

*Minysporops dominicanus* gen. n., sp. n. (Hemiptera: Pentatomoidea: Megarididae), a  
megaridid in Dominican amber.

George Poinar, Jr.<sup>a\*</sup> and Ernst Heiss<sup>b</sup>

<sup>a</sup> Department of Zoology, Oregon State University, Corvallis, OR 97331, U.S.A.

<sup>b</sup> Tiroler Landesmuseum Ferdinandeum, Josef-Schraffl-Strasse 2a, A 6020 Innsbruck,  
Austria.

\*Email: [poinarg@science.oregonstate.edu](mailto:poinarg@science.oregonstate.edu)

## **Abstract**

A new genus and species of megaridid, *Minysporops dominicanus* gen. n., sp. n. (Hemiptera: Megarididae), is described from Dominican amber. Diagnostic characters include: Minute (under 2.00 mm), glabrous, nearly round body; declivitous flat-topped head; eyes constricted near middle, with dorsal eye shields; ocelli ovoid-elliptical; antennae 4-segmented, setose; rostrum 4- segmented; pronotum finely punctate with indistinct calli not extending to lateral body margins, antero-lateral margin angulate; scutellum punctate, exposing base of hemelytra; connexivum narrowly exposed; venter of abdomen glabrous, with fine punctures and two-segmented tarsi. This is the first description of a fossil megaridid.

**Key words:** Megarididae, Dominican amber, Tertiary fossil, new taxa

## **Introduction**

Megaridids are small bugs that belong to a group with an enlarged scutellum covering all or portion of the abdomen and wings. They are restricted to the Neotropics and the family is represented by a single genus, *Megarid* Stål with 16 species (McAtee and Malock 1928; McDonald 1979; Schuh and Slater 1995). They are plant-feeders but little is known of their natural history and habits. Their evolutionary history is unknown since there are no known fossils of this family. The present study describes a new genus and species of megaridids from Dominican amber.

## **Materials and Methods**

The piece of amber containing the fossil measures 14 mm long by 18 mm wide by 3 mm deep. The amber originated from mines in the Cordillera Septentrional mountain range in the northern portion of the Dominican Republic.

Dating of Dominican amber is still controversial with the latest proposed age of 20-15 mya based on foraminifera (Iturralde-Vinent and MacPhee 1996) and the earliest of 45-30 mya based on coccoliths (Cêpek in Schlee 1999). What makes dating the amber difficult is that it is secondarily deposited in turbiditic sandstones of the Upper Eocene to Lower Miocene Mamey Group (Draper et al. 1994). The plant species that formed the amber is a member of the legume family (*Hymenaea protera* Poinar 1991) and the original environment was similar to a present day moist tropical forest (Poinar and Poinar 1999).

The classification used in the present study is that presented in Schuh and Slater (1995).

## **Systematics**

Family Megarididae McAtee & Malloch, 1928

*Minysporops* Poinar and Heiss, gen. n.

### *Diagnosis*

Body minute, glabrous, nearly round; head declivitous, flat topped; eyes large, constricted near middle, with dorsal eye shields; ocelli ovoid-elliptical; antennae 4-segmented, setose; rostrum 4-segmented; pronotum finely punctate with indistinct calli and angulate antero-lateral margin apparently not reaching lateral body margins; scutellum punctate, exposing base of hemelytra; connexivum narrowly exposed; venter of abdomen glabrous, with fine punctures; tarsi two-segmented.

Comments: The fossil is placed in the Megarididae because of its small size, broad scutellum exposing only the base of the hemelytra, 4-segmented antennae, 4-segmented rostrum, 2-segmented tarsi, angulate antero-lateral margin, well developed scutellum, connexivum narrowly exposed, venter of abdomen lacking striated areas and abdominal sterna not emarginate or recurved (Schuh and Slater 1995; McAtee and Malloch 1928).

The constricted eyes with their dorsal eye shields, ovoid-elliptical ocelli, and two segmented tarsi with the second segment more than twice as long as the first segment (in

*Magaris*, the second tarsal segment is barely discernible and considerably shorter than the first) separate the fossil from extant species of *Megarididae*, the only genus in the family *Megarididae*.

