

***Neuryurus* (Xenarthra, Glyptodontidae) in the Lujanian (late Pleistocene – early Holocene) of the Pampean region**

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With 2 figures

ZURITA, A. E., SOIBELZON, E. & CARLINI, A. A. (2006): *Neuryurus* (Xenarthra, Glyptodontidae) in the Lujanian (late Pleistocene – early Holocene) of the Pampean region. – N. Jb. Geol. Paläont. Mh., **2006**: 78–88; Stuttgart.

Abstract: The Neuryurini are among the most poorly known group of Hoplophorinae glyptodonts. The only species that has been relatively well characterized as yet is *Neuryurus rudis* (GERVAIS) from the Ensenadan (early-middle Pleistocene) of the Pampean region, which is known mainly from remains of dorsal armor, and caudal tube and rings. This is the first record and description of genus *Neuryurus* from Lujanian sediments (Lobería Fm.; late Pleistocene – early Holocene) in Buenos Aires province, Argentina.

Zusammenfassung: Die Neuryurini zählen zu den am wenigsten bekannten Gruppen der Hoplophorinae-Glyptodonten. Die einzige bisher relativ gut charakterisierte Art ist das aus dem Ensenadan (Alt- bis Mittelpleistozän) stammende *Neuryurus rudis* (GERVAIS) aus dem Pampa-Gebiet. Diese Art ist hauptsächlich durch Reste vom Rückenpanzer, Schwanzrohr und -ringen bekannt. In diesem Fall handelt es sich um den ersten Nachweis der Gattung *Neuryurus* aus den Lujanian-Ablagerungen (Lobéria-Formation, Altpleistozän bis Frühholozän) in der Provinz Buenos Aires, Argentinien.

Key words: Glyptodontidae. Neuryurini. *Neuryurus*. Lujanian. Pampean region. Argentina.

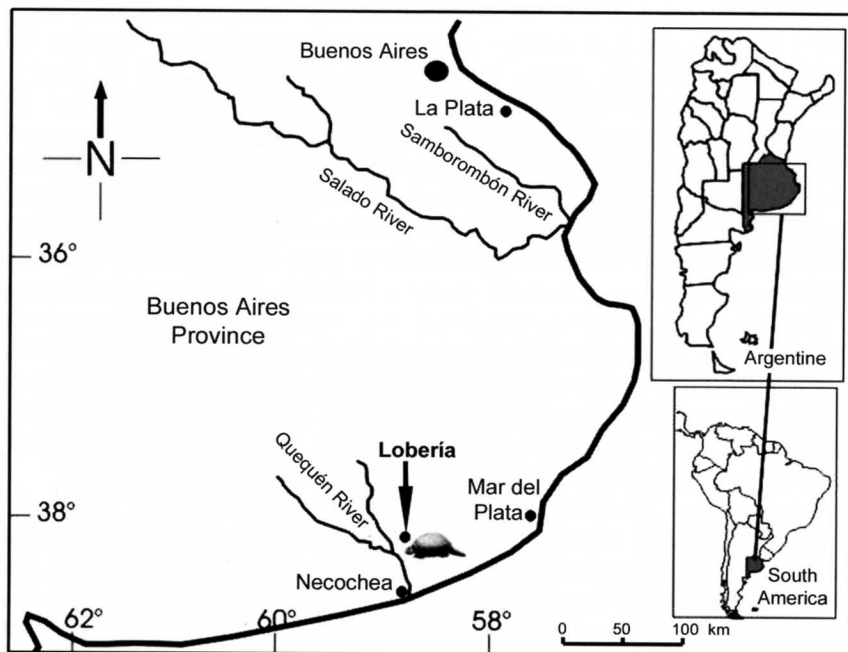


Fig. 1. Location map showing the locality from which the fossil was collected.

1. Introduction

The Neuryurini is a tribe erected by HOFFSTETTER (1958) and one of the most poorly known group within the Glyptodontidae Hoplophorinae (See HOFFSTETTER 1958, PAULA COUTO 1979, PASCUAL et al. 1967). The only genus that has been relatively well characterized is *Neuryurus* AMEGHINO, 1889, with the species *N. rudis* (GERVAIS, 1878) from the Ensenadan (early-middle Pleistocene) of the Pampean region. This species was originally assigned to genus *Euryurus* GERVAIS & AMEGHINO, 1880, but the generic name was afterwards replaced by *Neuryurus*, as the first was preoccupied (*Euryurus* KOCH, 1847; *Euryurus* VON DER MARCK, 1864) (see AMEGHINO

