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THE LELONG THÉVENET COLLECTION AND ITS FINAL DESTINATION: RECOVERY OF TYPE AND REFERRED MATERIALS OF CINGULATES DESCRIBED BY AMEGHINO

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Abstract. At the end of the 19th century, Ameghino studied the fossils of the "*conglomerado osífero*" (Late Miocene, Paraná, Entre Ríos, Argentina), erecting at least 13 new species of cingulates. Some of the type specimens of these species have been considered lost, relying only on the descriptions of Ameghino and some figures of the type or referred materials of his 1889 atlas. The specimens described by Ameghino belonged to private (*e.g.*, Lelong Thévenet, Ameghino) and public collections (*e.g.*, those of Professor Scalabrini). This work aims to record the type specimens and referred materials of Cingulata within the Lelong Thévenet Collection and deposited in the collections housed at the Museo Argentino de Ciencias Naturales "Bernardino Rivadavia". The Lelong Thévenet Collection was acquired by this institution in 1886, but the specimens were formally included, at different times, in the Colección Nacional de Paleovertebrados. An exhaustive search of the cingulate specimens referred to said collections was carried out, which resulted in the identification of several of them in Ameghino's 1889 atlas. We found materials collected by Lelong Thévenet and Ameghino in the Colección Nacional de Paleovertebrados and Colección Nacional Ameghino, respectively. Many of these materials have been recognized as type specimens or referred materials of these armored mammals, identifying 10 original materials, of which four correspond to holotypes and six to referred materials; added to these, 17 casts were identified, six of them from holotypes and the other 11 referred by Ameghino in his atlas.

Key words. Fossil mammals. Lelong Thévenet Collection. Ituzaingó Formation. Holotypes. Referred materials. Ameghino.

Resumen. LA COLECCIÓN LELONG THÉVENET Y SU DESTINO FINAL: RECUPERACIÓN DE MATERIALES TIPO Y REFERIDOS DE CINGULADOS DESCRIPTOS POR AMEGHINO. A finales del siglo XIX Ameghino estudió los fósiles del "conglomerado osífero" (Mioceno Tardío, Paraná, Entre Ríos, Argentina) erigiendo al menos 13 nuevas especies de cingulados. Algunos de los ejemplares tipo y materiales referidos de estas especies se han considerado extraviados, contando solo con las descripciones de Ameghino y algunas figuras en su atlas de 1889. Los especímenes descriptos por Ameghino pertenecían a colecciones privadas (*e.g.*, Lelong Thévenet, Ameghino) y estatales (*e.g.*, la del Profesor Scalabrini). El objetivo de este trabajo fue registrar los ejemplares tipo y materiales referidos de Cingulata pertenecientes a la Colección Lelong Thévenet, depositados en las colecciones del Museo Argentino de Ciencias Naturales "Bernardino Rivadavia". La Colección Lelong Thévenet fue adquirida por dicha institución en 1886, pero los ejemplares fueron ingresados formalmente en diferentes instancias a la Colección Nacional de Paleovertebrados. Se efectuó una exhaustiva búsqueda de los ejemplares de cingulados que estuviesen referidos a dichas colecciones, resultando en la identificación de varios de ellos figurados en el Atlas de Ameghino de 1889. Se han encontrado materiales colectados por Lelong Thévenet y Ameghino en la Colección Nacional de Paleovertebrados y la Colección Nacional Ameghino, respectivamente. Estos materiales han podido ser reconocidos como ejemplares tipos o referidos de estos mamíferos acorazados, identificándose 10 especímenes originales, de los cuales cuatro corresponden a materiales tipo y seis a materiales referidos; además se identificaron 17 calcos, seis de ellos correspondientes a copias de holotipos, mientras que 11 son calcos de materiales referidos por Ameghino en su atlas.

Palabras clave. Mamíferos fósiles. Colección Lelong Thévenet. Formación Ituzaingó. Holotipos. Materiales referidos. Ameghino.

BETWEEN 1883 and 1889, Florentino Ameghino (1854–1911) established diverse species of mammals from fossil specimens recovered from the "*conglomerado osífero*" (Late Miocene) of Paraná locality (Entre Ríos Province, Argentina) among which, at least, 13 corresponded to cingulates. As was customary at the time, Ameghino never published the new species with their associated catalog numbers, nor gave them typological assignments (*e.g.*, type material); but

in many cases, he specified the collector of each specimen on which he based his new taxa and descriptions (Ameghino, 1883a, 1883b, 1885, 1886, 1889). Until 1889, all the species of cingulates erected by Ameghino (1883a, 1883b, 1885, 1886) only had a description, which in some cases, were very brief and lacked illustrations. Fortunately, in his exceptional publication about the fossil mammals of Argentina, Ameghino (1889) illustrated 23 materials representing 10 species among the 13 taxa of cingulates recovered from the "*conglomerado osífero*" established and described by Ameghino (1883a, 1883b, 1885, 1886, 1889).

The cingulate specimens studied by Ameghino (1883a, 1883b, 1885, 1886, 1889) belonged to both private and public collections. Within the latter was the one constituted by the Italian professor and naturalist Pedro Scalabrini (1848–1916), who gathered an extensive collection of fossils from the cliffs exposed at Paraná (*e.g.*, Ameghino, 1883a, 1883b, 1885, 1886; Cione *et al.*, 2000; Velázquez, 2007; Scillato-Yané *et al.*, 2013; Contreras *et al.*, 2019), housed at the Museo Provincial del Paraná (Entre Ríos Province, Argentina) (Ameghino, 1885, 1886; see also Museo Provincial de Entre Ríos in Ameghino, 1889). This museum closed in 1904 and its collections were transferred to the Escuela Normal de Paraná (see Velázquez, 2007) and the Museo de Ciencias Naturales y Antropológicas "Antonio Serrano" (MAS, Entre Ríos Province, Argentina) (see Scillato-Yané *et al.*, 2013) or possibly both institutions according to Contreras *et al.* (2019). The fossil cingulates stored at the MAS were studied by Scillato-Yané *et al.* (2013), who identified three type specimens and tracked down the historical background of the materials: 1- Scalabrini collected the materials; 2- he sent them to Ameghino in Buenos Aires; 3- Ameghino analyzed and described the materials, and, in some cases, made casts; 4- Ameghino returned them to Scalabrini, where they were finally stored in Paraná.

Regarding the private collections, Ameghino (1886, 1889) mentioned his studies were made based on Mr. Leon Lelong Thévenet's and his own collections. Both collections were purchased in 1886; the former by the Museo Nacional (nowadays Museo Argentino de Ciencias Naturales "Bernardino Rivadavia" and Instituto Nacional de Investigación de las Ciencias Naturales—MACN—; for a review of the names of this institution see Castello & Piacentino, 2015), and the latter by the Museo de La Plata (MLP) (Moreno, 1886, 1890; Ameghino, 1889; Farro, 2008, 2009; Fernicola, 2011a). Consequently, the original specimens described by Ameghino during almost a decade (1883a, 1883b, 1885, 1886, 1889) and later figured (Ameghino, 1889) followed the same, tortuous historical path. Unfortunately, most of the specimens at the MACN were cataloged in the mid-20th century without acknowledging that many of them had been studied by Ameghino and did not consider his taxonomic assignations (Cruz & Fernicola, 2022); while those at the MLP were subjected to the confrontation between Francisco Pascasio Moreno (1852–1919) and Florentino Ameghino, Director and Sub-Director of this institution, respectively (Fernicola, 2011a).

Contrasting, perhaps, with the history of the specimens collected by Scalabrini, the lack of clarity in the historical sequence of Lelong Thévenet's collections led many specimens, including type materials, to be considered lost for many years (*e.g.*, Mones, 1986; Kinderknecht, 1999; Scillato-Yané *et al.*, 2013).

In this context, the objective of this work is to account for the historical course of the Lelong Thévenet Collection mentioned by Ameghino, purchased by the then Museo Nacional and currently deposited in the Colección Nacional de Paleovertebrados (MACN-PV) at the MACN in order to identify the type specimens and referred materials of Cingulata that are part of this acquisition. In addition to this, we identified type and casts of the types of cingulates of the "*conglomerado osífero*" described by Ameghino and collected by Scalabrini and Ameghino, which are housed in the Colección Nacional Ameghino (MACN-A) at the MACN.

HISTORICAL BACKGROUND

Ameghino began studying the fauna from the "*Piso Mesopotamiense*" or "*conglomerado osífero*" in 1883, from a few materials that Scalabrini brought to Buenos Aires. Ameghino (1883a), in this first work, established three new species within Cingulata: *Chlamydotherium paranense*, *Glyptodon* (?) *antiquus*, and *Hoplophorus paranensis*. Then, in a second work, based on new materials given by Dr. Estanislao S. Zeballos on behalf of Scalabrini, Ameghino (1883b) established within Cingulata one new genus—*Palaehoplophorus*—and added new materials to

Palaehoplophorus scalabrinii [=*Glyptodon* (?) *antiquus*, see below], *Chlamydotherium paranense*, and *Glyptodon elongatus*. Later, Ameghino (1885) mentioned that in October of 1884, he visited the Paraná city, studied the materials housed at the Museo Provincial del Paraná, and went to the field, in some opportunities with Scalabrini (Ameghino, 1885; Tognetti, 2001). These explorations were financially supported by the Academia Nacional de Ciencias (Tognetti, 2001). As a result, Ameghino (1885) established three new species: *Palaehoplophorus pressulus*, *Euryurus interundatus*, and *Protoglyptodon primiformis*; in addition, he described more materials of two known taxa: *Palaehoplophorus scalabrinii* and *Chlamydotherium paranense* and described two materials as indetermined Cingulata. Ameghino (1885) also mentioned that pictures of each material would be released in future publications as soon as he obtained the resources for it.

