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A New Species of Wasp (Symphyta, Sepulcidae) from the Santana Formation (Lower Cretaceous, Northeast Brazil)

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ABSTRACT

This paper describes a new species of Hymenoptera for the Santana Formation (Lower Cretaceous, northeast Brazil): *Prosyntexis legitima* n. sp., representing the family Sepulcidae (Symphita), and the fifth species for the genus.

Key words: Araripe Basin, Brazil, fossil Hymenoptera, Lower Cretaceous, Santana Formation.

INTRODUCTION

The Santana Formation Hymenopterofauna, more specifically from its lowermost unit (Crato Member), is apparently monotypic (Table 1), consisting of eight genera and ten species, including the new one described here, representing eight families (Table 1) (Martins-Neto, 2002). The result highlighted in this paper indicates a potentially more diverse representation than expected, rather than a truly monotypic composition. The fifth species for the genus *Prosyntexis* Sharkey (Sepulcidae) is described herein. The adopted terminology follows Rasnitsyn (1980).

The type species *Prosyntexis gouleti* Sharkey in Darling & Sharkey (1990), was originally placed in Anaxyelidae (Darling & Sharkey, 1990) and subsequently moved to the Sepulcidae, subfamily Trematothoracinae, by Rasnitsyn *et al*. (1998). Other two closely related species, *Trematothorax gobiensis* Rasnitsyn, 1993, from the Lower Cretaceous of Mongolia and *Trematothorax okhotensis* Rasnitsyn, 1993 from the Lower Cretaceous of northeast Siberia, were moved to the genus *Prosyntexis* by Rasnitsyn *et al.* (1998). Rasnitsyn & Ansorge (2000) described the

fourth species for the genus, *Prosyntexis montsecensis* Rasnitsyn & Ansorge, 2000, from the Lower Cretaceous of Sierra Del Montsec (Spain), and now we describe the fifth species and only the second known for the Lower Cretaceous of Brazil.

Geological Setting

The Crato Member, lowest unit of the Santana Formation (Araripe basin, Northeast Brazil) is a Konservatt Lagerstätte, a sequence of laminated organic rich limestones; situated on top of a variety of sediments type, but largely on top of the Batateira Formation of fluvial origin (Martins-Neto, 2002). It was deposited in a lagoon/lacustrine environment (Martins-Neto, 2002), during the late Aptian, and has important outcrops in southern Ceará, around the villages of Crato and Nova Olinda. The limestones are mined for the building industry; the sequence bears one of the most impressive arthropods (mainly insects) fossil fauna in the world. Insects, arachnids, crustaceans, myriapods are associated with plants (including early angiosperms), rare feathers, frogs, crocodiles, turtles, lizards, pterosaurs, dinosaurs (Martins-Neto, pers. Obs.), and the fresh waters fish *Dastilbe*, as well as other fish groups (Martins-Neto, 2002).

Table 1. The Hymenoptera record from the Crato Member (Santana Formation), one of the sedimentary units of the Araripe basin in Northeast Brazil.

ORDER	FAMILY	SPECIES
Hymenoptera	Scoliidae	*Cretaproscolia josai* Rasnitsyn & Delclòs, 1999
	Tiphidae	*Architip Architipia rasnitsyni* Darling & Sharkey, 1990
	Sphecidae	*Cretosphex magnus* Darling & Sharkey, 1990
		Cretosphex parvus Darling & Sharkey, 1990
	Ephialtitidae	*Cratephialtites kourios* (Sharkey) Rasnitsyn, 1999
	Rhopalosomatidae	*Mesorhopalosoma cearae* Darling & Sharkey, 1990
	Sepulcidae	*Prosyntexis gouleti* Darling & Sharkey, 1990
		Prosyntexis legitima n. sp. (in this paper)
	Proctitrupidae	*Protopoctro asodes* Darling & Sharkey, 1990
	Formicidae	*Cariridris bipetiolata* Brandão & Martins-Neto, 1989

Systematic Paleontology

Order: HYMENOPTERA Linnaeus, 1758

Suborder: SYMPHYTA *sensu* Rasnitsyn 1980

Superfamily: CEPHOIDEA Newman, 1834

Family: SEPULCIDAE Rasnitsyn, 1968

Subfamily: TREMATOTHORACINAE Rasnitsyn, 1988

Genus: *Prosyntexis* Sharkey, 1990

Type species *Prosyntexis gouleti* Sharkey, 1990, by original designation.

Prosyntexis legitima Martins-Neto n. sp.

Etymology: Alludes to the fact of the first Brazilian holotype of the group to be housed in the country, which was found.

Holotype: RGMN-T139, Martins-Neto Collection, housed at the Sociedade Brasileira de Paleoartropodologia - SBPr.

Type locality: Outcrop at Mina Pedra Branca, four Km from the municipality of Nova Olinda, Ceará State, Northeast Brazil (07º10' S; 39º40' W).

Type stratum: Lower limestone level of the Crato Member, lower unit of the Santana Formation, Araripe Basin.

Age: Upper Aptian, Lower Cretaceous.

Diagnosis (female): Fore wing 15mm long. 1r and 2r not parallel; RS+M slightly curved. 1M longer than 1m-cu; 1RS cell wider apically than basally.

