



## The first keroplatid (Diptera: Keroplatidae) species from the Lower Eocene amber of Vastan, Gujarat, India

MÓNICA M. SOLÓRZANO KRAEMER<sup>1</sup> & NEAL L. EVENHUIS<sup>2</sup>,

<sup>1</sup>Institute of Palaeontology, University of Bonn, Nussallee 8, 53115, Bonn, Germany, msolorzanokraemer@gmail.com

<sup>2</sup>Department of Natural Sciences, Bishop Museum, 1525 Bernice Street, Honolulu, Hawaii 96817-2704, neale@bishopmuseum.org

India is considered one of the biodiversity hotspots of the world (Mittermeier *et al.* 2004), being a member of the Indo-Burma hotspot, which formerly included the Himalaya chain and the associated foothills in Nepal, Bhutan and India. The great diversity of fauna and flora in India is probably due to the large diversity of ecosystems and also probably due to its complex biogeographic and geodynamic history. In this context, the fossil record can give important information on the evolution of the terrestrial biodiversity of this region.

The occurrence of Early Eocene amber in Vastan, Gujarat, India, was mentioned for the first time by Alimohammadian *et al.* (2005). The Palaeoenvironment has been interpreted by Sahni *et al.* (2006) as a freshwater to brackish water environment. The amber beds are interpreted as a marginal marine to very shallow marine environment, even probably with mangrove vegetation (Bandana & Phadtare 1997, Sahni *et al.* 2006). The amber has been dated at about 52 Mya based on foraminiferal biostratigraphy and the presence of fossil otolith assemblages. The age implicates that the amber fauna must have existed before the Indian-Asian collision, which occurred at about 49–50 Ma (Bajpai & Gingerich 1998) founded on biostratigraphic and biogeographic data from vertebrates.

The family Keroplatidae comprises about 952 described extant species in 86 genera, 51 of them belonging to the Orfeliini, and is distributed worldwide (Evenhuis 2006). The larvae mostly live in slimy webs that they produce underneath the fruiting bodies of polypores or on dead wood. The larvae of some species are predaceous (Jakovlev & Siitonen 2004). Adults of extant forms are often found in dark, damp places where they occur in large numbers in the crepuscular or nocturnal hours (Evenhuis 1994). Forty-eight species in 16 genera are cataloged in the fossil record of the family. Most of the species are described from Baltic amber, nevertheless species from Dominican amber are also described (Peñalver 1995, Schmalfuss 1979) and additional material was reported from northwestern France and Burma (Blagoderov & Grimaldi 2004) and from the Mexican amber (Solórzano Kraemer 2007).

The present paper represents the first description of an especially well preserved keroplatid species (tribe Orfeliini) from Indian amber, which opens a new window of opportunity for a comparison of the Indian fossil fauna with the extant fauna.

**Materials and Methods.** The amber used for the present study derives from the Vastan lignite mine deposited about 30 km northeast of Surat between the rivers Narmada and Tapti in western India (Alimohammadian *et al.* 2005). The type specimen will be deposited in Department of Geology at the Lucknow University, India. (MLGDLU/NS)

As with almost all of the Vastan amber, the piece of amber with the inclusion described here is very dark. The specimen itself appears cleared and as such some detailed features are not evident, but all the salient characters are clear enough to allow description and comparison with other keroplatids. The amber is very brittle, thus preparation was required that included initial embedding of the piece in epoxy resin [Araldite 2020 (XW396/XW397)] to avoid the risk of fracturing the inclusion during examination. Once the amber piece was embedded in the resin it was cut and then polished with emery paper (800, 1200 and 2500). Illustrations were made with a Leica MZ12 stereomicroscope and camera lucida. The photographs were taken with digital cameras (KY-F70B JVC70 and Nikon Coolpix 8800 VR) through a Leica MZ16 stereomicroscope. The photographs were edited with Adobe Photoshop®.

***Vastaplatyura electrica* Solórzano Kraemer & Evenhuis, gen. nov., sp. nov.**

(Figs. 1–5)

**Diagnosis:** *Vastaplatyura* is most similar to the orfeliine genera *Trigemma* Hardy, 1960, *Pyrtulina* Matile, 1977, and