Afterwards, Ameghino (1886) continued analyzing this fauna, establishing once again within Cingulata, three new species: *Comaphorus concisus*, *Chlamydotherium*? e*xtremum*, and *Proeuphractus limpidus*. Based on new materials, he also extended the description of five previous taxa (*Hoplophorus paranensis*, *Palaehoplophorus scalabrinii*, *Euryurus interundatus*, *Protoglyptodon primiformis*, and *Chlamydotherium paranense*). In addition, Ameghino's (1886) work highlighted the valuable collections built around the fauna of "*conglomerado osífero*", including the collections of the Museo Provincial del Paraná and the Museo Nacional (=MACN). Ameghino (1886, p. 3–4) specifically mentioned a large collection of fossil mammals that belonged to Lelong Thévenet and, later, he wrote that this collection was acquired by the Museo Nacional.

Finally, Ameghino (1889) described and figured many materials of this fauna and, within the Cingulata, established three new species: *Hoplophorus verus*, *Lomaphorus cingulatus*, and *Pseudoeuryurus lelongianus*, and extended the description of nine previously described taxa (*Palaehoplophorus scalabrinii*, *Palaehoplophorus pressulus*, *Hoplophorus paranensis*, *Protoglyptodon primiformis*, *Neuryurus interundatus*, *Comaphorus concisus*, *Chlamydotherium paranense*, *Chlamydotherium*? e*xtremum*, and *Proeuphractus limpidus*), based on specimens recovered from Paraná's cliffs.

Until now, the Paraná's cliffs yielded several fossil's remains recovered from two units: the Paraná and Ituzaingó formations (see Cione *et al.*, 2000; Brunetto *et al.*, 2013; Perez, 2013). The lower member of the Ituzaingó Formation was traditionally known as the "*conglomerado osífero*" and/or "*Piso Mesopotamiense*" (see Cione *et al.*, 2000; Brandoni, 2013; Schmidt *et al.*, 2020, and references therein). According to Cione *et al.* (2000), and following the geochronologic and chronostratigraphic formal scheme based on biostratigraphic units and defined by mammalian Biozones (see Cione & Tonni, 1995, 2005, and references therein cited), the "*conglomerado osífero*" or "*Piso Mesopotamiense*" has been referred to the Huayquerian Stage/Age (*ca.* 8.7–6.8 Ma). However, recent faunistic analysis indicates that this faunal assemblage is a mixture of faunas assigned to the Chasicoan and Huayquerian stages/ages, deposited during the end of the Tortonian or the early Messinian (Brandoni, 2013; Schmit *et al.,* 2020). It is important to mention here that the Huayquerian Stage/Age at its type locality was recently reviewed and redefined (Romano *et al.*, 2023).

MATERIALS AND METHODS

The types and assigned specimens of the species erected by Ameghino between 1883 and 1889, regrettably, were not identified with a collection number. In order to identify the types and referred materials of the studied species, we thoroughly reviewed numerous specimens deposited at the MACN-A and MACN-PV collections, comprising mainly isolated osteoderms, fragments of the dorsal carapace, and fragment of the caudal tubes. These materials were contrasted with the original descriptions and supplementary data, such as measurements and illustrations, published between 1883 and 1889 by Ameghino. According to Ameghino (1886) the fossil specimens from Lelong Thévenet's collection had been purchased by the Museo Nacional that same year. Therefore, we firstly focused our search of the materials at the MACN-PV. We also extended our search to the MACN-A collection because it was Ameghino's personal.

The information was gathered from notes and books preserved at the *Archivo Histórico* of the MACN (*e.g.*, "*Inventario Museo de Buenos Aires 1850–1891*"), Ameghino's handwritten catalog, an entrance book of the MACN-PV,

and the multiple publications of Ameghino (1883a,1883b, 1885, 1886, 1889). Especially important are the illustrations published by Ameghino (1889) in different plates (see results for details), which, in some cases, completed the description of the taxa published in the previous years. We want to emphasize that in this contribution we provide new descriptions of the original recovered materials, but we do not make any evaluation on the validity of the species and genera. Consequently, we prefer to follow the systematic scheme and taxonomic nomenclature of Ameghino (1889). Nevertheless, with regards to *Glyptodon* (?) *antiquus* of Ameghino (1883a) = *Palaehoplophorus scalabrinii* of Ameghino (1883b), the specific name is different because this taxon had a particular nomenclatural problematic. In this sense, this contribution follows the regulations established by the ICZN (1999) concerning the selection of type specimens, type species, and nomenclatural problems. Therefore, in this work we write it correctly like as *Palaehoplophorus antiquus* (Ameghino, 1883a) in accordance to Scillato-Yané *et al.* (2013).

The terminology used for the anatomical description follows Cruz *et al.* (2011) and Porpino *et al.* (2014) for glyptodonts, Gois *et al.* (2015) for pampatherids, and Fernicola *et al.* (2021, and references therein) for dasypodids.

All materials were analyzed by direct observations and, in some cases, under a magnifier lamp (3x). The measurements indicated in this contribution were taken with a Kendo digital caliper (0.02 mm). The photographs were taken with a Panasonic DMC-TZ57 20X camera.

Institutional Abbreviations. MACN, Museo Argentino de Ciencias Naturales "Bernardino Rivadavia", Ciudad Autónoma de Buenos Aires, Argentina; **MACN-A,** Colección Nacional Ameghino at the MACN, Ciudad Autónoma de Buenos Aires, Argentina; **MACN-PV,** Colección Nacional de Paleovertebrados at the MACN, Ciudad Autónoma de Buenos Aires, Argentina; **MAS,** Museo de Ciencias Naturales y Antropológicas "Prof. Antonio Serrano", Paraná, Entre Ríos, Argentina [= **MASP** following Brandoni (2013) and Schmidt & Cerdeño (2013), = **MPCNP,** Museo Provincial Ciencias Naturales de Paraná, Entre Ríos, Argentina, following Mones (1986)]; **MLP,** Museo de La Plata, La Plata, Argentina.

RESULTS

Acquisition of the Lelong Thévenet Collection by the Museo Nacional (=MACN)

There are several documents at the MACN, some only paper and others paper and digitized data, which allowed us to re-construct the history of the purchase of the Lelong Thévenet Collection. In the *Archivo Histórico* of the MACN we found a document (see Supplementary data 1) with different notes about this subject: one note in particular, dated on February 4th, 1886, addressed to the Minister of Public Instruction Dr. D. Eduardo Wilde, signed by Dr. German Burmeister, explains the following: *"El Sr. D. Leon Lelong Thévenet, de Paraná, ha ofrecido al Museo Nacional su colección de Fósiles de la Formación Terciaria del Paraná, que, según el catálogo que me ha remitido, enumera 715 objetos diferentes, entre los cuales figuran algunos, especificados por dibujos provisorios, de mucho valor y hasta hoy desconocidos, faltando no solamente éstos sino tambien muchos otros de entre ellos en el Museo. Como esta colección dará un suplemento muy valioso á la de Bravard, recién examinada por mí en la última entrega (XIV) de los Anales del Museo, me parece una adquisición á propósito, y propongo aceptar la oferta hecha por el precio de 2000 pesos nac. que el propietario pide, previa inspección exacta, á la cual me ofrezco, con la asistencia del Naturalista viajero del Museo, D. Enrique de Cárles."* (Mr. D. Leon Lelong Thévenet, from Paraná, has offered to the Museo Nacional his collection of fossils from the "*Formación Terciaria*", of Paraná, which according to the catalog he has sent, consists of 715 different objects, including some, specified by provisional drawings, highly valuable and until today unknown, missing not only these but also many others among them in the museum. As this collection will provide a very valuable supplement to that of Bravard, recently examined by me in the last edition (XIV) of the *Anales del Museo*, it seems to me a deliberate acquisition, and I propose to accept the offer made for the price of 2000 national *pesos* that the owner requests, previous thorough inspection, to which I offer myself, with the assistance of the traveling naturalist of the Museum, Mr. Enrique de Carles). Burmeister also offers a proposed payment plan for that sum starting at the amount of 500 (fixed sum per month awarded for the increase of the Museum's collections). Afterwards, another note signed by *Conta. Gral*

(=*Contaduría General de la Nación*) dated on February 8th, 1886, said: *"Atento lo manifestado por el Director del Museo Nacional en la adjunta nota, toca a V.E resolver á su respecto lo que crea oportuno"* (Considering to what was manifested by the Head of the *Museo Nacional* in the attached note, it is up to Your Excellency to resolve what you deem appropriate). Subsequently, with a note dated on February 17th, 1886, the President of Argentina (by that time, Julio Argentino Roca) resolved: *"que se ponga a disposición del Mencionado Director la cantidad de dos mil pesos moneda nacional destinada á adquirir la colección de fósiles que ha ofrecido en venta Don Leon Lelong Thévenet, con destino al Museo Nacional, imputándose dicha suma al Inciso 12, Item 9 Partida 9 del presupuesto vigente"* (that the amount of two thousand *pesos* national currency be made available to the aforementioned Director to acquire the collection of fossils that Don Leon Lelong Thévenet has offered for sale, destined for the *Museo Nacional*, charging said sum to Subsection 12, Item 9, Section 9 of the current budget). This letter was signed by Eduardo Wilde. Then, in another note dated March 10th, 1886, addressed to Mr. Wilde, and signed by Dr. Burmeister, it reads: *"Por nota de V.E. fecha 17 de Febrero ppdo., estoy autorizado para comprar la colección de fósiles ofrecida al Museo Nacional por D. Leon Lélong Thévenet, del Paraná, por el precio de 2000 pesos nacionales. Conforma con mi oferta, pienso ir al Paraná á principios del mes de abril, acompañado por el naturalista viajero del museo D. Enrique de Cárles y mi hijo, Ayudante del mismo establecimiento, para inspeccionar la colección y adquirirla por el precio estipulado, si la encuentro conforme con las indicaciones de su propietario, y arreglar su embalaje por las personas que me acompañan, para ser transportada al Museo. Ruego entónces a V.E. ordenar se entreguen á mi órden los 2000 pesos para no retardar el pago del vendedor..."* (By note of Your Excellency dated February 17, I am authorized to buy the collection of fossils offered to the *Museo Nacional* by Mr. Leon Lélong Thévenet, from Paraná, for the price of 2000 national *pesos*. In accordance with my offer, I plan to go to Paraná at the beginning of April, accompanied by the traveling naturalist from the museum, D. Enrique de Cárles, and my son, assistant of the same establishment, to inspect the collection and acquire it for the stipulated price, if it is in accordance with the indications of its owner, and arrange its packaging by the persons who accompany me, to be transported to the Museum. So, I request Your excellency that you order the 2000 *pesos* be delivered to me so as not to delay the seller's payment). Finally, on March 16th, 1886, the payment was approved and the director of the museum was informed. Added to these notes there is a detail of different expenditures of the museum for the year 1886, where in March 1886 the costs of the expedition to Paraná are specified (see Supplementary data 1).