Type species: *Minysporops dominicanus* Poinar and Heiss

Etymology: *Minysporops* is from the Greek “minys” for “little”, “sporos” for “seed” and “ops” for “having the appearance of” in reference to the resemblance of the fossil to that of a small seed.

*Minysporops dominicanus* Poinar and Heiss, gen. n. et sp. n. (Figs. 1-6)

Holotype male: Body nearly round, minute, 1.76 mm long. The specimen is well preserved and complete, however the wings and genitalia are not visible. Some small air bubbles obstruct a portion of the ventrum.

Description:

*Head.* Declivitous, dark brown, top flat, with fine punctures; 240  $\mu\text{m}$  long, 580  $\mu\text{m}$  wide; eyes protruding, strongly convex, constricted near middle, partially covered dorsally by bar-like eye shields; ocelli prominent, ovoid-elliptical in outline, positioned near eyes; antennae 4-segmented, bearing elongate straight and curved setae longer than corresponding width of antennomeres; antennomere lengths: 1, 297  $\mu\text{m}$ ; 2, 702  $\mu\text{m}$ ; 3, 810  $\mu\text{m}$ ; 4, 675  $\mu\text{m}$ ; beak 4-segmented, inserted adjacent to antennal insertions; reaching first abdominal segment, nearly 3 times length of pronotum; article lengths: 1, 460  $\mu\text{m}$ ; 2, 675  $\mu\text{m}$ ; 3, 460  $\mu\text{m}$ ; 4, 240  $\mu\text{m}$ .

*Pronotum.* Transverse, dark brown, bearing fine punctures; sides not extending to lateral body margins; antero-lateral margins angulate; basal margin concave, more so at lateral edges; length, 600  $\mu\text{m}$ ; width, 1.2 mm.

*Scutellum.* Dark brown, broadly oval to nearly round; anterior margin convex; disk with irregular medium-sized punctures; conceals apical two-thirds of costal border of hemelytra; length, 920  $\mu\text{m}$ ; width, 1.1 mm.

*Venter.* Reddish brown; pro, meso and metasternum nearly flat with punctated surface; metathoracic scent gland distinct.

*Abdomen.* Composed of 6 glabrous sternites bearing small punctures; spiracles in normal position; lateral edges of sternites partly covered by posterior expansions of metapleura; trichobothria not observed.

*Legs.* Light brown; femora clavate, tapering towards base; tibia long, straight, unarmed, bearing short setae; tarsi 2-segmented with second tarsomere nearly 3 times length of basal tarsomere, basal section of second tarsomere separated from apical portion by crease; claws with well developed pulvilli.

*Type material.* Holotype male in a transparent, brownish-orange, oval piece of Dominican amber deposited in the Poinar amber collection (accession # D-4-80) maintained at Oregon State University.

*Type locality.* Amber mines (19° 13'N; 70°40'W) in the northern region of the Dominican Republic.

*Etymology.* Named after the country of origin, the Dominican Republic.

*Comments.*

In some aspects, *Minysporops* resembles members of the related family, Canopidae Amyot and Serville with the single American genus *Canopus* Fabricius. These are shiny dark bugs with hemispherical bodies. However canopids are medium sized (5-7 mm), have strongly convex, shiny bodies and the anterior and lateral pronotal margins meet in a rounded arc. In addition, canopids have 3-segmented tarsi, antennomere 2 is much shorter than antennomere 1 and the sutures between the abdominal sternites are obsolete laterad of the spiracles (Rolston and McDonald 1979; Schuh and Slater 1995). Canopids also have one or two medial longitudinal impressed lines anteriorly as well as a rather feeble transverse impression on the pronotum. The scutellum has a row of punctures along the basal margin and a distinct lunate, impressed, punctate line marking off an area at the base (McAtee and Malloch 1928).

The eye shields of *Minysporops* are an interesting feature. They are apparent along the lower border on the dorsal surface of the eye (Fig. 2). They are obscured ventrally and laterally, however these views show the eye constrictions. The crease near the base of the second tarsomere is too indefinite to be a segmental joint, but it could provide greater flexibility of the tarsus (Fig. 6).

