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FUNNEL-WEB SPIDERS (ARANEAE: DIPLURIDAE) FROM THE LOWER CRETACEOUS OF BRAZIL¹

ARANHAS DE TEIA DE FUNIL (ARANEAE: DIPLURIDAE) DO CRETÁCEO INFERIOR DO BRASIL¹

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ABSTRACT

In this work we describe three adult male specimens and one young female Dipluridae spider from the Cretaceous of Brazil deposited in the Laboratory of Geosciences of the Universidade Guarulhos, Brazil, as well as adult female specimens from the Berlin Museum collections. These fossils are from the Lower Cretaceous of the Santana Formation, Araripe Basin, in northeastern Brazil, which contains a very rich fossil assemblage of insects, plants, fish, reptiles and spiders. The Dipluridae family contains three subfamilies (Diplurinae, Ischnothelinae and Masteriinae). The oldest previous known Dipluridae were from the Tertiary of the Baltic region.

Keywords: Spiders, Dipluridae, Lower Cretaceous, Santana Formation, Araripe Basin.

RESUMO

O presente trabalho consta do estudo de três exemplares de machos adultos e um exemplar jovem de aranha Dipluridae depositados no acervo do Laboratório de Geociências da Universidade Guarulhos e exemplares de fêmeas adultas do Humboldt Museum of Berlin. Esses espécimes provêm da Formação Santana, Cretáceo Inferior da Bacia do Araripe, a qual apresenta uma riquíssima assembléia fossilífera contendo vegetais, insetos, peixes, répteis e aranhas. A família Dipluridae contém três subfamílias (Diplurinae, Ischnothelinae e Masteriinae). A referência anterior de Dipluridae mais antigo era de um âmbar báltico de idade Terciária.

Spiders of the family Dipluridae are commonly known as funnel-web spiders because of their habit of making

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funnel-shaped webs beneath stones. In the quarries around the villages of Nova Olinda and Santana, on the northern edge of the Chapada do Araripe, Ceara State, north-east Brazil, the diplurid *Ischnothele annulata* is abundant in webs beneath discarded slabs of limestone. The quarried limestone belongs to the Lower Cretaceous (Aptian–Albian) Santana Formation (Fig. 1), and contains abundant fossils of land plants, insects, the freshwater fish *Dastilbe*, rare pterosaurs, and spiders (Araneae).

Among the fossil spiders are some beautiful specimens of a diplurid, reported here. The collections of the Geosciences Laboratory, Universidade Guarulhos, São Paulo, have three examples of adult males, including one showing the distinctive pedipalps modified for sperm transfer, and a juvenile (Fig. 2).

Other collections (e.g. Museum of Palaeontology, Santana; Humboldt Museum, Berlin) have examples

of females, including an excellently preserved adult. The specimens are referred to the family Dipluridae on account of their elongate spinnerets (typical of spiders which make funnel-webs).

The Dipluridae contains three subfamilies: Diplurinae, Ischnothelinae, and Masteriinae. The last consists of very small spiders; the living *Ischnothele* from Ceará belongs to Ischnothelinae; whilst the fossils can be placed in Diplurinae because the distal segments of the posterior spinnerets lack subsegmentation (it is possible that the fossils represent an extinct clade or an ancestral lineage).

The oldest fossil diplurid was recorded from Tertiary Baltic amber (Menge 1869), so the fossils described here are the oldest diplurids yet recorded. However, the presence of a nemesiid (sister group to Dipluridae) in Lower Cretaceous rocks of England (Selden 2002) predicted the presence of diplurids in the Early Cretaceous.

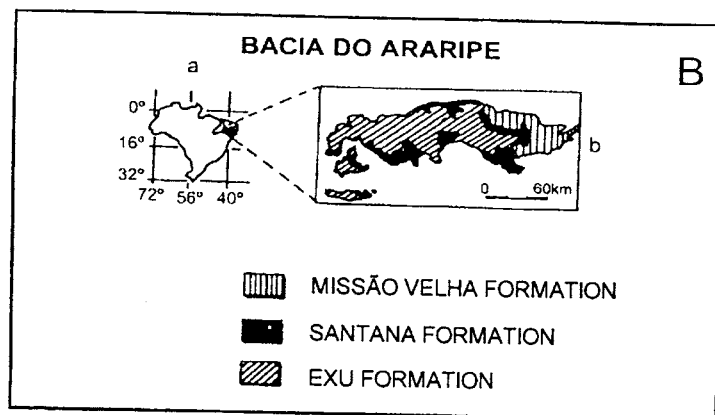
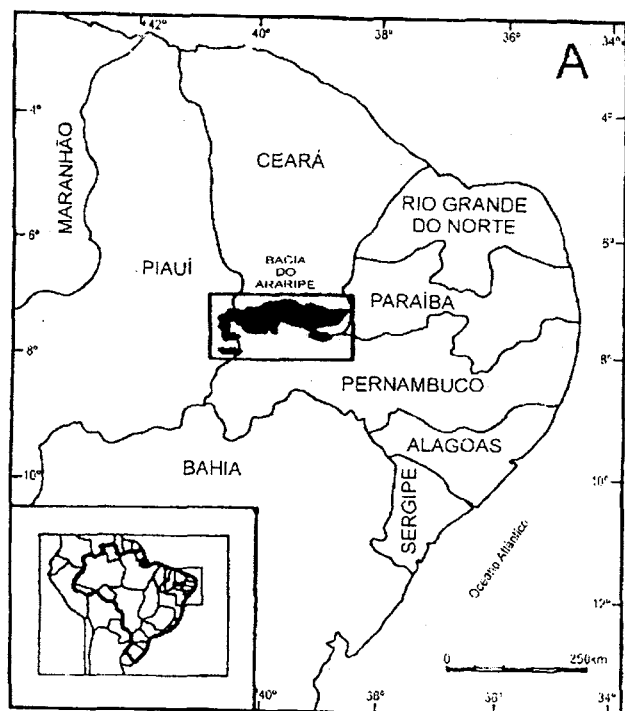
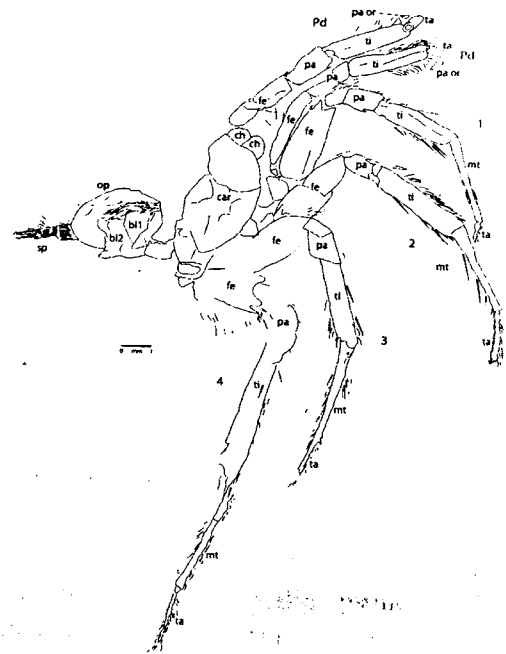


Figure 1. A – Location map of the Araripe Basin (Assine, 1990); B – Geologic map of the Araripe Basin (Martins-Neto, 1991).



A



B

Figure 2. A – Photo of an adult male of Dipluridae; B – Schematic drawing with structural details: fe (femur); pa (patella); ti (tibia); mt (metatarsus); ta (tarsus); ch (chelicerae); ce (cephalothorax); ab (abdomen); sp (spinnerets). Scale = 1mm.

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