In addition, we found another document in the *Archivo Histórico* of the MACN, which is the "*Inventario Museo de Buenos Aires 1850-1891*", recording the museum's possessions and the various incomes from 1850 to 1891. On page 107 of this inventory (p. 126 of the digitized document, Fig. 1.1) there is a record indicating the entry to the museum of the Lelong Collection with date April 15th, 1886: *"La colección de fosilis del Paraná, comprado de D. Leo Lelong, ha sido traído por el Naturalista viajero, en cinco grandes cajones. Pronto lo he examinado y dado velación al Ministro por nota el 26 de Abril"* (The collection of the Paraná fossils, purchased from D. Leo Lelong, has been brought by the traveling Naturalist in five large drawers. I had soon examined it and reported it to the Minister by a note on April 26th). Then, different entries (*e.g.*, June 12th: p. 107 of inventory or p. 126 of the document digitized—Fig. 1.1— and December 28th, p. 110 of inventory or p. 129 of the document digitized—Fig. 1.2—) recorded the preparation of some materials and their meticulous arrangement in a newly purchased cabinet for the Lelong Collection. This document certifies the purchase, acquisition, and initial organization of said collection. Furthermore, in the annual reports of the year 1886 (Filemon Posse, 1887), the acquisition of the Lelong Thévenet Collection was described by Dr. Burmeister as: *"un verdadero Tesoro para el Museo"* (a real treasure for the Museum).

Holotypes and referred materials at the MACN collected by Lelong Thévenet and Ameghino

We found holotypes and referred materials of cingulates described by Ameghino (1883a, 1883b,1885, 1886, 1889) and collected by Lelong Thévenet and Ameghino, in both the MACN-PV and MACN-A collections, respectively (Tab. 1). Following Ameghino (1889), we present the studied

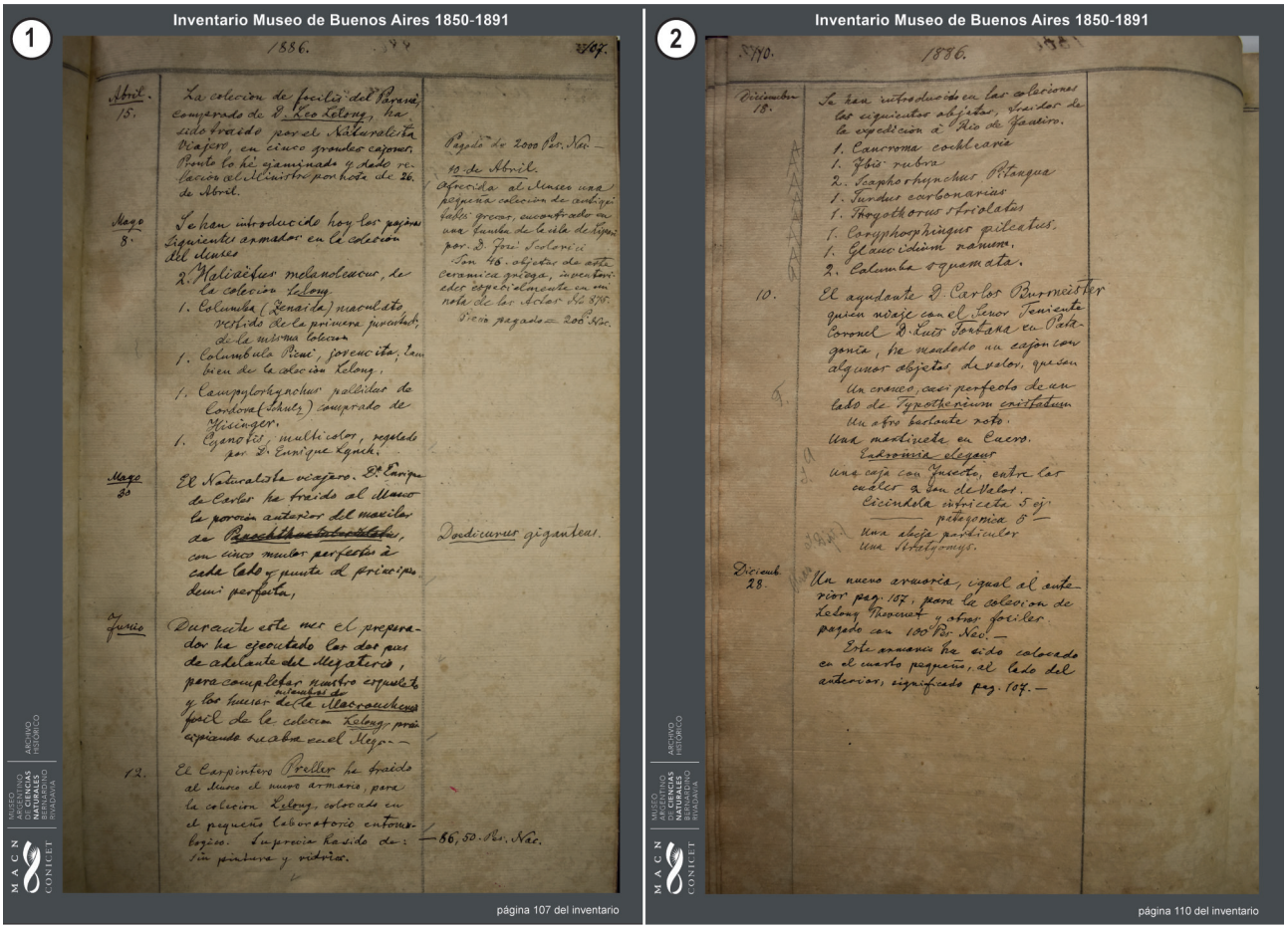


Figure 1. Details of personal notes of Burmeister in the inventory book at the **MACN. 1,** pp. 107 with details about the purchase and preparation of some materials of Lelong Thévenet Collection. **2,** pp. 110 with details of the purchase of a cabinet for the Lelong Thévenet Collection.

materials, which are separated into two main groups: Glyptodontia and Dasypoda.

SYSTEMATIC PALEONTOLOGY

Order GLYPTODONTIA Ameghino, 1889

Genus ***Palaehoplophorus*** Ameghino, 1883b

Type species. *Palaehoplophorus scalabrinii* (Ameghino, 1883b). "*Conglomerado osífero*", Late Miocene, Entre Ríos Province, Argentina.

Palaehoplophorus antiquus (Ameghino, 1883a)
Figures 2–3

[= *Glyptodon* (?) *antiquus* Ameghino, 1883a = *P. scalabrinii* Ameghino, 1883b, 1889 = *P. scalabrinii* Ameghino, 1885, 1886].

Holotype. Border osteoderm of the dorsal carapace (MAS without number, see Scillato-Yané *et al.*, 2013).

Referred material. MACN-PV 13282, fragment of the caudal tube; MACN-PV 13283, isolated osteoderms from the dorsal carapace; MACN-A 1373, isolated osteoderm from the caudal rings.