1889: 314, SIMPSON 1945: 74, MONES 1986: 235, McKENNA & BELL 1997: 90). Later on, diverse authors recognized several Tertiary species that were assigned to this genus, although the validity of most of these is questionable due to their poor morphological characterization and the scarcity of the materials (CASTELLANOS 1929, 1939, 1948). These are: *N. solidus* ROVERETO, 1914, from the Huayquerian (late Miocene) of Mendoza province (later transferred by CABRERA (1944) to genus *Eleutherocercus* KOKEN, 1888); *N. giganteus* ROVERETO, 1914 (discussed by KRAGLIEVICH (1934), *N. proximus* MORENO & MERCERAT, 1891 (transferred by CABRERA (1944) to genus *Hoplophractus* CABRERA, 1939); *N. compressidens* MORENO & MERCERAT, 1891 (later included by CABRERA (1944) within *Stromaphorus* CASTELLANOS, 1926) from the "Araucanian" (late Miocene-Pliocene) of Catamarca province; *Euryurus interdundatus* AMEGHINO, 1885 (transferred by CASTELLANOS (1926) to genus *Urotherium*); *N. chapalmalensis* AMEGHINO, 1908, and *N. crassus* AMEGHINO, 1908 from the Chapadmalalan (early Pliocene) of Buenos Aires province.

Other taxa of doubtful validity have also been recognized within this tribe, in particular *Pseudoeryurus lelongianus* AMEGHINO, 1889, from the "Mesopotamian" (late Miocene-Pliocene) of Entre Ríos province, and some poorly known species assigned to the Tertiary genus *Urotherium* CASTELLANOS, 1929 ("Araucanian" – Vorohuan; CASTELLANOS 1948, SCILLATO-YANÉ et al. 1995, CARLINI & SCILLATO-YANÉ 1999).

Thus, the only well-defined *Neuryurus* species is *N. rudis*, a species chronologically and geographically restricted to the Ensenadan of the Pampean region. It is characterized by its large size (comparable to *Panochthus* BURMEISTER, 1866) and dorsal carapace formed by large osteoderms with uniformly perforated dorsal surface, and no clear differentiation of central and peripheral figures; caudal tube formed by osteoderms similar to those of the dorsal armor, weakly joined to each other and bearing lateral elliptic "protuberances" with a conical central knob, showing certain analogy with *Panochthus* and *Hoplophorus* LUND, 1839 (AMEGHINO 1889, 1895, HOFFSTETTER 1958, PAULA COUTO 1979). Also included, although somewhat tentatively, are the taxa *Pseudoeryurus lelongianus* and *Urotherium* (see SCILLATO-YANÉ et al. 1995, CIONE et al. 2000; but see McKENNA & BELL 1997).

This is the first notice and description of a specimen referable to *Neuryurus* from Lujanian sediments (late Pleistocene – early Holocene).

Abbreviation: MCNL Museo de Ciencias Naturales de Lobería, Buenos Aires province, Argentina.

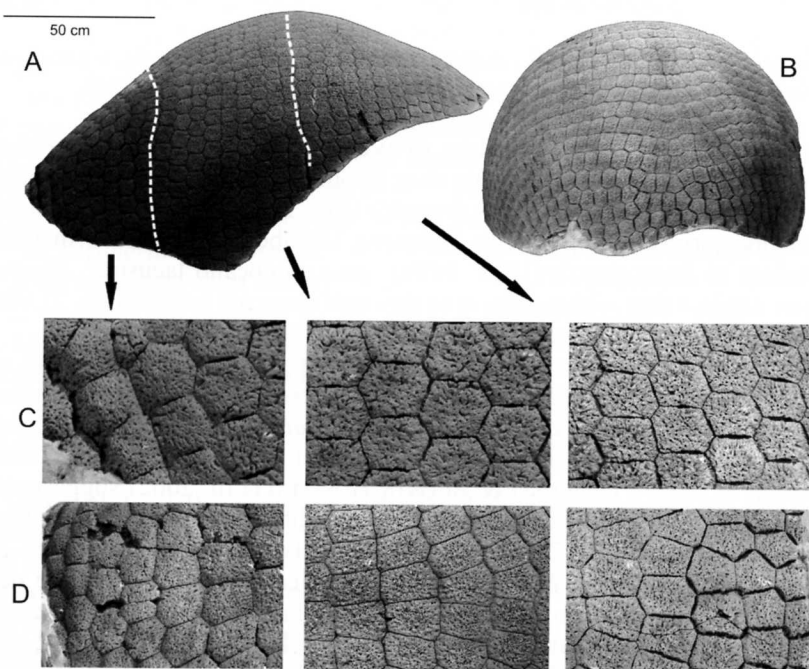


Fig. 2. Dorsal carapace of *Neuryurus* sp. (MCNL 6.6). **A** – lateral view; **B** – in frontal view; **C** – detail of lateral osteoderms (left to right: posterior, middle and anterior regions); **D** – detail of dorsal osteoderms (idem C).

