



## ***Alumeda solorzanokraemerae* sp. nov. from the Miocene Mexican Amber (Hemiptera: Heteroptera, Reduviidae, Emesinae)**

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### **Abstract**

A new fossil emesine reduviid from the Middle Miocene Mexican amber from the Simojovel– *Alumeda solorzanokraemerae* sp. nov. – is described and illustrated. This is the second record of Reduviidae: Emesinae in Mexican amber and the fifth from the New World contemporaneous (Dominican amber) fossil resin.

Keywords: *Alumeda*, Heteroptera, Reduviidae, Emesinae, Mexican amber.

### **Resumen**

Se describe e ilustra un nuevo, reduviido emesine, fósil del ámbar Mexicano del Miocene Temprano de Simojovel - *Alumeda solorzanokraemerae* sp. nov. -. Este es el segundo registro de Reduviidae: Emesinae en ámbar Mexicano y el quinto de la resina fosil contemporánea del Nuevo Mundo (ámbar Dominicano).

Palabras clave: *Alumeda*, Heteroptera, Reduviidae, Emesinae, ámbar mexicano.

### **1. Introduction**

The purpose of the present paper is to put on record in Mexican amber a new species from a remarkable extinct genus *Alumeda* Popov whose three species were earlier described from Dominican amber (Popov, 1989). The most famous resin of this area is Dominican and Mexican amber, the latter also called “Chiapas amber”, both being of Middle Miocene age (Solórzano Kraemer, 2007). Both resins originated from a leguminous tree of the genus *Hymenaea* (Poinar, 1999; Langenheim, 1966). Mexican amber originated in Tuxtla Gutierrez, Chiapas in southernmost Mexico, bordered to the south by Guatemala. Most amber deposits occur in the northern mountain ranges, referred to as Chiapas highlands, and the majority of amber mines are located in the Simojovel area (Poinar, 1992). Previously, the Simojovel Formation (La Quinta) was considered to be in

between Oligocene-Miocene (Frost and Langenheim 1974; Berggren and Van Couvering, 1974). Recently the age of the Simojovel Formation, like that of all other amber localities, has been established as Early-Middle Miocene, with an age of 15-20 million years (Solórzano Kraemer, 2007, 2010).

In Mexican amber quite a lot of insects have been described and mentioned (see appendix in Solórzano Kraemer, 2010). Our current knowledge about heteropteran bugs from Mexican amber is still poor. The first description of a real bug belonging to the family Ceratocombidae (*Ceratocombus hurdi* Wyg.) was published by Wygodzinsky (1959). Cobben (1971) established a new leptopodomorphan subfamily Leptosaldinae for a peculiar *Leptosalda chiapensis* Cobben. Thomas (1988) described the first burrower bug (Cydnidae) of the plesiomorphic subfamily Amnestinae from the Western Hemisphere *Amnestus guapinolinus*. Later on (1992) he also described a new

species of Emesinae (Reduviidae) named *Empicoris electricus* Thom. From subfossil Dominican copal, one more species from the genus *Empicoris* named *E. copal* Popov (1987a) was also described. Earlier, Wygodzinsky (1966) referred to another specimen of *Empicoris* from the Chiapas amber (Thomas, 1992) but offered no further elaboration. An unnamed emesin from Dominican amber was figured in the work of Schlee (1980); it was described later on as *Malacopus wygodzinskyi* (Popov, 1987b) as well as *Alumeda dominicana* Pop., *Alumeda nigricans* Pop., and *Alumeda antilliana* Pop. (Popov, 1989). Two more undescribed assassin bugs from the subfamily Emesinae are also known to me. As for Mexican amber, Hurd *et al.* (1962) mentioned the first plant bugs (Miridae) from the plesiomorphic subfamily Isometopinae and also Aradidae, Dipsocoridae and Hebridae. The only known fossil hebrid bug (Hebridae) was described from Chiapas amber as *Stenohebrus glaesarius* by Polhemus (1995), which was mentioned before by Andersen (1982) and later on illustrated by Poinar (1992). Also described from Mexican Chiapas amber was the first known fossil termite bug *Termitaradus protera* Poinar and Doyen (1992) belonging to the extremely modified heteropterans of the aradoid family Termitaphididae. Five more specimens of *T. protera* were found in a single piece of Mexican amber (Poinar and Heiss, 2011). Recent termitaphidids are living only in the nests of termites and found in the Neotropical, Ethiopian, Oriental and Australian regions. Later on, three more species of termite bugs (*Termitaradus avitinquilinus*,

