Quaternary International xxx (2011) 1–3

Contents lists available at ScienceDirect

Quaternary International

journal homepage: www.elsevier.com/locate/quaint

About the occurrence of *Glyptodon* sp. in the Brazilian intertropical region

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ARTICLE INFO

Article history:
Available online xxx

ABSTRACT

The record of *Glyptotherium* sp. in the Brazilian Northeastern region initiated a reinterpretation of the material previously assigned to *Glyptodon* and the distribution in the country. The most recent interpretation suggests that the materials found in the Brazilian Intertropical Region belong to *Glyptotherium*, with *Glyptodon* restricted to southern Brazil. However, two osteoderms with characteristics attributable to *Glyptodon* has been recently found in Sergipe State, Northeastern region, suggesting that the two genera occurred in this region during the Pleistocene.

1. Introduction

The occurrences of *Glyptodon* in Brazil were assigned to the species *G. reticulatus*, with distribution restricted to the south of the country (Oliveira, 1992; Kerber and Oliveira, 2008a, 2008b), and *G. clavipes*, with a wide distribution, being recorded in the north, northeast, and southeast regions of Brazil (Cartelle, 1992, 1994; Dantas, 2009). The recent record of *Glyptotherium* cf. *G. cylindricum* in Venezuela (Rincón, 2006; Carlini et al., 2008), and *Glyptotherium* sp. in the northeastern region of Brazil (Oliveira et al., 2010) initiated a reinterpretation of the material previously assigned to *Glyptodon* and the distribution in the country. The most recent interpretation suggests that the materials found in the Brazilian Intertropical Region – RIB (*sensu* Cartelle, 1999) belong to *Glyptotherium*, and thus *Glyptodon* would be restricted to southern Brazil (Oliveira et al., 2010). Recently two osteoderms with characteristics attributable to *Glyptodon* have been found in Sergipe State, northeastern region, and their description is the main goal of this paper.

2. Study area

The material studied here was collected in a “tank”, a natural depression on Neo-Mesoproterozoic strata of the Macurure Group, dominant in the area (Bonfim et al., 2002), caused by physical and chemical erosion in previous fractures (Oliveira and Hackspacher, 1989). It filled with sediments transported by flow during seasonal rains, which include remains of animals and plants accumulated during the dry season. Presently, sediments in the depressions are known to be Pleistocene or Holocene in age. The location in which the materials studied here was found is known as “Tanque Grande” (10°05′06" S, 37°01′14" W), in the “Sítios Novos” localitie, a municipality of Canhoba, Sergipe (Fig. 1). The material studied here was a part of the scientific collection of the Laboratory of Paleontology at the Federal University of Sergipe (LPUFS).

3. Systematic paleontology

Cingulata (ILLIGER, 1811), Glyptodontidae GRAY, 1869.
Glyptodon sp.

4. Material

Dorsal carapace fragment, with one complete osteoderm LPUFS 5110; isolated osteoderm form posterior border of carapace LPUFS 4989.

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doi:10.1016/j.quaint.2011.06.024

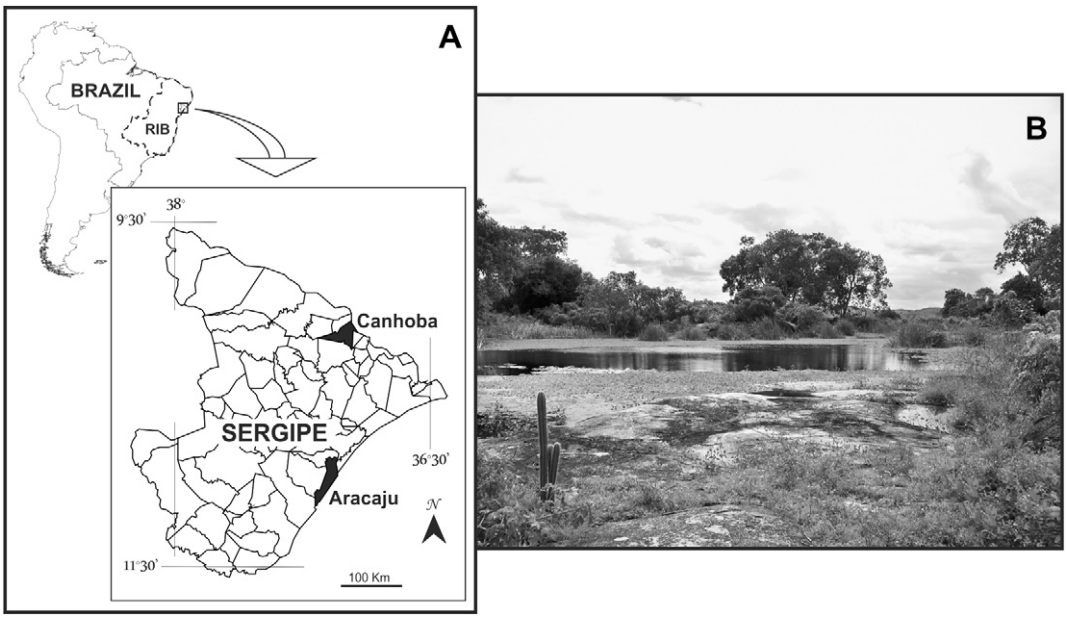

Fig. 1. (A) Map of Canhoba, Sergipe, Brazil; (B) Tank in Sítios Novos, Canhoba, Sergipe. Legend: RIB - Brazilian Intertropical Region.