## **Discussion**

The family Megarididae is represented in Hispaniola by two undescribed extant species of *Megarid* (Perez-Gelabert 2008), however *M. dominicanus* is the first fossil megaridid (Carpenter 1992; Rasnitsyn and Quicke 2002).

It is assumed that *Minysporops dominicanus* was phytophagous since extant members of the family are plant feeders. There is an *Azteca alpha* Wilson worker ant in the same piece of amber, but this association is probably accidental. Some species in the related hemipteran family Plataspidae, which has representatives as small as 2 mm, have symbiotic associations with ants, apparently providing honeydew in return for protection (Schuh and Slater 1995).

### **Acknowledgements**

We thank Thomas J. Henry and Jack Lattin for discussions concerning the systematic placement of this fossil, Christopher Hedstrom for taking the photograph in Fig. 1 and Roberta Poinar and Art Boucot for comments on earlier drafts of this manuscript.

## References

- Carpenter FM. 1992. Treatise on Invertebrate Paleontology. Part R, Arthropoda 4, Vol 3, Superclass Hexapoda. Boulder, Co and Laurence, KA: The Geological Society of America, Inc. and The University of Kansas, 277 pp.
- Draper G, Mann P, Lewis JF. 1994. Hispaniola. pp.129-150. *In*: Donovan, S. and Jackson, T.A. (eds.). Caribbean Geology: An Introduction. The University of the West Indies Publishers' Association, Kingston, Jamaica.
- Iturralde-Vinent MA. MacPhee RDE. 1996. Age and Paleogeographic origin of Dominican amber. *Science* 273: 1850-1852.
- McAtee WL, Malloch JR. 1928. Synopsis of pentatomid bugs of the subfamilies Megaridinae and Canopinae. *Proc. US National Mus.* 72: 1-21.
- McDonald FJD. 1979. A new species of *Megarid* and the status of the Megarididae McAtee & Malloch and Canopidae Amyot & Serville (Hemiptera: Pentatomoidea). *New York Entomol Soc* 87: 42-54.
- Perez-Gelabert DE. 2008. Arthropods of Hispaniola (Dominican Republic and Haiti): a checklist and bibliography. *Zootaxa*. 1831:

- 530 pp.
- Poinar GO, Jr. 1991. *Hymenaea protera* sp. n. (Leguminosae, Caesalpinioideae) from Dominican amber has African affinities. *Experientia* 47: 1075-1082.
- Poinar, Jr., G. O., Poinar, R. 1999. *The amber forest*. Princeton University Press, Princeton.
- Rasnitsyn AP, Quicke DLJ. (eds.). 2002. *History of Insects*. Dordrecht: Kluwer Academic Publishers. 517 pp.
- Rolston LH, McDonald FJD. 1979. Keys and diagnoses for the families of western hemisphere Pentatomoidea, subfamilies of Pentatomidae and tribes of Pentatominae (Hemiptera). *J. New York Entomol. Soc.* 87:189-207.
- Schlee D. 1990. *Das Bernstein-Kabinett*. Stuttgarter Beitrager fur Naturkunde, Ser. C. 28: 100 p.
- Schuh RT, Slater JA. 1995. *True bugs of the World (Hemiptera: Heteroptera) classification and natural history*. Ithaca: Cornell University Press. 336 pp.

## Figures

Figure 1. Dorsum of *Minysporops dominicanus* in Dominican amber. Scale bar = 530  $\mu\text{m}$ .



Figure 2. Detail of dorsal view of head of *Minysporops dominicanus* in Dominican amber. Arrows show eye shields. Scale bar = 230  $\mu\text{m}$ .

