



## ***Calisiopsis azteca* n.sp., the first Aradidae from mid Miocene Mexican Amber (Hemiptera: Heteroptera)**

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### **Abstract**

Only a few Heteroptera have been described so far from Mexican amber. *Calisiopsis azteca* n.sp. is the first fossil representative of the family Aradidae, which is described and illustrated. It resembles *Calisiopsis brodzinskyorum* Froeschner, 1992 from Dominican amber but differs by a more elongate habitus, different head structure and the presence of four lateral tubercles on the lateral margin of deltg II-VII and further characters discussed later.

Keywords: Heteroptera, Aradidae, *Calisiopsis*, new species, fossil, Mexican amber.

### **Resumen**

Hasta ahora se han descrito pocos heterópteros en el ámbar de México. El presente trabajo describe e ilustra *Calisiopsis azteca* n.sp., siendo el primer representante fósil de la familia Aradidae en dicho ámbar. Se asemeja a *Calisiopsis brodzinskyorum* Froeschner, 1992 del ámbar dominicano pero difiere en la forma alargada, diferente estructura de la cabeza y la presencia de cuatro tubérculos laterales en el margen lateral del deltg II-VII y otros caracteres discutidos más adelante.

Palabras clave: Heteroptera, Aradidae, *Calisiopsis*, especie nueva, fósil, ámbar mexicano.

### **1. Introduction**

Unlike numerous Heteroptera described from the contemporaneous Dominican amber, there are only few taxa recorded so far from Mexican amber: *Ceratocombus hurdi* (Wygodzinsky, 1959 - Dipsocoridae); *Leptosalda chiapensis* (Cobben, 1971 - Leptosaldidae); *Amnestus guapinoli* (Thomas, 1988 - Cydnidae); *Empicoris electricus* (Thomas, 1992 - Reduviidae); *Termitaradus protera* (Poinar and Doyen, 1992 - Termitaradidae); *Stenohebrus glaesarius* (Polhemus 1995 - Hebridae) and Miridae (Isometopinae), Aradidae, Dipsocoridae and Hebridae mentioned but not described by Hurd et al (1962), (Poinar, 1992, 1999; Grimaldi, 1996; Poinar and Heiss, 2011; Solórzano-Kraemer, 2007, 2010).

The Mexican amber of Simojovel in the state of Chiapas originated and was formed by resin of the fossil Leguminosae tree *Hymenaea mexicana* (Poinar and Brown, 2002). Still controversial is the age; older deposits are estimated to be from the late Oligocene with an age of 22.5-26 Mya (Berggren and Van Couvering, 1974; Poinar, 1992), and younger deposits from the mid Miocene with an estimated age of 15-20 Mya (Iturralde-Vinent and MacPhee, 1996; Poinar, 1999; Solórzano Kraemer, 2007, 2010). The latter date seems to be presently accepted.

Among Aradidae, the Neotropical genus *Calisiopsis* (Champion, 1898) of the subfamily Calisiinae (Stål, 1873) contains to date seven species, six of them are extant described from Panama (*C. ampliceps* Champion, 1898), Peru (*C. kormilevi* Froeschner, 1992), Mexico (*C.*

*minutus* Kormilev, 1959 from Tampico, *C. nigrotuberculata* Froeschner, 1992 from Laredo), Brazil (*C. brasiliensis* Kormilev, 1956; *C. planiceps* Kormilev, 1976) and one fossil from Dominican amber (*C. brodzinskyorum* Froeschner, 1992).

*Calisiopsis* is characterized by the small size, the wide head and short antennae, segment IV usually as long as the preceding ones together. A key to these seven species was given by Froeschner (1992). The now described *Calisiopsis azteca* n.sp. from Mexican amber resembles and seems more closely related to *C. brodzinskyorum* from Dominican amber, supposedly of the same age and plant origin as both extant taxa recorded from Mexico.

## 2. Materials and Methods

The specimen is enclosed in a piece of transparent honey-colored Mexican amber, which will be embedded later in epoxy resin for better conservation. It is complete with legs and antennae bent ventrally that are obscured by impurities and only partly visible. A small bee is found as a syninclusion.

Photo was taken using an Olympus SZX 10 binocular microscope with an attached Olympus E 3 digital camera and processed with Helicon Focus 4.3 software and using Adobe Photoshop and Lightroom 2.3.

Measurements were taken with a micrometer eyepiece and are given in millimeters. Abbreviations used: deltg = dorsal external laterotergite (connexivum).

When citing the text on the labels attached to the specimen / separates the lines and // separates different labels.

