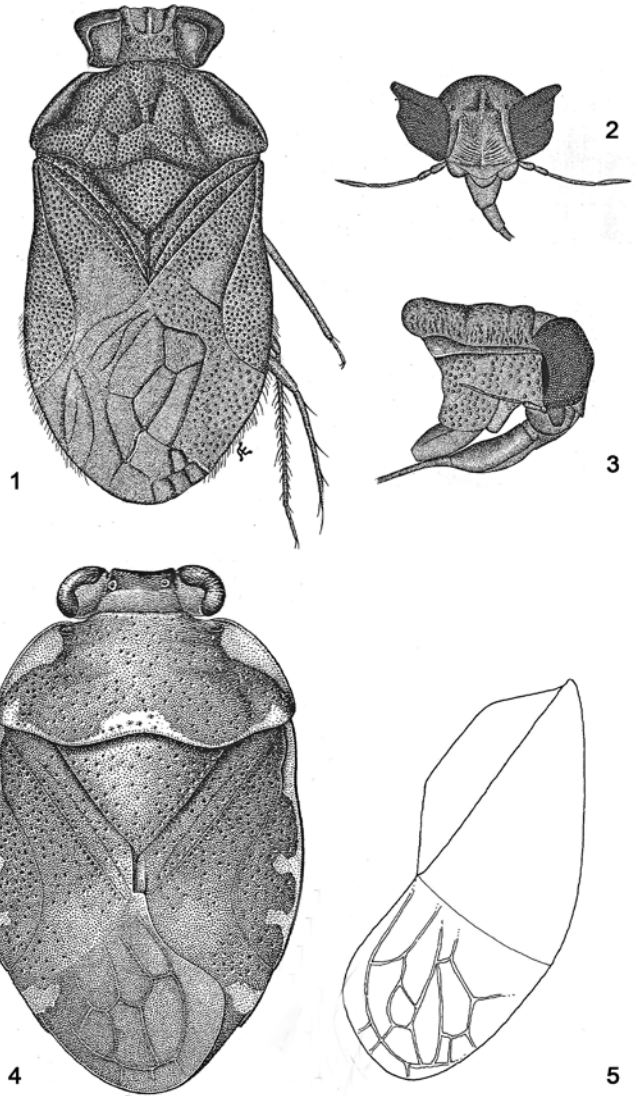
Holotype: Male, in a piece of irregular shaped Dominican Amber (17 x 17 x 13 mm), Type. Kat. Nr. DO-4667-B, Yu. A. POPOV & E. HEISS des., coll. Staatliches Museum für Naturkunde Stuttgart, Germany. Syninclusions: Coleoptera (Platypodidae).