DISCUSSION

1r-m cross vein of fore wing absent, 2R1 cell of fore wing wider basally than apically, RS+M of fore wing reaching 1m-cu cross vein, 3R1 cell closed and 1M cell long and four-sided are all characteristics of the genus *Prosyntexis* Sharkey. *Prosyntexis legitima* n. sp. differs of *Prosyntexis gouleti* Sharkey (in Darling & Sharkey 1990), the closest species described for the same sediments, having 1M twice greater than 1m-cu (the same size in *P. gouleti*), 1r not parallel to 2r (parallel en *P. gouleti*); RS+M slightly curved (a deflexion at the 1RS level and distally divergent of R in *P. gouleti*) and 1RS cell wider apically than basally (as wider

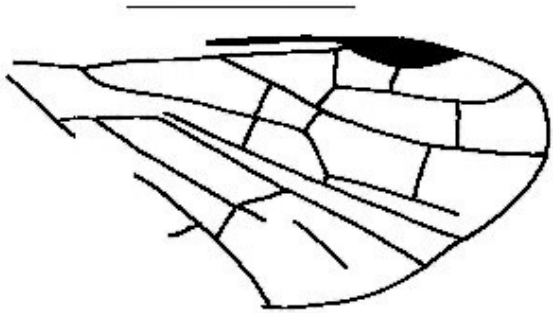

Fig. 1. *Prosyntexis legitima* n. sp., fore wing detail. Scale bar 5 mm.

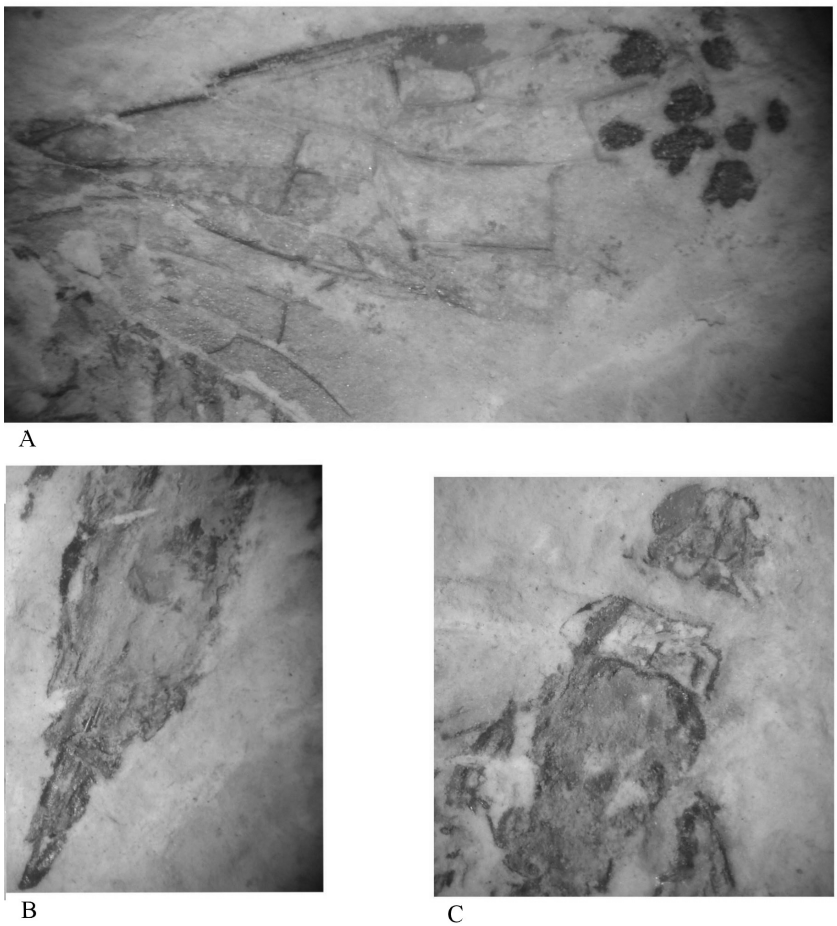

Fig. 2. *Prosyntexis legitima* n. sp., holotype. A) details of wings; B) details of ovipositor; C) details of head and pronotum.

basally as apically in *P. gouleti*). Additionally *Prosyntexis legitima* n. sp. is greater, have an ovipositor slender, pronotum notably smaller and thorax shorter and robust. *P. montsecensis* Rasnitsyn & Ansorge differs of *P. legitima* n. sp. in having a notably narrow pterostigma and a very long ovipositor.

Description (Female, Fig. 2): Elongated and slender body, 15 mm long and narrow ovipositor. Head small with big eyes, occupying more than 2/3 of the head size. Pronotum small, rectangular, wider than pronotum. Abdomen twice wider than long. Mesothorax robust, trapezoidal, wider than pronotum. Fore wing length 12 mm (Fig. 1). 1R1cell relatively great, triangular; 2R1 cell of fore wing wider basally than apically, smaller than both 1R1 and 3R1: 1r twice longer than 2r, not parallel; 3R1 greater than 1R1: R notably curved apically. RS+M of fore wing reaching 1m-cu crossvein; 1RS cell wider apically than basally; 1M cell long and four-sided.

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