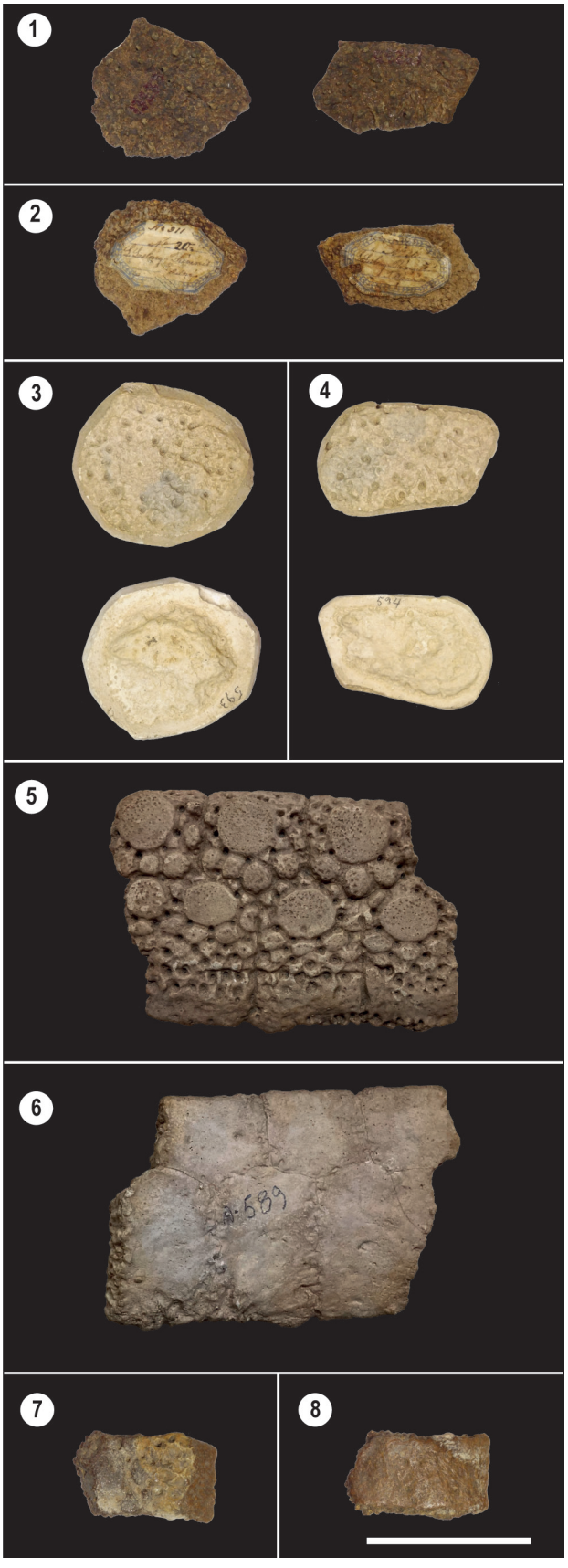
Cast of the referred material. MACN-A 589, fragment of the caudal ring (cast of MAS 159); MACN-A 593/594 isolated osteoderms/fragment of the isolated osteoderm from the dorsal carapace (casts of MACN-PV 13283); MACN-A 741, fragment of the caudal tube (cast of MACN-PV 12382).

Comments and descriptions. Ameghino (1883a) described one osteoderm from the border of the carapace and established a new species: *Glyptodon*? *antiquus*. Later, Ameghino (1883b) assigned it (together with another isolated border osteoderm and a small fragment of the

TABLE 1. Holotypes, referred materials, and casts described by Ameghino (1883a, 1883b, 1885, 1886, 1889), collected by Lelong Thévenet and Ameghino, and housed at MACN

Taxon	Plate of Ameghino (1889)	Holotype	Material Referred	Material
Palaehoplophorus antiquus	Plate 56, fig. 7		MACN-PV 13283*	Fragment of the osteoderm of the dorsal carapace
			MACN-A 594	Cast of MACN-PV 13283
	Plate 56, fig. 8		MACN-PV 13283*	Osteoderm of the dorsal carapace
			MACN-A 593	Cast of MACN-PV 13283
	Plate 58, fig. 6		MACN-A 589	Cast of MAS 159 - Fragment of the caudal ring
	Plate 65, fig. 6		MACN-PV 13282*	Fragment of the caudal tube
			MACN-A 741	Cast of MACN-PV 13282
	Plate 67, fig. 10		MACN-A 1373*	Isolated osteoderm of the caudal ring
Lomaphorus cingulatus	Plate 56, fig. 5	MACN-PV 13289		Osteoderm of the dorsal carapace
		MACN-A 592		Cast of MACN-PV 13289
Protoglyptodon primiformis	Plate 58, fig. 7		MACN-A 601	Cast of the fragment of the caudal tube
Neuryurus interundatus	Plate 56, fig. 6		MACN-PV 13285	Two osteoderm of the dorsal carapace
			MACN-A 591	Cast of the MACN-PV 13285
	Plate 62, fig. 1	MACN-A 1470–1472		Cast of the osteoderm of the dorsal carapace
Comaphorus concisus	Plate 60, figs.12–13a	MACN-A 28**		Osteoderm of the dorsal carapace
Pseudoeuryurus lelongianus	Plate 65, fig. 7	MACN-PV 13286		Osteoderm of the dorsal carapace
		MACN-A 599		Cast of the MACN-PV 13286
Chlamydotherium paranense	Plate 24, figs. 6–8		MACN-A 1469	Cast of the fragment of right mandible
	Plate 24, figs. 9–10		MACN-A 1429–1430	Cast of the isolated molariform
	Plate 67, fig. 13		MACN-A 11115	Cast of isolated movable osteoderm
	Plate 67, fig. 15		MACN-A 1570	Fragment of the isolated movable osteoderm
			MACN-A 1571	Cast of the MACN-A 1570
	Plate 67, fig. 14		MACN-A 11116	Cast of a fragment of isolated movable osteoderm
Proeuphractus limpidus	Without draw	MACN-PV 13001 (Sintype)		Isolated fixed osteoderm

*Original materials that Scillato-Yané *et al.* (2013) mentioned that were housed at MAS and were cited as 'MAS without number'.
**Original materials cited by Scillato-Yané *et al.* (2013) as 'lost within the MAS'.



caudal tube, integrated by only three incomplete osteoderms) to a new genus, *Palaehoplophorus*, and re-named the species as *P. scalabrinii* in honor of Professor Scalabrini (Ameghino, 1883b). Subsequently, he mentioned diverse osteoderms and described another one referred to the antero-marginal border (Ameghino, 1885). A year later, he described one isolated osteoderm from the border of the caudal ring and two isolated osteoderms, one of them from the lateral region of the dorsal carapace (Ameghino, 1886). Finally, Ameghino (1889) described more osteoderms from the antero, dorsal, and lateral sections of the dorsal carapace, osteoderms from the caudal rings, and two fragments of the caudal tube. In this latter publication, he added the figures of several of these materials (Ameghino, 1889, pl. 56 figs. 7–8, pl. 58 fig. 6, pl. 65 fig. 6, pl. 67 fig. 10). Concerning the type, Mones (1986) suggested that it was in the MPCNP (=MAS). Scillato-Yané *et al.* (2013) cited that it was a border osteoderm of the dorsal carapace and referred it as 'MAS, without number'. These authors did not provide any image or figure. Remarkably, when describing other materials of this species, Scillato-Yané *et al.* (2013) constantly indicated them as MAS, without number. After our research, we conclude that the original materials were in fact located in the MACN-PV (see below). Regarding the figured osteoderms of plate 56, figures 7 and 8 of Ameghino (1889), we found a fragment of an osteoderm and a complete osteoderm identical to the ones figured by Ameghino (1889), only with the difference that Ameghino represented both osteoderms integers. Each of these materials cataloged as a batch under MACN-PV 13283 (Fig. 2.1–2) has a label on the inner surface, on the fragmented osteoderm it is written: "N° 21 L. Lelong Thévenet. Paraná", whereas the complete osteoderm has two labels, one that

Figure 2. ***Palaehoplophorus antiquus*** (Ameghino 1883a), materials referred and figured by Ameghino; **1–2, MACN-PV 13283,** original osteoderms figured by Ameghino (1889, pl. 56, figs. 7–8); **1,** dorsal view; **2,** ventral view; **3, MACN-A 593,** dorsal and ventral views of the cast of the isolated osteoderm from the dorsal carapace figured by Ameghino (1889, pl. 56, fig. 8); **4, MACN-A 594,** dorsal and ventral views of the cast of the fragment of isolated osteoderm from the dorsal carapace figured by Ameghino (1889, pl. 56, fig. 7); **5–6, MACN-A 589,** cast of the fragment of the caudal rings figured by Ameghino (1889, pl. 58, fig. 6); **5,** dorsal view; **6,** ventral view; **7–8, MACN-A 1373,** original isolated osteoderm of the caudal rings figured by Ameghino (1889, pl. 67, fig. 10); **7,** dorsal view; **8,** ventral view. Scale bar= 5 cm.

says "N° 20 L. Lelong Thévenet. Paraná" and the other only with the number "311" (Fig. 2.2). Furthermore, at the MACN-A, we found two casts of these materials cataloged as MACN-A 593 (isolated osteoderm from the dorsal carapace, Fig. 2.3) and MACN-A 594 (fragment of the isolated osteoderm from the dorsal carapace, Fig. 2.4). It is likely Ameghino partially reconstrued the osteoderm of his figure 7 in plate 56, because the original is broken, the old label is complete, and the cast is identical to the original. Scillato-Yané *et al.* (2013) did not figure these materials and only mentioned that they were housed at the 'MAS, without number'. However, the original materials that we found in the MACN-PV and the casts present the exact size as the ones figured by Ameghino (1889, pl. 56, figs. 7–8), and it is even possible to distinguish some of the features that Ameghino mentioned of them. The exposed surface of the osteoderms is rough and has a circular and slightly concave main figure. In the osteoderm fragment, it could be central and in the other it is anterior. Around this main figure, two rows of rough peripheral figures can be observed, poorly defined, separated by shallow, slightly marked, moderately wide sulci and with a considerable number of large foramina, usually those that delimit the sulci. Concerning a fragment of the caudal rings of plate 58, figure 6 of Ameghino (1889), the original material (MAS 159) was described and figured by Scillato-Yané *et al.* (2013, fig. 5.3) and we found its cast cataloged as MACN-A 589 (exact in size as the one figured by Ameghino, in which it is possible to distinguish the features figured and described by Ameghino). The cast of the caudal ring fragment is composed by two rows of osteoderms (Fig. 2.5–6). The osteoderms of the anterior row are rectangular and with a sub-circular, flat, slightly smooth, and posterior main figure. It is surrounded by only one row of the peripheral figures, well-marked in the anterior section and rudimentary in the posterior border of the osteoderm. The anterior border is rough and has one accessory row of the peripheral figures. The osteoderms of