*T. mitnicki*, *T. dominicanus*) were described from Dominican amber (Grimaldi and Engel, 2008; Engel, 2009; Poinar and Heiss, 2011).

## 2. Description of the new species (Systematics)

**Family:** Reduviidae Latreille, 1807

**Subfamily:** Emesinae Amyot & Serville, 1843

**Tribe:** Ploiaroliini Van Duzee, 1916

**Genus:** *Alumeda* Popov, 1989

**Type species:** *Alumeda nigricans* Popov, 1989: 3

*Alumeda solorzanokraemerae* sp. nov

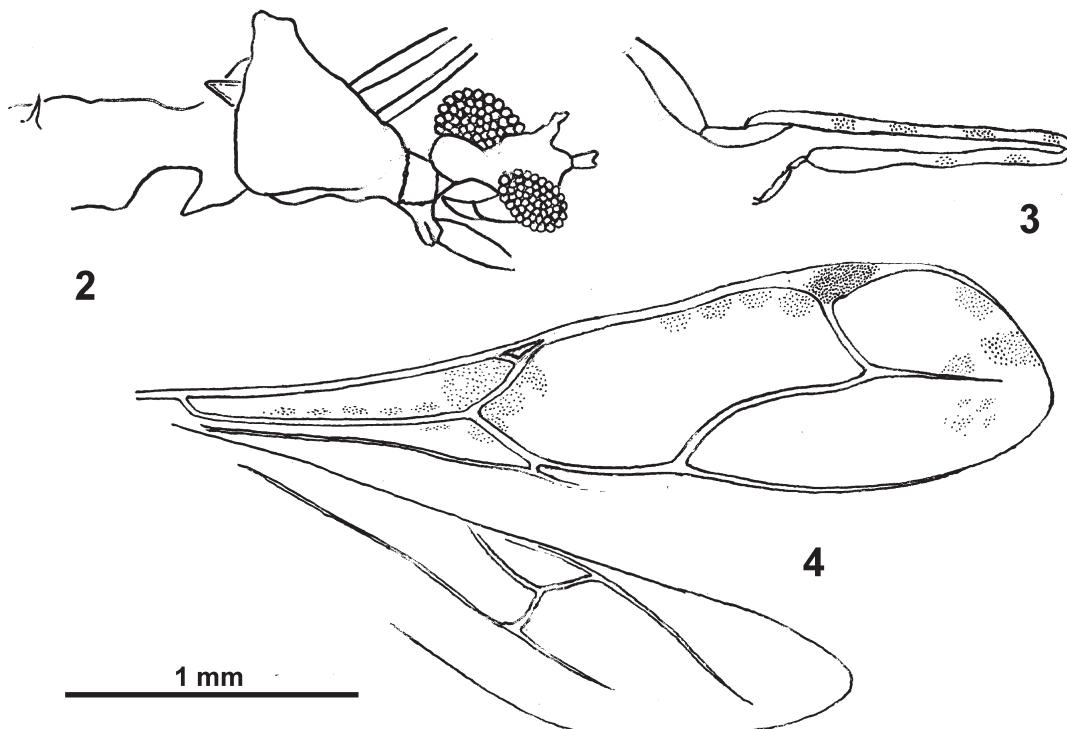
Figs. 1–4

**Holotype:** female from Mexican amber, Chiapas, Simojovel area. Deposited in the Staatliches Museum für Naturkunde, Stuttgart, Inv.-Nr. MX-260-X. Body is considerably damaged.