## 3. Taxonomy

Family Aradidae Brullé, 1836  
Subfamily Calisiinae Stål, 1873  
Genus *Calisiopsis* Champion, 1898

*Calisiopsis azteca* n.sp.  
(Figures 1,3,4)

**Holotype.** Macropterous female in Mexican amber, designated as holotype with the attached label: Holotype / *Calisiopsis* / *azteca* n.sp. / des. E.Heiss 2014 //. Preserved as MA-Ca-01 in the collection of the author at the Tiroler Landesmuseum.

**Diagnosis.** Small elongate species with denticulate lateral margins of pronotum without elevated blunt tubercles between median carina and lateral margins of scutellum. Resembles *Calisiopsis brodzinskyorum* from Dominican amber but differs by more elongate habitus, different head structure and the presence of 4 lateral tubercles on lateral margin of deltg II-VII and further characters discussed later.

**Description.** Color. Light brown with whitish (secondary) incrustation on head, pronotum and scutellar elevations.

**Head.** Wider than long (0.6/0.45); clypeus with a dorsolateral row of 6 and beneath a lateral row of 4 spine-like tubercles; antenniferous lobes large and bidentate, antennae short, about as long as head, antennal segments I-III moniliform, IV elongate, as long as the three preceding ones together; eyes small hemispherical, postocular lobes acute, slightly protruding over outer margins of eyes, then straightly converging to constricted neck; vertex with a double row of larger tubercles at middle, a row of 4 lateral tubercles along the eyes and about 5 tubercles delimiting the posterior margin medially from neck; rostrum arising from a slit-like atrium as long as head.

**Pronotum.** More than twice as wide as long (0.95/0.45); lateral margins straightly converging anteriorly, beset with about 11 spine-like tubercles; anterior margin straight, posterior margin sinuate at middle; disk with 4 granulate carinae, the 2 median ones are longer reaching to anterior margin, the 2 lateral ones shorter not exceeding the transverse impression; surface finely punctate.

**Scutellum.** Elongate, 1.4x as long as wide (1.2/0.85); lateral margins beset with a row of larger tubercles, excavated on anterior half for the reception of the carinate visible costal margin of hemelytra; basal triangular elevation with 4 larger tubercles overlapping pronotum, surface granulate; median carina with a double row of tubercles extending posteriorly, joining tuberculate posterior margin; surface between median carina and lateral margin punctate and finely granulate without larger elevated tubercles.

**Abdomen.** Of oval shape, slightly reflexed lateral margins of deltg II-VII with 4 blunt tubercles, surface punctured; venter finely punctate.

**Measurements.** Length 2.4mm; width of abdomen across tergite III 1.25mm.

**Etymology.** Named after the Aztec people, who

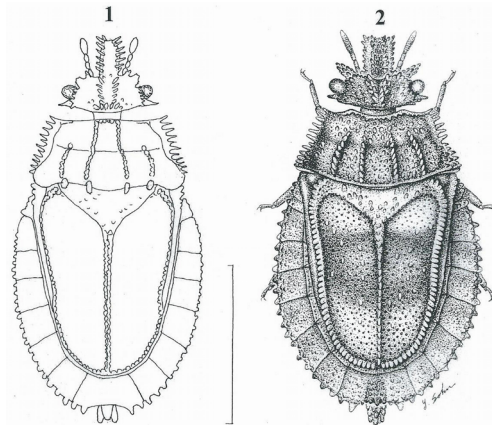


Figure 1-2. Fossil *Calisiopsis* spp. (1) *Calisiopsis azteca* n.sp., reconstruction of habitus; (2) *Calisiopsis brodzinskyorum*, after Froeschner (1992) Fig.4. Scale 1 mm.

developed the great Mesoamerican native civilisation destroyed in the 16<sup>th</sup> century by Spanish conquerors.

#### 4. Discussion

The only fossil representative of the extant Calisiinae genus *Calisiopsis* (Champion, 1898) is *C. brodzinskyorum* (Froeschner, 1992) described from contemporaneous Dominican amber (Figure 2). Comparison of *C. azteca* n.sp. with the original description and the illustration (Figure 4) of *C. brodzinskyorum* shows following differences:

<i>C. azteca</i> n.sp.	<i>C. brodzinskyorum</i>
habitus more elongate (Figure 1)	more oval (Figure 2)
clypeus with 6 dorsolateral and 4 lateral spines	numerous scattered tubercles
clypeus dorsally flat, with punctures	beset with rows of tubercles
antenniferous lobes larger and bidentate	longer with acute apex
pronotum: anterior margin straight	sinuate
pronotum: posterior margin sinuate	distinctly convex
pronotum: 2 median carinae reaching anterior margin	not reaching anterior margin
scutellum: median keel with 2 rows of tubercles	only one row
lateral margin of deltg II-VII with 4 tubercles	deltg II-VII with 3 tubercles



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Figure 3. *Calisiopsis azteca* n.sp., inclusion in Mexican amber.

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