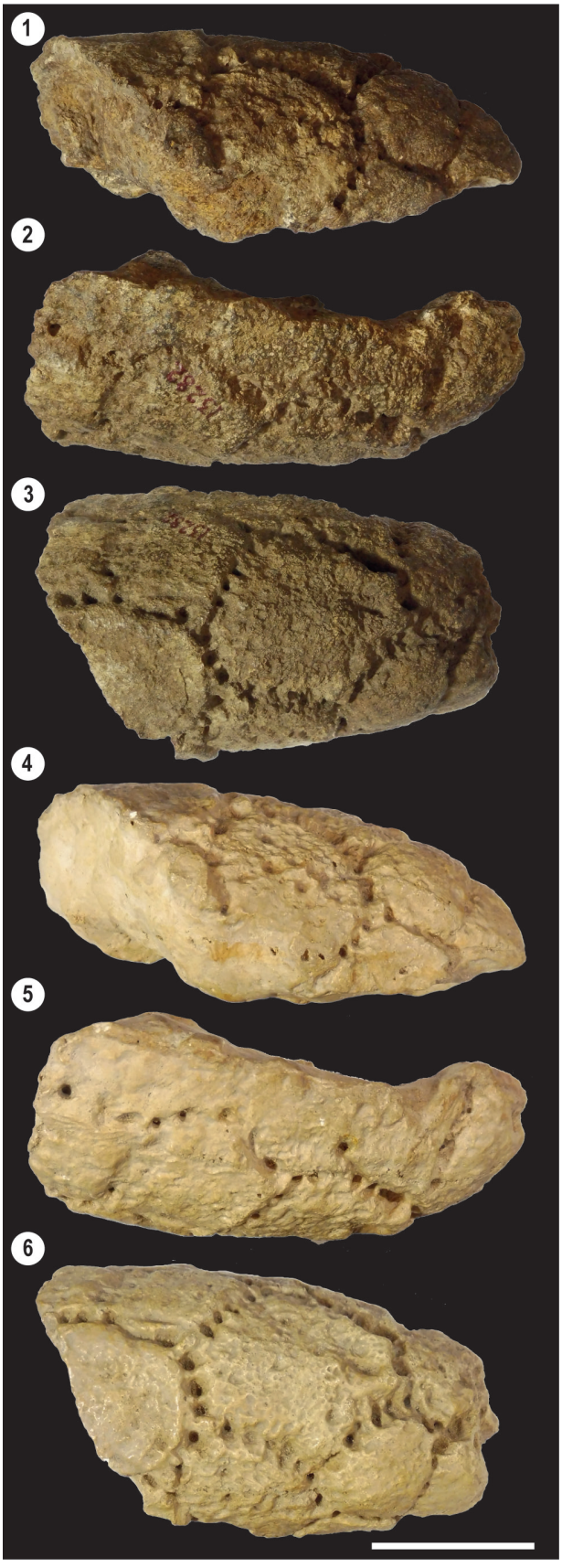


Figure 3. ***Palaehoplophorus antiquus*** (Ameghino, 1883a), materials referred and figured by Ameghino (1889, pl. 65, fig. 6); **1–3, MACN-PV 13282,** original fragment of the caudal tube; **1,** dorsal view; **2,** ventral view; **3,** left lateral view; **4–6, MACN-A 741,** cast of the fragment of the caudal tube; **4,** dorsal view; **5,** ventral view; **6,** left lateral view. Scale bar= 5 cm.

the posterior row are pentagonal, with a sub-circular, flat, slightly smooth, and posterior main figure. It is surrounded by only one row of the peripheral figures, well-marked in the anterior section and rudimentary in the posterior border of the osteoderm. The sulci of all osteoderms are well-defined, shallow, moderately wide, and with a considerable number of large foramina, usually those that delimit or mark them. The osteoderm in plate 67, figure 10 (Ameghino, 1889) corresponds to an almost complete osteoderm of the caudal ring cataloged as MACN-A 1373 (Fig. 2.7–8). Scillato-Yané *et al.* (2013) did not figure this material but mentioned that it was housed at the 'MAS, without number', adding that MACN-A 1373 was a cast. However, MACN-A 1373 is an original osteoderm of the same size as the one figured by Ameghino (1889) and it is possible to distinguish the features figured on it. The smooth and slightly punctuated exposed surface of the osteoderm has a sub-circular, flat, and posterior main figure. It is surrounded by only one row of the peripheral figures, well-marked in the anterior section and probably rudimentary in the posterior border, but is partly broken. The anterior border is rough and has one or two accessory peripheral figures. Finally, concerning a fragment of the caudal tube illustrated in plate 65, figure 6 (Ameghino, 1889), we found the original material with the number MACN-PV 13282 (Fig. 3.1–3) and a cast cataloged as MACN-A 741 (Fig. 3.4–6). Scillato-Yané *et al.* (2013) did not figure these materials. However, they cited the cast MACN-A 741 and mentioned that the original material was housed at the MAS, once again, indicating it as 'without number'. The fragment of the caudal tube and its cast (MACN-PV 13282 and MACN-A 741, respectively) corresponds to a left posterior fragment. It comprises osteoderms of different sizes with a concave or slightly concave and rough exposed surface delimited by a sulci well marked only by large and deep foramina. According to the MACN-A and MACN-PV catalogs, only MACN-A 1373 was collected by Ameghino, whereas Lelong Thévenet collected the rest. According to the MACN-PV catalog, the materials MACN-PV 13282 and MACN-PV 13283 are cataloged only as Glyptodontidae. However, according to Ameghino's handwritten and MACN-A catalogs, MACN-A 589, MACN-A 593/594, MACN-A 741, and MACN-A 1373 are indicated as *Palaehoplophorus scalabrinii*.

Genus ***Lomaphorus*** Ameghino, 1889

Type species. *Hoplophorus imperfectus* (Gervais & Ameghino, 1880). Pliocene, Buenos Aires Province, Argentina.

Lomaphorus cingulatus Ameghino, 1889
Figure 4.1–2

Holotype. MACN-PV 13289, isolated osteoderm from the dorsal carapace.

Cast type. MACN-A 592, isolated osteoderm from the dorsal carapace (cast of MACN-PV 13289).

Comments and descriptions. Ameghino (1889) established this species based on only one osteoderm from the dorsal region of the dorsal carapace collected by Lelong Thévenet (Ameghino, 1889, p. 821–822). Mones (1986) mentioned that MACN-A 592 was the cast type of this species and Scillato-Yané *et al.* (2013) added that the original material was lost but should have been at the MACN-PV. The comparison of MACN-A 592, together with the original description and illustration of Ameghino (1889, p. 821, pl. 56, fig. 5) allows us to conclude that the cast was made from the holotype. Fortunately, among the materials collected by Lelong Thévenet, we were able to find the original material, MACN-PV 13289, which has two labels, one with "N° 23 L. Lelong Thévenet. Paraná", and the other only with the number "310" (possibly corresponding to the Paraná collection). MACN-PV 13289 (Fig. 4.1) and MACN-A 592 (Fig. 4.2) are of the same size as the ones figured by Ameghino and it is possible to distinguish some of the features figured and described. The exposed surface of the osteoderm is rugose principally by the presence of many radial impressions that start in a slightly concave central region without any figures delimited by sulci. For this species, Scillato-Yané *et al.* (2013) suggested that it could belong to the genus *Trachycalyptus*. According to the MACN-PV catalog, the material MACN-PV 13289 is indicated as Glyptodontidae. However, according to Ameghino's handwritten and MACN-A catalogs, the material MACN-A 592 is registered as *Lomaphorus cingulatus*.

Genus ***Protoglyptodon*** Ameghino, 1885

Type species. *Protoglyptodon primiformis* Ameghino, 1885.

"*Conglomerado osífero*", Late Miocene, Entre Ríos Province, Argentina.

Protoglyptodon primiformis Ameghino, 1885
Figure 4.3

Holotype. Small fragment of the dorsal carapace [MAS missing, MLP-M 119 cast of the holotype, Mones (1986) and Scillato-Yané *et al.* (2013)].

Cast of referred material. MACN-A 601, fragment of caudal tube (cast of the missing material).

Comments and descriptions. Ameghino (1885) established this species from a small fragment of the dorsal carapace. Then, Ameghino (1886) added three fragments of the dorsal carapace recovered by Scalabrini and included another fragment of the dorsal carapace and an isolated osteoderm described as glyptodon indet (Ameghino, 1885, p. 135–136). Finally, Ameghino gave full descriptions of the previously mentioned materials and added a figure of a small fragment of the dorsal carapace and a caudal tube (Ameghino, 1889, pl. 54, fig. 6; pl. 58, fig. 7), stating that the former was found by Scalabrini, but the latter fragment of the caudal tube had been collected by Lelong Thévenet. Mones (1986) and Scillato-Yané *et al.* (2013) mentioned the calcotype, MLP M119, and claimed that the holotype was lost within the MAS; the fragment of the caudal tube was indicated as 'MAS without number'. Unfortunately, the