**Coloration** – General coloration black and ochraceous, *in vivo* pale parts perhaps straw yellow. Head and thorax black, almost devoid of light stripes. Antennae ochraceous, without black rings. Scutellum and metanotum completely black. Fore legs ochraceous; coxa and trochanter completely black, femur 1 with four and tibia 1 with two rings in basal half (Figure 3). Middle and hind legs ochraceous; femur 2 with 5 more or less equal rings, basal part of tibia 2 with one subbasal ring; femur 3 with 4 equal narrow rings.



Figure 1. *Alumeda solorzanokraemerae* sp. nov., dorsal view (photo by Dmitry E. Shcherbakov).



Figures 2–4. *Alumeda solorzanokraemerae* sp. nov.: 2 – forebody; 3 – foreleg; 4 – fore- and hind wings. Scale 1 mm in all figures.

Forewings semihyaline, with numerous pale spots, as in Figure 4; pterostigma mostly dark with light apex. Hind wing colorless. Abdomen almost entirely ochraceous, *in vivo* perhaps brown; spine of abdominal segment ochraceous.

**Head** – Head rather strongly deformed as in Figure 2; anteocular region most probably equal to posterior one. Eyes large, globular. Antennae bare; ratio of antennomeres 1–4 as 27:42:19:8.

**Thorax** – Thorax strongly deformed as in Figure 2; pronotum as in Figure 2; surface smooth, hairless. Posterior lobe very short, 4.5 x longer than anterior lobe.

**Legs** – Fore legs slender (Figure 3), clothed with numerous very short, dense, delicate hairs much shorter than diameter of coxa or femur. Coxa 1 rather slender, 8 times as long as wide; length ratio of femur 1 and tibia 1 as 10:7.5. Ratio of coxa 1, femur 1 and tibia 1 as 12:21:15. Ratio of middle and hind femora as 7:10, both bare; fore tarsi 2-segmented.

**Wings** – Fore wing apically rounded, 3.6 times as long as wide; pattern and venation as in Figure 2; distance from apex of pterostigma to tip of wing 2.5 x as long as distance from apex of pterostigma to insertion of M; discal cell 2.8 x as long as its maximum width, apical portion clearly pointed; independent basal part of anterior border of discal cell as long as 1/3<sup>rd</sup> of its fused part with anterior margin of wing. Venation of hind wing complete; M-Cu very long (Figure 4).