5. Description

LPUFS 5110 (Fig. 2A, Table 1) is a fragment from the dorsal region of the carapace which shows that the dorsal surface is worn due to the transport suffered, making the sulci that delimits the central and peripheral figures appear to be shallow. This fragment has three distinct osteoderms, but only one is complete. The best preserved osteoderm is pentagonal and has four foramina in its principal sulcus, which are located in the intersection with the radial sulci. It also shows nine peripheral figures, with a subcircular central figure, larger than the peripherals, with a well defined depression, displaced to the distal portion, near the principal sulcus.

The osteoderm LPUFS 4989 (Fig. 2B, Table 1) belongs to the posterior border of the carapace, and has a subcircular central figure, delimited by a deep sulcus, with a well defined depression in the center of it. It seems that nine peripheral figures were present, but some of them are missing due to fracture. Five foramina can be observed in the principal sulcus, located in the intersection with the radial sulci.

6. Discussion

The fossils of glyptodonts found in the RIB are currently assigned to *Glyptotherium*. The references to this genus in the states of Rio Grande do Norte and Pernambuco (Northeast region) were based on osteoderm characteres. Oliveira et al. (2010) mention the following characteristics: presence of external surface with many pits, which give a rougher appearance than *Glyptodon*, shallow radial and main sulcus, and presence of eight to nine peripheral figures.

Some of these features are not measurable and can vary according to the interpretation of each author. The roughness observed in the osteoderms studied by these authors was also observed in the osteoderms of *Glyptodon* (e.g. Forasiepi et al., 2009; Rincón et al., 2009; Zurita et al., 2009). Furthermore, the material in tanks shows

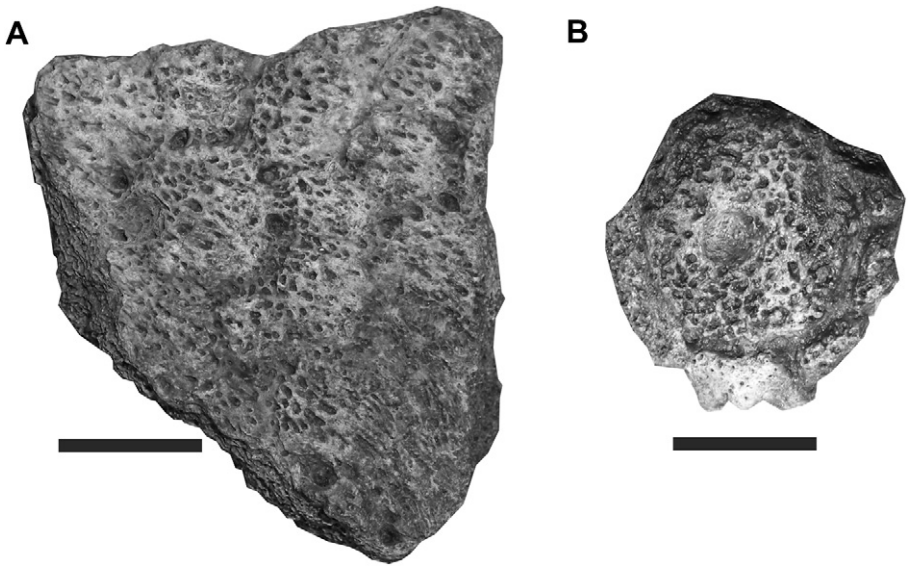

Fig. 2. Osteoderms of *Glyptodon* sp., dorsal view (bar escale 20 mm). (A) LPUFS 5110; (B) LPUFS 4989.

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Table 1
Measurements (in mm) of the osteoderms LPUFS 5110 and 4989 of *Glyptodon* sp.

	1	2	3	4	5
LPUFS 5110	43.0	40.0	23.0	18.0	17.0
LPUFS 4989	32.3*	45.9*	29.3	25.6	22.0

(1) width; (2) antero-posterior lenght; (3) thickness; (4) central figure lenght; (5) central figure width.
* Measurement compromised by fracture.

wear caused by the process of abrasion on their surfaces, which would cause roughness of the osteoderm surfaces. Shallow radial and main sulci and rough surface have also been mentioned for *Glyptodon* specimens from Rio Grande do Sul and Venezuela (Kerber and Oliveira, 2008a; Rincón et al., 2009). This is a subjective characteristic used to differentiate these two genera. Another feature described for *Glyptodon* is that it presents only six to seven peripheral figures (Ameghino, 1889). However, recently (Rincón et al., 2008; Kerber and Oliveira, 2008b; Forasiepi et al., 2009; Zurita et al., 2009)the occurrence of up to eight peripheral figures for this genus was reported. In *Glyptotherium*, seven to thirteen peripheral figures have been observed (Gillette and Ray, 1981), which shows that some overlap in the number of peripheral figures between both genera exist, which may lead to incorrect identification.

In summary, the osteoderms studied here show characteristics that allow their assignment to a species of the genus *Glyptodon*, as shown in the description. The most evident is a well defined depression in the central figure, as observed in *Glyptodon munizi*. However, these specimens cannot be determined below generic level, due to the need for a systematic review of the genus *Glyptodon* (Soibelzon et al., 2006), the limited number of specimens available, and because the occurrence of *G. munizi* is restricted to the Ensenadan SALMA (early/middle Pleistocene) of Argentina.

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