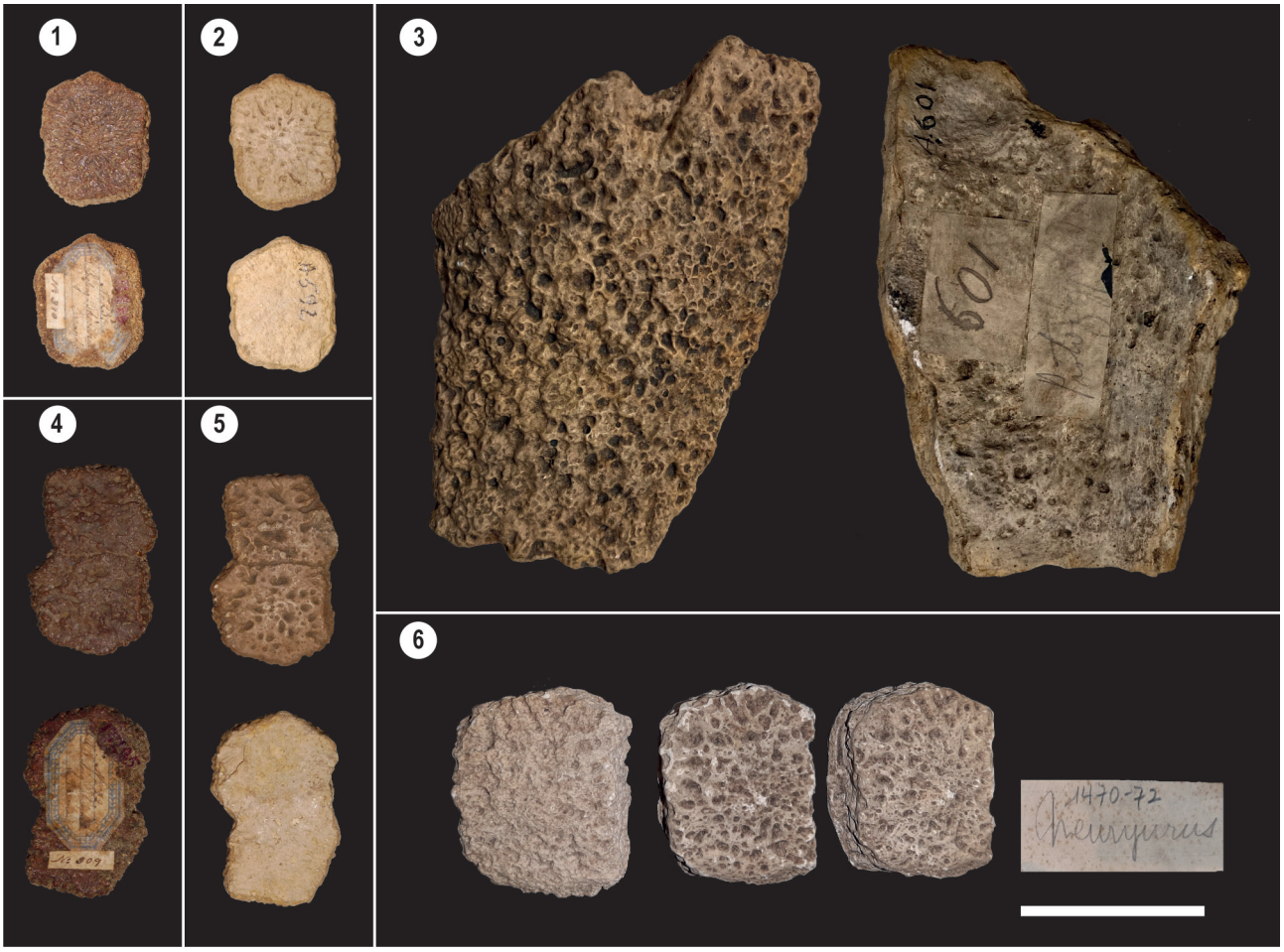


Figure 4. 1–2, *Lomaphorus cingulatus* Ameghino, 1889; **1, MACN-PV 13289,** holotype, dorsal, and ventral views of the isolated osteoderm, figured by Ameghino (1889, pl. 56, fig. 5); **2, MACN-A 592,** cast of the holotype, dorsal and ventral views; **3, *Protoglyptodon primiformis*** Ameghino, 1885, **MACN-A 601,** dorsal and ventral views of the cast of fragment of the caudal tube figured by Ameghino (1889, pl. 58, fig. 7); **4–6, *Neuryurus interundatus*** (Ameghino, 1885); **4, MACN-PV 13285,** dorsal and ventral views of the original isolated osteoderms from the dorsal carapace figured by Ameghino (1889, pl. 56, fig. 6); **5, MACN-A 591,** dorsal and ventral views of the cast of isolated osteoderms from the dorsal carapace figured by Ameghino (1889, pl. 56, fig. 6); **6, MACN-A 1470–1472,** dorsal and ventral views of the cast of the Holotype, isolated osteoderm from the dorsal carapace figured by Ameghino (1889, pl. 62, fig. 1). Scale bar= 5 cm.

original material of the latter has not been found in any of the MACN's collections yet. Nevertheless, two casts of this fragment figured by Ameghino (1889, pl. 58, fig. 7) were found, cataloged as MACN-A 601 (Fig. 4.3). Compared with the material figured (Ameghino, 1889), the casts correspond to a copy of the referred material, being the exact size of that figured by Ameghino (1889, pl. 58, fig. 7), where it is possible to distinguish some of the described features. The cast corresponds to a fragment of the anterior region of the caudal tube, and as described by Ameghino (1889), it preserved a small fragment of the anterior articular border. The exposed surface is rough and punctuated, has larger circular figures, arranged in transverse rows with smaller peripheral figures separated or delimited by wide, slightly deep indistinct sulci with large and multiple foramina. In some sectors, it is possible to observe that these figures are presented in two rows, one is closer to the main figure and smaller in size, and the other is surrounding the previous one with larger figures, perhaps due to the fusion with those of the adjacent osteoderm. These features are similar to those described by Ameghino (1889). According to Ameghino's handwritten and MACN-A catalogs, the specimen MACN-A 601 is registered as *Protoglyptodon primiformis*.

Genus ***Neuryurus*** Ameghino, 1889

Type species. *Euryurus rudis* (Gervais, 1878). "*Conglomerado osífero*", Late Miocene, Entre Ríos Province, Argentina.

Neuryurus interundatus (Ameghino, 1885)
Figure 4.4–6

1885 *Euryurus interundatus* Ameghino, p. 132

Holotype. Isolated osteoderm of the dorsal carapace (MAS?).

Cast type. MLP M229 (see Scillato-Yané *et al.*, 2013), MACN-A 1470-1472, isolated osteoderm of the dorsal carapace (cast of the missing and unnumbered holotype).

Referred material. MACN-PV 13285, two articulated osteoderm of the dorsal carapace.

Cast of the referred material. MACN-A 591, two articulated osteoderm of the dorsal carapace (cast of the MACN-PV 13285).

Comments and descriptions. Ameghino (1885) established this species based on one osteoderm from the dorsal carapace and provided a brief description. Later, Ameghino (1886) mentioned that on its internal face, it had a transverse notch that represented the vestiges of a suture, consequence of the union of two contiguous osteoderms. Therefore, the pentagonal osteoderm resulted from the fusion of two contiguous osteoderms. Finally, Ameghino (1889) added to the previous description some osteoderms from the lateral region of the dorsal carapace and their respective measurements. In this contribution, he figured in plate 56, figure 6, two osteoderms from the antero-lateral region of the dorsal carapace; in plate 62, figure 1, one osteoderm from the dorsal region of the dorsal carapace; and in plate 70, figures 5–7, three osteoderms, each from the dorsal and lateral regions of the dorsal carapace. Concerning the type, Mones (1986) mentioned the calcotype MLP M123, while Scillato-Yané *et al.* (2013) cited MLP M229 and figured it. Three casts of the osteoderm figured by Ameghino (1889, pl. 62, fig. 1) are represented by MACN-A 1470-1472 (Fig. 4.6). Compared with the original description and measurements by Ameghino (1889) and in accordance with Scillato-Yané *et al.* (2013, fig. 5.8), we can affirm that MACN-A 1470-1472 are the casts of the holotype. The exposed surface of the osteoderms is smooth, without figures, and with some slightly deep concave depressions and some small foramina without apparent order. Conversely, the original materials and the cast figured in plate 56, figure 6, are represented by MACN-PV 13285 (Fig. 4.4) and MACN-A 591 (Fig. 4.5). Both materials are the same size when compared to the ones figured by Ameghino (1889) and it is possible to distinguish some of the figured and described features. These osteoderms have two labels on the inner surface, one with "N° 22 L. Lelong Thévenet. Paraná" and the other only with the number "309". According to Ameghino (1889), all materials were found by Scalabrini, but according to the MACN and Ameghino's handwritten catalogs, MACN-PV 13285 was found by Lelong Thévenet. The material MACN-PV 13285 is cataloged only as Glyptodontidae and MACN-A 591 as *Neuryurus interundatus*, according to the MACN-PV and Ameghino's handwritten catalogs, respectively.

Genus ***Comaphorus*** Ameghino, 1886

Type species. *Comaphorus concisus* Ameghino, 1886. "*Conglomerado osífero*", Late Miocene, Entre Ríos Province, Argentina.

Comaphorus concisus Ameghino, 1886
Figure 5.1

Holotype. MACN-A 28, isolated osteoderm from the dorsal carapace.

Comments and descriptions. Ameghino (1886) established this species from one osteoderm of the dorsal carapace. Then, Ameghino (1889, pl. 60, figs. 12–13) described and figure the osteoderm. Mones (1986) suggested that the holotype was stored in the MPCNP (=MAS) and Scillato-Yané *et al.* (2013) cited that it was at the MAS, although at the time lost. However, the material MACN-A 28 has the exact size of the one figured by Ameghino (1889) and it is possible to distinguish some of the features figured and described on it (Fig. 5.1). The exposed surface of the osteoderm is smooth, with a central elevation. However, without any figures and sulci, only some slightly deep concave depressions and some small foramina without apparent order can be identified. This material is housed at the MACN-A because Ameghino collected it during his fieldtrips in October, 1884 (Ameghino, 1885, 1886, 1889; see discussion below). According to Ameghino's handwritten catalog, this material is cataloged as *Comaphorus concisus*.