**Description**

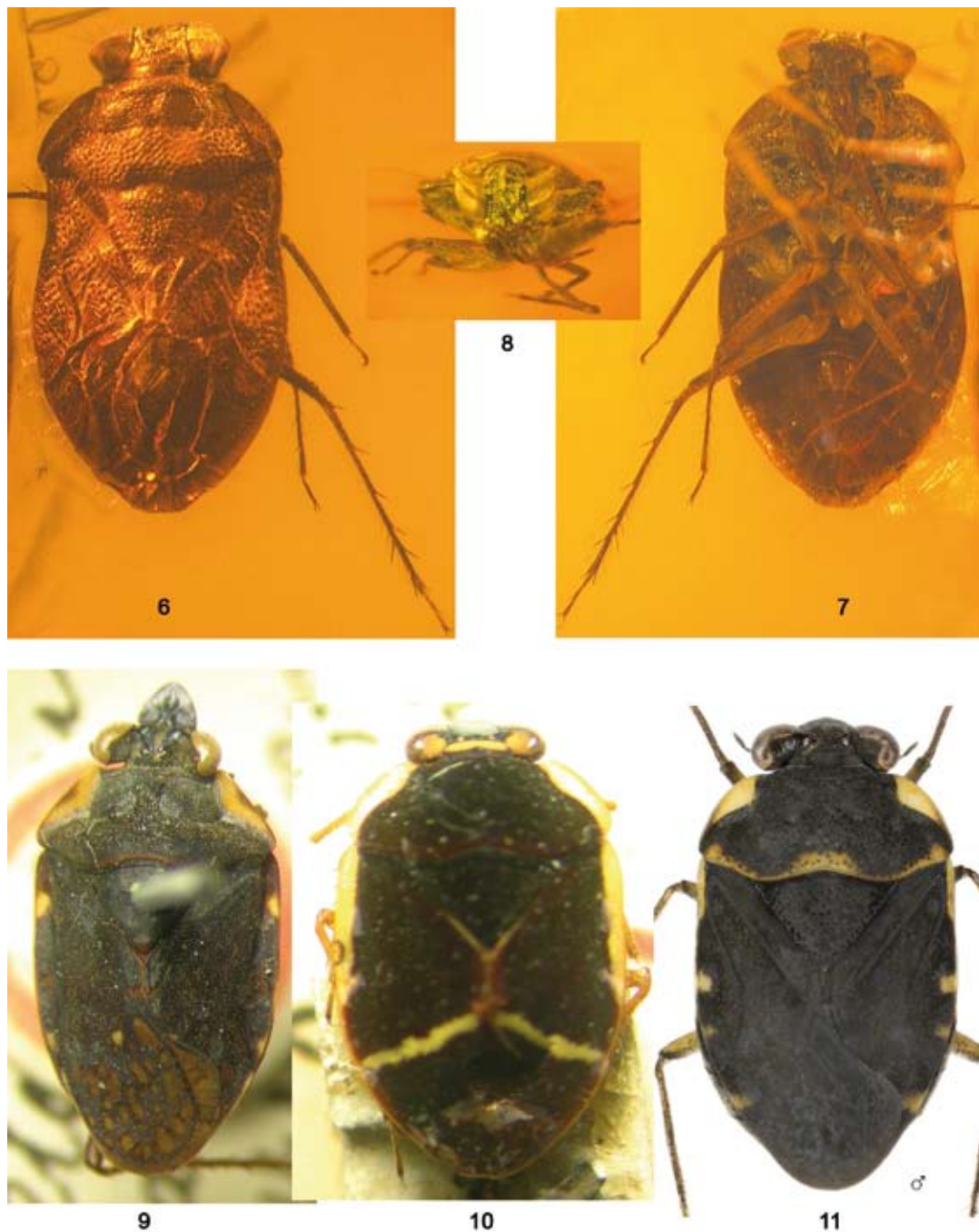
As in the generic description. General coloration uniformly yellowish-brown and glabrous.

Measurements of the holotype in mm: body length 3.3, width 1.75; length of head 0.35, width of head (diatone) 1.0; frontal plate: length 0.6, width 0.35; vertex width (interocular space) 0.375; width of eye 0.3, height of eye 0.55; interocular space of ocelli 0.2; length of antennal segments I/II/III/IV = 0.1/0.12/0.3/0.2; length of

rostral segments I/II/III/IV = 0.25/0.4/0.85/0.4; pronotum length 0.75 (max.), width 0.88 (ant.) and 1.65 (post.); scutellum length 0.5, width 0.75; length of hemelytron 2.35; fore leg: length of femur 0.85, tibia 0.9, tarsus 0.2; hind leg: length of femur 1.0, tibia 1.5, tarsus 0.32 (0.07/0.125/0.125).



Figs 1-5. – 1-3 *Riegerochterus baehri* gen. nov., spec. nov. (1) dorsal view; (2) front view of head; (3) head and pronotum, lateral view; – (4) *Ochterus marginatus* (LATREILLE) from POPOV, 1971; – (5) *Ocyochterus victor* (BOLIVAR), outline of right wing.



Figs 6-11. – 6-8 *Riegerochterus baehri* gen. nov., spec. nov. (6) dorsal view; (7) ventral view; (8) front view of head; – (9) *Megochterus nasutus* (JACZEWSKI), Holotype dorsal view; – (10) *Ocyochterus victor* (BOLIVAR), Holotype dorsal view; – (11) *Ochterus marginatus* (LATREILLE). – Photos: 6-10 – D. E. SUCHERBAKOV; 11 – G. STRAUSS.

**Etymology:** Named after our friend and well known German entomologist MARTIN BAEHR (Munich) for his interest and publications on Australian Ochteridae.

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