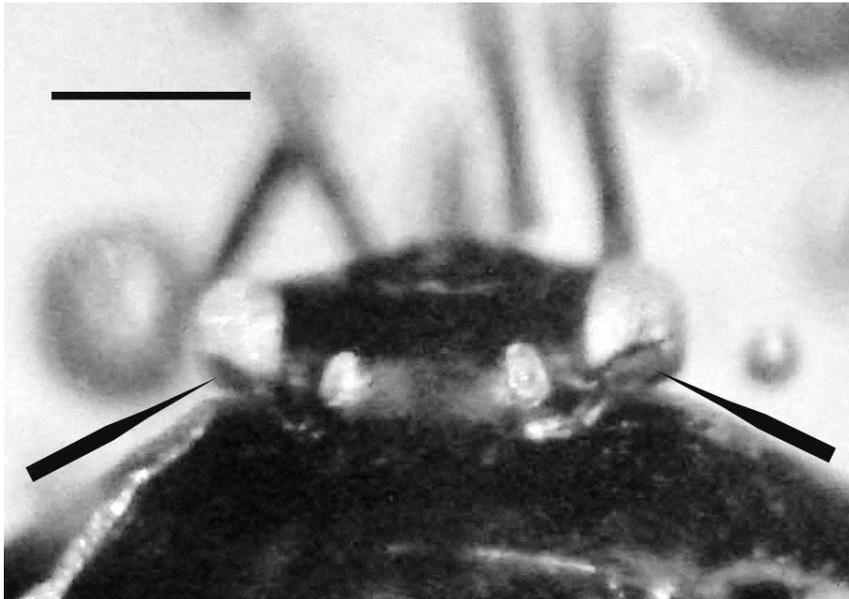


Figure 3. Ventrum of *Minysporops dominicanus* in Dominican amber. White arrow shows metathoracic scent gland. Black arrow shows area of constriction of compound eye. Scale bar = 480  $\mu\text{m}$ .



Figure 4. Setose antennal segments of *Minysporops dominicanus* in Dominican amber.

Note 2-segmented protarsus at lower right. Scale bar = 360  $\mu\text{m}$ .



Figure 5. Lateral view of head of *Minysporops dominicanus* in Dominican amber. Black arrows show beak segments. White arrow shows foretibia. Scale bar = 460  $\mu\text{m}$ .

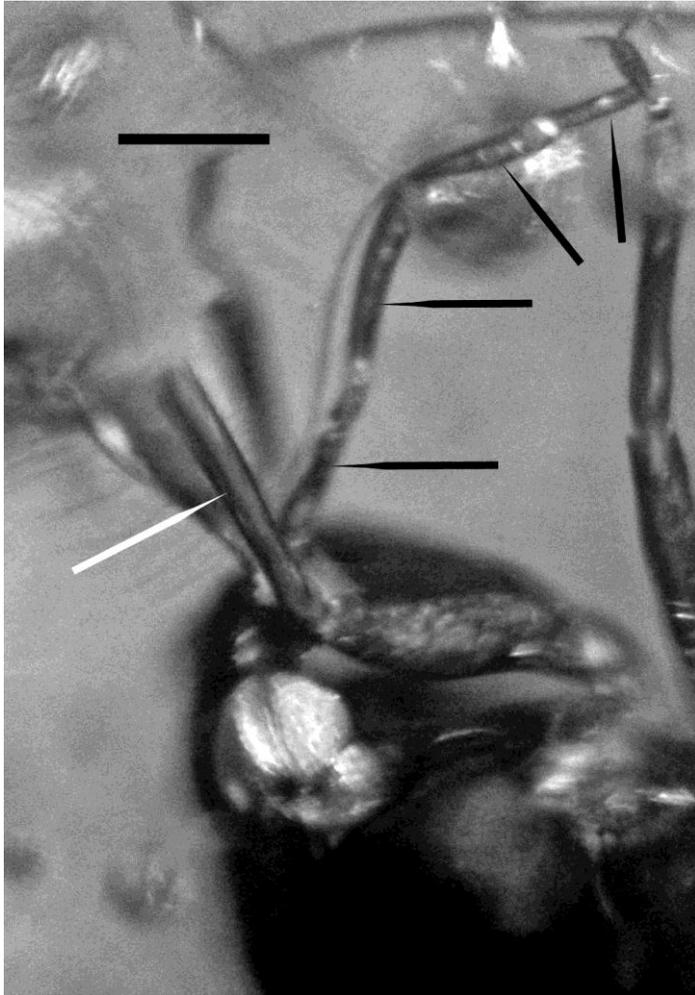


Figure 6. Protarsus of *Minysporops dominicanus* in Dominican amber. Arrow shows crease near base of second tarsomere. Scale bar = 165  $\mu\text{m}$ .