Genus ***Pseudoeuryurus*** Ameghino, 1889

Type species. *Pseudoeuryurus lelongianus* Ameghino, 1889. "*Conglomerado osífero*", Late Miocene, Entre Ríos Province, Argentina.

Pseudoeuryurus lelongianus Ameghino, 1889
Figure 5.2–3

Holotype. MACN-PV 13286, isolated osteoderm from the dorsal carapace.

Cast type. MACN-A 599, isolated osteoderm from the dorsal carapace (cast of MACN-PV 13286).

Comments and descriptions. Ameghino established this species based on one osteoderm from the dorsal region of the dorsal carapace that he figured (Ameghino, 1889, pl. 65, fig. 7). The original material and its cast have been found at the MACN-PV and MACN-A collections, under numbers 13286 (Fig. 5.2) and 599 (Fig. 5.3), respectively. Both are of the same size as the ones figured by Ameghino (1889) and it is possible to distinguish some of the features figured and described on it. The exposed surface of the osteoderm is rough, with a sub-circular, central, high, and concave main figure. The area surrounding this central figure is irregular, without figures, and with some slightly deep concave depressions, concentrically arranged surrounding the main figure. Following Ameghino (1889), this material presumably corresponded to an osteoderm from the dorsal region of the dorsal carapace, something we can certify now. According to Ameghino (1889) and the catalogs at the MACN, the material was found by Lelong Thévenet. Mones (1986) referred with doubts MACN 599 as the cast of the type. The material MACN-PV 13286 was mentioned by Scillato-Yané *et al.* (2013) as the type specimen of the species. According to our study and considering the original description, measurements and material figured by Ameghino (1889), we agree with Mones (1986) and Scillato-Yané *et al.* (2013) that MACN-PV 13286 and MACN-A 599 are the holotype and its respective cast type. According to the MACN-PV catalogue, the material MACN-PV 13286 is cataloged only as Glyptodontidae. However, following the MACN-A and Ameghino's handwritten catalogs, the material MACN-A 599 is registered as *Pseudoeuryurus lelongianus*.

Order DASYPODA Ameghino, 1889

Genus ***Chlamydotherium*** Lund, 1839

Type species. *Chlamydotherium humboldtii* Lund, 1839. Pleistocene, Lagoa Santa, Minas Gerais, Brazil.

Chlamydotherium paranense Ameghino, 1883a
Figure 5.4–11

Holotype. Isolated fixed osteoderm (lost?).

Referred materials. MACN-A 1570, fragment of the isolated movable osteoderm.

Cast of the referred materials. MACN-A 1429/1430, isolated molariform; MACN-A 1469, fragment of right

Figure 5. 1, ***Comaphorus concisus*** Ameghino, 1886, **MACN-A 28,** Holotype, dorsal, ventral, and lateral views of the isolated osteoderm figured by Ameghino (1889, pl. 60, figs. 12–13a); **2–3,** ***Pseudoeuryurus lelongianus*** Ameghino, 1889, figured by Ameghino (1889, pl. 65, fig. 7); **2, MACN-PV 13286,** Holotype, dorsal and ventral views of the isolated osteoderm; **3, MACN-A 599,** cast of the Holotype, dorsal and ventral views. **4–11,** ***Chlamydotherium paranense*** Ameghino, 1883a; **4, MACN-A 1469,** cast of the fragment of right mandible figured by Ameghino (1889, pl. 24, figs. 6–8), labial, lingual, and occlusal views; **5, MACN-A 1429–1430,** cast of the isolated molariform figured by Ameghino (1889, pl. 24, figs. 9–10), labial, lingual, and occlusal views; **6, MACN-A 11115,** cast of the isolated movable osteoderm figured by Ameghino (1889, pl. 67, fig. 13); **7,** personal note associated with **MACN-A 11115**; **8, MACN-A 1570,** original fragment of the isolated movable osteoderm figured by Ameghino? (1889, pl. 67, fig. 15), dorsal view; **9, MACN-A 1571,** cast of the fragment of the isolated movable osteoderm figured by Ameghino? (1889, pl. 67, fig. 15), dorsal view; **10, MACN-A 11116,** cast of the isolated movable osteoderm probably figured by Ameghino (1889, pl. 67, fig. 14); **11,** personal note associated with **MACN-A 11116**. Scale bar= 5 cm.

mandible; MACN-A 1571, fragment of the isolated movable osteoderm (cast of MACN-A 1570); MACN-A 11115, isolated movable osteoderm; MACN-A 11116, fragment of the isolated movable osteoderm.

Comments and descriptions. Ameghino (1883a) established this species based on one pentagonal osteoderm from the dorsal carapace. Then, he added seven osteoderms and expanded the original diagnosis (Ameghino, 1883b).

Posteriorly, he added an isolated molariform and a mandibular fragment with four molariforms among the materials he collected (Ameghino, 1885) and a year later, another eight osteoderms (Ameghino, 1886). Finally, Ameghino described in detail all these materials, figured them (Ameghino, 1889, pl. 24, figs. 6–10; pl. 67, figs. 13–15), and explained that the remains were collected by Scalabrini, by him, and other collectors. Regarding the type, Mones (1986) suggested that it was lost in the Instituto Nacional Superior del Profesorado (Paraná, Entre Ríos Province). Casts of other of these materials are represented by MACN-A 1429–1430, MACN-A 1469, MACN-A 1571, and MACN-A 11115–11116. Compared with the original description of Ameghino (1883a), none was a cast of the type, but there are casts of the materials referred to and figured by Ameghino (1889). The casts cataloged as MACN-A 1469 (Fig. 5.4) and MACN-A 1429–1430 (Fig. 5.5) are figured by Ameghino (1889, pl. 24, figs. 6–8 and figs. 9–10, respectively) and correspond to referred materials of the species. The mandibular fragment corresponds to a central fragment of the right ramus with five molariforms, posteriorly broken at the same level as the beginning of the ascending ramus. The size of the molariforms decreases in an antero-posterior direction and exhibit the same morphology; all of them are elliptical, bi-lobed with the labial groove more pronounced than the lingual one. With respect to the specimen MACN-A 11115 (Fig. 5.6), it is a cast of the isolated movable osteoderm figured by Ameghino (1889, pl. 67, fig. 13). The exposed surface is slightly rough, with a wide longitudinal central elevation, anteriorly depressed, confluent with the marginal elevation, but not reaching to the posterior border and without lateral projections. The intermediate portion is concave and wide, similar in size to the marginal elevation, without lateral margins only with lateral foramina at the lateral border. This material had a personal note that wrote: *"Chlamydotherium paranense, Plancha LXVII Fig. 13 de mamiferos fósiles"* (*Chlamydotherium paranense*, plate 67 fig. 12 of fossil mammals) (Fig. 5.7). Adding to these materials, we found an original fragment of the isolated movable osteoderm and its cast (MACN-A 1570–1571 respectively, Fig. 5.8–9) that probably correspond to the one figured in Ameghino (1889, pl. 67, fig. 15). Query arise because whereas it is complete in Ameghino's illustration, both the original osteoderm and its cast are fragmented, similarly to what was presented previously (see *Palaehoplophorus antiquus*). We found another cast, MACN-A 11116 (Fig. 5.10), fragment of the isolated movable osteoderm that probably corresponds to that figured by Ameghino (1889, pl. 67, fig. 14). This material had a personal note that wrote: *"Chlamydotherium typum, Plancha LXVII Fig. 14 mamiferos fósiles"* (*Chlamydotherium typum*, pl. 67 fig. 14 fossil mammals) (Fig. 5.11). According to the MACN-A and Ameghino's handwritten catalogs, MACN-A 1429/1430, MACN-A 1469, MACN-A 1570, MACN-A 1571, and MACN-A 11115 are identified as *Chlamydotherium paranense*. However, according to the MACN-A catalog, the material MACN-A 11116 was indicated as *Chlamydotherium typum*.

Genus ***Proeuphractus*** Ameghino, 1886

Type species. *Proeuphractus limpidus* Ameghino, 1886. "*Conglomerado osífero*", Late Miocene, Entre Ríos Province, Argentina.

Proeuphractus limpidus Ameghino, 1886

Figure 6.1–2

Syntype. MACN-PV 13001, isolated fixed osteoderm and MLP ? (lost), isolated movable osteoderms.

Comments and descriptions. Ameghino (1886) erected this species from one isolated fixed osteoderm, collected by Lelong Thévenet, and one movable osteoderm collected by himself. He then described these osteoderms, but, unfortunately, he did not illustrate them (Ameghino, 1889,

Figure 6. ***Proeuphractus limpidus*** Ameghino, 1886, **MACN-PV 13001,** isolated fixed osteoderm**,** Syntype; **1,** dorsal view; **2,** ventral view; **3,** personal note associated with **MACN-PV 13001**; **4–5,** label associated with **MACN-PV 13001**. Scale bar= 2 cm.

p. 869–870). Afterward, Ameghino mentioned that the materials figured by Lydekker purportedly stored at the MLP (1894, pl. 33, 7–8) were the syntypes (Ameghino, 1920 in Torcelli, 1920, p. 881). This apparently led other authors to consider the syntypes to be lost at the MLP (Mones, 1986; Scillato-Yané *et al.,* 2013). However, as part of the Lelong Thévenet's Collection, the fixed osteoderm should have been stored at the MACN and the movable osteoderm as part of Ameghino's collection at the MLP (Fernicola, 2011a). We therefore search for the former material within the collections at this institution (MACN-Pv, MACN-A), successfully finding the fixed osteoderm under MACN PV 13001 (Fig. 6) with two labels, one with "*Proeuphractus limpidus*" written by Ameghino himself (Fig. 6.3). The other with several legends such as 'Not type', 'Lelong Collection', '13001', and with a painted red spot (Fig. 6.4) and on its reverse only 'Cotype' (Fig. 6.5), with different people's handwritings. The material has similar measurements and anatomical characteristics and was collected by Lelong Thévenet, which allows us assign it as part of the syntype. The exposed surface of the fixed osteoderm is smooth, with a principal lageniform figure that occupies the posterior three quarts of the exposed surface of the osteoderm. The posterior portion of the principal figure is strongly elevated. Surrounding this principal figure, there are four anterior peripheral figures (one of them is very small) and three lateral peripheral figures (two in the right lateral and one in the left lateral) delimited by marked sulci. All these peripheral figures are convex. The piliferous system is developed, composed of lateral and posterior foramina, and is positioned between the posterior border of the lateral left peripheral figure and the posterior border of the principal figure. According to the MACN-PV catalog, MACN-PV 13001 is registered as *Proeuphractus limpidus*.