2. Systematic Paleontology

Superorder	Xenarthra COPE, 1889
Order	Cingulata ILLIGER, 1811
Superfamily	Glyptodontoidea BURMEISTER, 1879
Family	Glyptodontidae BURMEISTER, 1879
Subfamily	Hoplophorinae (HUXLEY, 1864) WEBER, 1928
Tribe	Neuryurini HOFFSTETTER, 1958
Genus	<i>Neuryurus</i> AMEGHINO, 1889

Material: MCNL 6.6. Dorsal carapace almost complete, lacking the ventralmost marginal osteoderms on both sides and those adjacent to the cephalic notch.

Geographic and stratigraphic provenance: The studied material is from the cliffs of Quequén Grande river (from fields belonging to Mr. Piacenza), in Lobería, Buenos Aires province (Fig. 1), and was exhumed from sediments corresponding to the Guerrero Member of Luján Formation, equivalent to AMEGHINO'S (1881, 1889) "piso pampeano lacustre". Recent datings suggest that sedimentation in this unit occurred between ca. 21.000 and 10.000 radiocarbon years AP (TONNI et al. 2003).

The occurrence within this unit of taxa that are current inhabitants of the Central and Patagonian Domains (e.g., *Lestodelphys halli*, *Lyncodon patagonicus*, *Microcavia australis*, *Dolichotis salinicola*, Rheidae, etc.; see among others, TONNI & FIDALGO 1979, TONNI 1981, TONNI et al. 1985, PRADO et al. 1987, TAMBUSI & ACOSTA HOSPITALECHE 2002) suggests an extension of the climatic-environmental conditions currently prevailing in Patagonia to an area 750 km northeast of its present limits (TONNI & FIDALGO 1979, IRIONDO & GARCÍA 1993), at least during part of the deposition of the Guerrero Member of Luján Fm. (especially the period corresponding to the Last Glacial Maximum – LGM – ca. 18 ky AP, see CLAPERTON 1993). The almost total absence of "strictly" subtropical taxa (e.g., *Cavia aperea*, *Oryzomys flavescens*, etc.; TONNI & FIDALGO 1979, TONNI et al. 1999, PRADO et al. 2001), as well as the available paleopalino-logical information (QUATTROCHIO et al. 1995) support a prevalence of arid to semiarid conditions, probably associated with temperatures that were lower than currently recorded in the area.

The sediments of the Guerrero Member comprise primarily silty sands and green clayey-sandy silts (FIDALGO et al. 1973), corresponding to flood plain deposits (TONNI & SCILLATO-YANÉ 1997) or low energy fluvial deposits (FIDALGO et al. 1973, FIDALGO et al. 1985). This unit is biostratigraphically characterized by the presence of *Equus* (*Amerhippus*) *neogeus*, which gives its name to the biozone that regionally supports the Lujanian Stage/Age (CIONE & TONNI 1995, 1999, CIONE et al. 1999).

Description: The specimen comprises a well-preserved carapace, 1320 mm total length and 800 mm width; its outline is similar to that of *Glyptodon munizi* AMEGHINO, 1881, but smaller: the anteroposterior arc of the dorsal circumference is 1550 mm long, and the transversal arc is 1600 mm long. It comprises approximately 34 transversal rows of four- or six-sided osteoderms which, on account of the contacts between them, must have been more

loosely joined to each other than in other glyptodonts. As we have previously mentioned, the ventralmost lateral osteoderms and those adjacent to the cephalic notch are missing.

The osteoderms of *Pseudoeuryurus lelongianus* present a central raised figure with a marked depression in its middle area, surrounded by a series of well-developed foramina; these foramina become smaller towards the periphery and are transforming into simple rugosities. This combination of characters is not seen in any part of the armor of *Neuryurus*.

In *Urotherium* the osteoderms are smaller, their dorsal surface does not appear as rugose as in *Neuryurus* and the larger foramina are arranged near the edges of the osteoderms and exhibit a distinct circular disposition. In addition, the central area of the largest osteoderms shows a slight depression within which the foramina are little developed.

