



Hispanocaderidae n. fam. (Hemiptera: Heteroptera: Tingoidea), one of the oldest lace bugs from the Lower Cretaceous Álava amber (Spain)

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Abstract

In this article described is a new monotypic fossil family Hispanocaderidae n. fam. (Hemiptera: Heteroptera) from the Lower Cretaceous amber of Álava (Spain) clearly belonging to superfamily Tingoidea and at the same time possessing a complex of distinctive features from other families of this superfamily, mostly of a plesiomorphic character. The complex of unique features of the new family includes: the longest antennal segment II, the presence of ocelli, very large ventrally faceted eyes, connection of peritreme of scent-ostiole with base of costal area of hemelytron by groove as rudimentary state of ostiole-stenocostal system but without stenocostal area, not fused hemelytral veins *R+M* and *CuA*, very broad abdominal laterotergites separated from mediotergites by sutures dorsally and ventrally. The described taxon probably represents one of the ancestral forms of the Cantacaderinae Stål (Tingidae) or Cantacaderidae *sensu* Lis.

Key words: Heteroptera, Tingoidea, Hispanocaderidae, new family, Lower Cretaceous, Spain, amber

Introduction

To date both recent families of Tingoidea (Tingidae and Vianaididae) are known from the Cretaceous (Popov 1989, Golub & Popov 2000c, 2008, Perrichot *et al.* 2006) as well as the fossil family Ignotingidae Zhang *et al.*, 2005. Study of materials from the amber collection belonging to the Álava Museum of Natural Science (Vitoria, Spain) allowed us identifying another tingoid family in Cretaceous which helps to clarify, to some extent, a phylogenetic relationship of higher rank taxa in Tingoidea.

In the modern fauna there are approximately 2100 species of the cosmopolitan family Tingidae of cryptic cimicomorphan bugs, or lace bugs (Froeschner 1996), which comprises two subfamilies, Cantacaderinae and Tinginae. About 40 fossil species of Tingidae have so far been described or recorded, mainly during the last fifteen years. The oldest fossil tingids *Golmonia pater* Popov, 1989 and *Sinaldocader drakei* Popov, 1989 belonging to a special Mesozoic subfamily, were known from the later Early Cretaceous of Central Mongolia (Popov *op. cit.*). Most of them are from Cenozoic age (Golub & Popov 1999, 2000 a, b; Nel 1992; Wappler 2003), especially from Eocene of Western Europe, e.g. Grube Messel of Germany and the amber of Paris basin, France (Wappler 2003; Nel *et al.* 2004). The first fossil lace bug, *Tingis quinquecarinata* Germar & Berendt, 1856, was described by from the Eocene Baltic amber (Prussian Formation) and later on referred to the new cantacaderid genus *Paleocader* Froeschner, 1996. Quite numerous tingids were described much later (especially during last decade) from Baltic amber (Drake 1950; Golub 2001, 2004; Golub & Popov 1998, 2002, 2005a, b; Heiss 2002) and from Ukrainian, Saxonian (Golub 2004; Golub & Popov 2007), and Dominican amber (Golub & Popov 2000a, b, 2003; Golub *et al.* 2009). The majority of other fossil tingids are known from West Europe (Oligocene of Isle of White, England; Oligocene of Aix-en-Provence and Liberon Provence, Cereste, France; Miocene of Oeningen, Baden, Germany; Miocene of Crotensee, Bohemia, Czech Republic and Miocene of Radoboj, Croatia) and North America (Oligocene of Florissant, Colorado, U.S.A.). There is also one more fossil lace bug from the modern genus