**Spines** – Spine of abdominal segment 1 very short and slender (Figure 2).

**Measurements.** Length up to apices of forewings 4.6

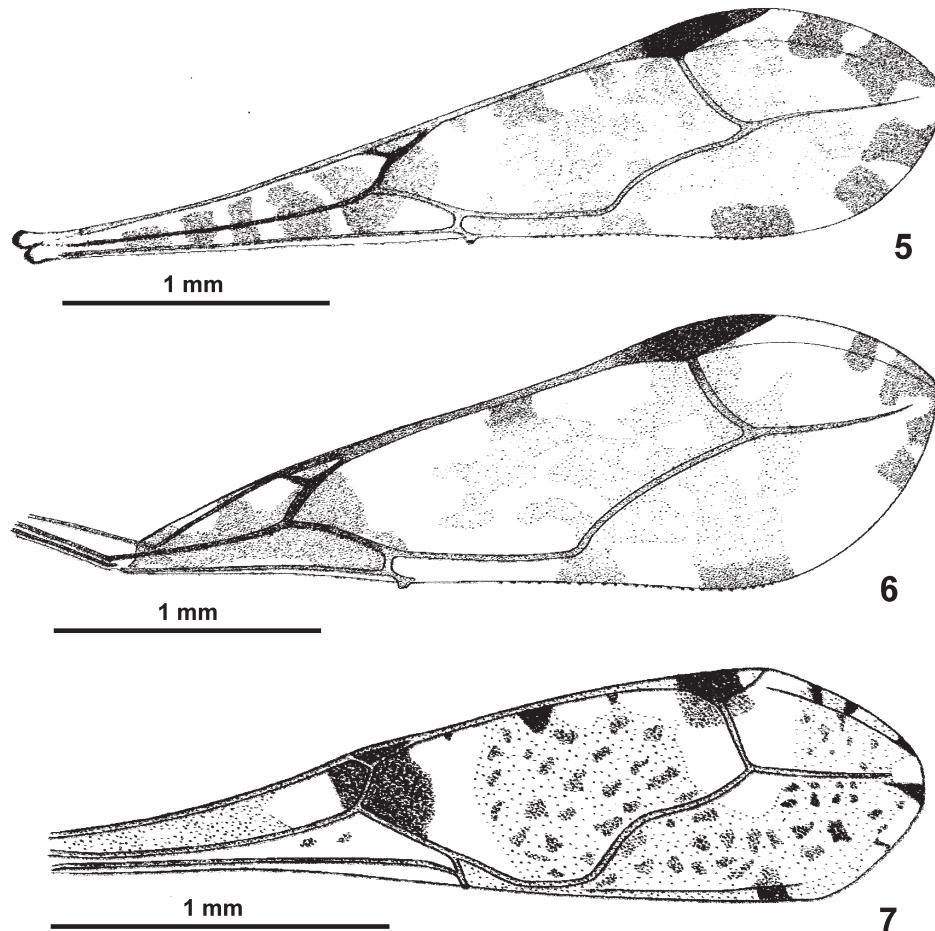
mm; length of head 0.3 mm, width 0.55 mm; maximum length of forewings 3.6 mm, width 1.0 mm; length of head 0.3 mm, width 0.55 mm; length of pronotum 0.62 (0.11 + 0.5).

**Etymology.** Named after the well-known German paleontologist Mónica M. Solórzano Kraemer for her important contribution in studying of the insect fauna from Mexican amber.

**Remarks.** The genus *Alumeda* Popov was only known only from the synchronous Miocene Dominican amber and three extinct species: *A. nigricans* Pop. (type generic species), *A. dominicana* Pop. and *A. antilliana* Pop. (Popov, 1989). The fossil species described above seems to be related to *Alumeda nigricans* Popov (especially in the wing characters). The main distinguishing feature of this new species is an extraordinarily short pronotum (posterior lobe x 4.5 longer than anterior lobe); it also differs by having a somewhat longer discal cell (2.8x), as well as by a different proportion for the basal independent part of the discal cell and fused portion of the anterior margin of wing.

### 3. Key to species of the genus *Alumeda* Popov, 1989 (based on forewings)

1. (6) Pterostigma rather long, distance from apex to tip of wing not more than 3x as long as distance from apex of pterostigma to insertion of M; apical portion of discal cell somewhat pointed.



Figures 5–7. *Alumeda* spp. from Dominican amber, forewings (after Popov, 1989); 5 – *A. dominicana* Popov; 6 – *A. nigricans* Popov; 7 – *A. antilliana* Popov. Scale 1 mm in all figures.

2. (3) Forewings narrow, 5x as long as wide; discal cell 3x as long as wide, its basal independent part 1/4<sup>th</sup> of its fused portion with anterior margin of wing; wing pattern as in Figure 5... *A. dominicana* Pop.
3. (2) Forewings wider, slightly over 3.5x as long as wide; discal cell less than 3x as long as wide.
4. (5) Discal cell 2.5 x as long as wide; its basal independent part 1/5<sup>th</sup> of its fused portion with anterior margin of wing; wing pattern as in Figure 6... *A. nigricans* Pop.
5. (4) Discal cell 2.8 x as long as wide; its basal independent part 1/3 of its fused portion with anterior margin of wing; wing pattern as in Figure 4... *A. solorzanolakraemerae* sp.n.
6. (1) Pterostigma short, distance from its apex to tip of wing 4x as long as distance from apex of pterostigma to insertion of M; apical portion of discal cell not pointed; wing pattern as in Figure 7... *A. antilliana* Pop.

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