For the present description of the material, the carapace was divided into 3 regions: anterior, middle and posterior respectively (Fig. 2):

Anterior region: Comprises the area between rows 1 and 15. The osteoderms in rows 1 to 5 are irregular and smaller than the rest; the posteriormost of these are almost isodiametric. These osteoderms characteristically present a conspicuous central convexity formed by the union or fusion of a series of small tubercles. In contrast with the condition seen in *N. rudis*, no osteoderms with one or two rows of rudimentary peripheral figures are seen surrounding the central figure. Plate size is inversely related to the degree of development of this central convexity; thus, the smaller osteoderms show a more evident convexity. The osteoderms between rows 6 to 15 are mostly rectangular with their major axis directed anteroposteriorly, but show a clear trend toward pentagonal shape. The exposed side of the osteoderms is characterized by the presence of one or various tubercles in the center of a circle delimited by the larger perforations. Only the dorsalmost lateral osteoderms are preserved and they are not significantly different with respect to those already described.

Middle region: Comprises the area between rows 16 and 25. In the first few rows the dorsal osteoderms are quadrangular to pentagonal, whereas the osteoderms in the last rows are larger and penta- to hexagonal in shape. On the lateral areas, hexagonal osteoderms are more frequent than pentagonal ones; additionally, they are smaller and more isodiametric with respect to the dorsal osteoderms.

Posterior Region: Comprises rows 26 to 34. The larger osteoderms occur in the first three rows, and are characterized by their slightly more rugose dorsal surface with respect to the smaller osteoderms of this region. All

osteoderms in this region are penta- to hexagonal and become smaller posteriorly, as their anteroposterior diameter becomes equal to their transverse diameter. The exposed side of the osteoderms is flat and uniformly punctured by small radiating perforations, although a series of somewhat larger foramina demarcating a central circle in each plate, similar to AMEGHINO's (1889: 842) description for *Neuryurus rudis*, can be observed. The osteoderms become smaller toward the sides, and vary from primarily hexagonal and isodiametric to antero-posteriorly elongated. The penultimate row is formed by mostly quadrangular osteoderms with slightly convex dorsal surface, similar to the osteoderms that border the caudal notch. This latter structure is circumscribed by irregular osteoderms that can be 4- to 6- sided and present a small convexity that forms a tuberosity, similarly to *N. rudis*. The dorsal osteoderms are larger, and become smaller towards the sides; the ventralmost osteoderms are unknown.

3. Discussion and conclusions

Chronological frame: This material is the first record of genus *Neuryurus* in sediments from the late Lujanian. It was recovered from the Guerrero Member of the Luján Formation, whose sedimentation occurred between ca. 21.000 and ca. 10.000 radiocarbon years AP (see also CIONE et al. 2001, and ROSELLO et al. 2001); its oldest sector coincides with the last glacial maximum (LGM). Likewise, the scarcity of records assignable to *Neuryurus* in the Pleistocene of the Pampean region is striking. Outside Argentinian territory, the only remains assignable to this genus are from the Lujanian s.l. (0,5-0,008 Ma.) of Uruguay, and consist of isolated osteoderms (RINDERKNECHT 1999, UBILLA & PEREA 1999).

Systematics: The assignation of this specimen to genus *Neuryurus* is made on the basis of: a) presence of large osteoderms with uniformly perforated dorsal surface, and with no well-defined division into central and peripheral figures; b) osteoderms united by means of loose sutures, and those adjacent to the caudal notch being noticeably convex (see AMEGHINO 1889, PASCUAL et al. 1967, HOFFSTETTER 1958, PAULA COUTO 1979, etc.). It differs from *N. rudis* basically by: a) smaller size, and b) total absence of peripheral figures at cephalic level, which was observed by AMEGHINO (1889: 842). Aside from this, the above mentioned scarce and imprecise knowledge of most of the species that have been assigned to the tribe Neuryurini currently prevents the specific assignation of this material, until a systematic-phylogenetic revision of the group.

Acknowledgments

The authors wish to thank J. NOCEDA and B. BAGLINO, the responsables of Museo de Ciencias Naturales de Lobería, for allowing us to examine and study the materials described herein, to the reviewers Dr. A. MONES and Dr. E. A. ROSELLO for their suggestions, and to the CONICET (PEI 6433 to AAC), and ANPCyT (PICT-R 074 G3 to AAC) for financial support.

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Manuscript received: July 18th, 2005.

Revised version accepted: November 4th, 2005.

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