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The first Triassic dipteran (Insecta) from South America, with review of Hennigmatidae

MARÍA BELÉN LARA¹ & ELENA D. LUKASHEVICH^{2,3}

¹Area Entomología, Universidad Nacional del Nordeste and Area Paleontología, Centro de Ecología Aplicada del Litoral (CONICET), Casilla de Correo 128, 3400 Corrientes, Argentina. E-mail: lara.maria.belen@live.com.ar

²Borissiak Paleontological Institute RAS, Moscow, Russia. E-mail: elukashevich@hotmail.com

³Corresponding author

Abstract

The first Triassic dipteran from South America is described based on an isolated wing from the lower Upper Triassic deposits of Argentina (Mendoza Province, Potrerillos Formation, Quebrada del Durazno locality). *Trihennigma zavattierii* **gen. et sp. nov.** is a member of the Mesozoic family Hennigmatidae, previously recorded only from Eurasia. A key for the genera and species of Hennigmatidae is provided and systematic position of the taxa is discussed.

Key words: Diptera, new genus, Upper Triassic, Argentina, basiala, SEM

Introduction

The Diptera, or true flies, are known since the early Middle Triassic (Anisian) Buntsandstein of Spain (Calafat Colom 1988; Zessin 2008), France (Grès à Voltzia Formation; Krzemiński *et al.* 1994), and Germany (Röt Formation; Bashkuev *et al.* 2012). The oldest assemblage of Diptera from France is very diverse: both suborders (Nematocera and Brachycera) and four infraorders of nematocerans (Tipulomorpha, Psychodomorpha *sensu* Hennig, Culicomorpha, and Bibionomorpha) have been described based on adults and immatures (Krzemiński & Krzemińska 2003; Lukashevich *et al.* 2010).

Later in the Triassic, dipterans became more diverse and widespread: impressions of other Triassic Diptera have been described from the Ladinian, Ladinian–Carnian, and Norian–Rhaetian of Asia (Kovalev 1983a; Shcherbakov *et al.* 1995; Hong & Guo 2003), Carnian of Australia (Kovalev 1983b; Blagoderov 1999; Lukashevich & Shcherbakov 1999) and North America (Krzemiński 1992; Blagoderov *et al.* 2007), Rhaetian of Europe (Krzemiński & Jarzembowski 1999; Krzemiński & Krzemińska 2002); and also recorded but not yet described from the Norian of Europe (Barth *et al.* 2011) and Carnian of Africa (Anderson & Anderson 1993). Additionally, the first nematoceran inclusion has been recently found in the Late Carnian amber of northeastern Italy, but it cannot be formally described due to partial preservation (Schmidt *et al.* 2012). Up to now, 31 genera with 44 species of Triassic dipterans have been described (listed in Blagoderov *et al.* 2007, updated by Lukashevich *et al.* 2010); most of them found in the Northern Hemisphere. Only four monotypic genera of Triassic Diptera, based on four isolated wings, have been described from the Southern Hemisphere, all from the Mount Crosby Formation, Queensland, Australia (*Crosaphis anomala* Evans, 1971, *Tillyardipectera prima* Lukashevich *et* Shcherbakov, 1999, *Austrocramptonomyia minuta* Blagoderov, 1999 and *Veriplecia handlirschi* Blagoderov, 1999).

Although the rich Triassic entomofauna of Argentina has been studied for a long time, yielding 12 orders recorded and 81 species described (Brauckmann *et al.* 2010; Gallego *et al.* 2011; Martins-Neto *et al.* 2011; Lara *et al.* 2012), until recently South America was one of only two continents (the other one being Antarctica) with no records of Triassic Diptera. The first insects recorded from the Triassic of South America (Argentina) have been described as crane flies, *Tipuloidea rhaetica* Wieland, 1925 and *Tipulodites affinis* Wieland, 1925; however now