Casts of the holotypes described by Ameghino and collected by Scalabrini at the MACN

We also found at the MACN-A, casts of the holotype of three other taxa described by Ameghino (1883a, 1885, 1889) and collected by Scalabrini (Tab. 2): *Hoplophorus paranensis* (Ameghino, 1883a), *Palaehoplophorus pressulus* (Ameghino, 1885), and *Hoplophorus verus* (Ameghino, 1889), all figured in Ameghino (1889). Concerning *Hoplophorus paranensis* Ameghino (1883a), it was described based on a fragment of the dorsal region of the carapace. Later, Ameghino (1889) described this material in more detail, along with another fragment from near the border of the dorsal carapace and an isolated osteoderm from the dorsal region. The first fragment, the holotype, was figured by Ameghino (1889, pl. 64, fig. 4). Ameghino (1889) mentioned that these materials were founded by Scalabrini and were housed at the Museo Provincial de Entre Ríos. A cast of the material figured in Ameghino (1889) is represented by MACN-A 1231 and labelled "N° A 12 Am" (Fig. 7.1–2). Compared with the original description in Ameghino (1883a), the given measurements, and the material figured in Ameghino (1889), we can establish that this cast corresponds to the cast of the holotype. Another cast of this species would be MLP M-118, mentioned by Mones (1986). Regarding *Palaehoplophorus pressulus*, Ameghino (1885) described this new species based on two fragments of different specimens, one of them was a dorsal carapace and the other were caudal rings. Subsequently, Ameghino (1889) re-described the same materials, figured the fragment of the dorsal carapace (Ameghino, 1889, pl. 69, fig. 16), and specified that these materials were found by Scalabrini and were housed at the Museo Provincial de Entre Rios. Castellanos (1940), based on these materials, created the genus *Chlamyphractus* and established *C. pressulus* as

TABLE 2. Casts housed at the MACN-A of the holotypes described by Ameghino (1883a, 1885, 1889), collected by Scalabrini, and housed at MAS

Taxon	Plate of Ameghino (1889)	Holotype	Cast of the holotype	Material
Hoplophorus paranensis	Plate 64, fig. 4	MAS?	MACN-A 1231	Cast of the small fragment of the dorsal carapace
Palaehoplophorus pressulus	Plate 69, fig. 16	MAS W/N	MACN-A 1279-1280	Cast of the small fragment of the dorsal carapace
Hoplophorus verus	Plate 64, fig. 15	MAS W/N	MACN A 1610-1612	Cast of the isolated osteoderm of the dorsal carapace

the type species. A cast of the material figured by Ameghino (1889, pl. 69, fig. 16) is represented by MACN-A 1279-1280 (Fig. 7.3–6). Compared with the original description of Ameghino (1883a) and the material figured by the author (1889, pl. 69, fig. 16), this cast corresponds to one specimen of the type series. Another cast of the material would be MLP M-121 which was mentioned by Mones (1986). Finally, *Hoplophorus verus* Ameghino, 1889 was erected based on one osteoderm from the dorsal region of the dorsal carapace (Ameghino, 1889, pl. 69, fig. 15). A cast of this material is represented by MACN-A 1610–1612 (Fig. 7.7–8). Compared with the original description of Ameghino (1883a) and the material figured in Ameghino (1889), this cast corresponds to a cast of the type. According to the catalog of MACN-A, the original material was collected by Scalabrini. Another cast of the type would be MLP M-124, which was mentioned by Mones (1986). This species was proposed as "*nomen dubium*" by Zurita (2007).

DISCUSSION

The dispute over the Lelong Thévenet Collection is possible to analyze as another chapter in the long confrontation between Ameghino and Burmeister that began in the 1870s, the most outstanding point of which was the dispute over the head of Museo Nacional when it was nationalized in 1884 (Podgorny & Lopes, 2008).

It is not difficult to infer that the purchase of the specimens collected by the Lelong Thévenet family at Burmeister's request would allow him to compete with the studies that Ameghino (1883a, 1883b, 1885) started concerning the fauna of Paraná (Entre Rios Province), based on the specimens collected by Scalabrini. Unfortunately, Burmeister did not study any of the specimens of cingulates acquired by the Museo Nacional in 1886 (Fig. 1). This collection, as well as the analysis of Ameghino on these

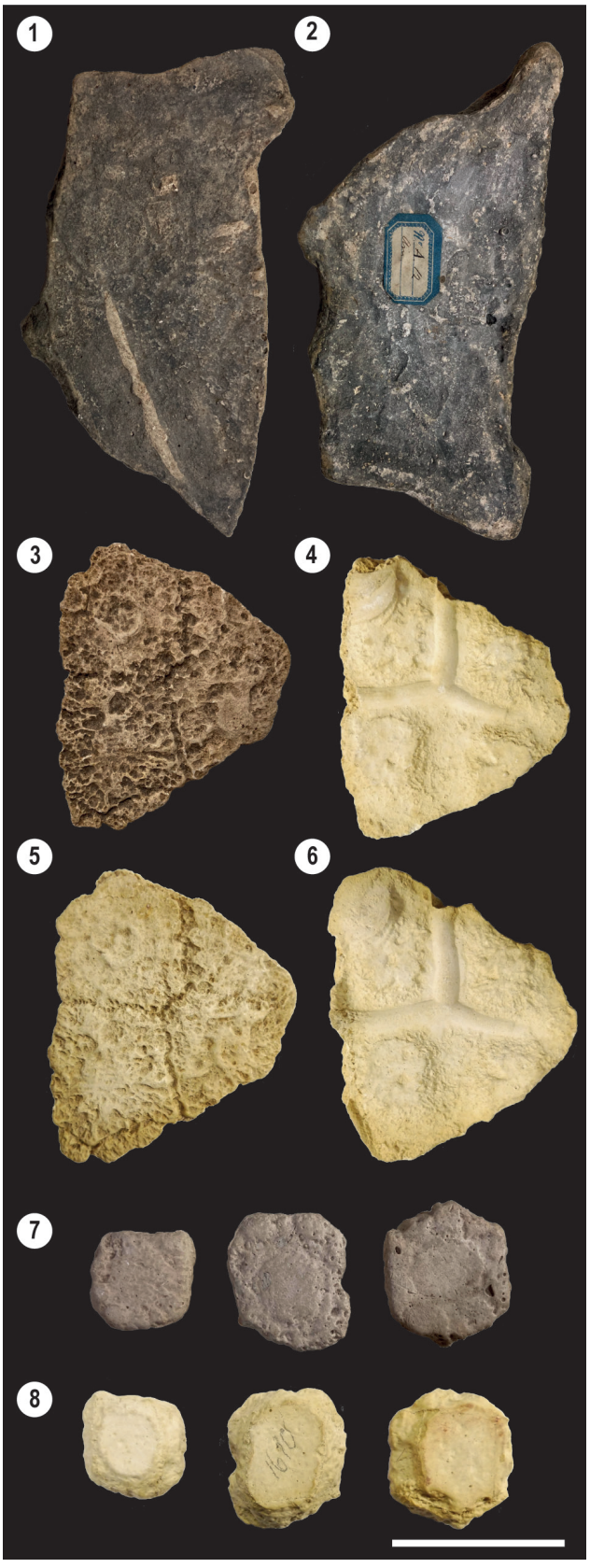


Figure 7. 1–2, *Hoplophorus paranensis* Ameghino, 1883a, **MACN-A 1231,** small fragment of dorsal carapace, cast of the holotype figured by Ameghino (1889, pl. 64, fig. 4); **1,** dorsal view; **2,** ventral view; **3–6, *Palaehoplophorus pressulus*** Ameghino, 1885, **MACN-A 1279–1280,** small fragment of the dorsal carapace, cast of the Holotype figured by Ameghino (1889, pl. 69, fig. 16); **3, 5,** dorsal view; **4, 6,** ventral view; **7–8, *Hoplophorus verus*** Ameghino, 1889, **MACN-A 1610–1612,** isolated osteoderm, cast of the holotype figured by Ameghino (1889, pl. 69, fig. 15); **7,** dorsal view; **8,** ventral view. Scale bar= 5 cm.

sites, were quickly put aside by the irruption of the discovery of the extinct fauna of Patagonia. In 1886, Ameghino received a called by Moreno, Director of the MLP. Both quickly reached an agreement that concluded with the purchase of Ameghino's collection, the incorporation of his brother Carlos as a traveling naturalist of the MLP, and himself as "*Secretario sub director*" (sub-director secretary) (Podgorny & Lopes, 2008; Fernicola, 2011a, 2011b). Among the first actions they carried out together was the design of the first geological-paleontological field trip, led by Carlos Ameghino, to the fossil deposits of the Santa Cruz Province (Fernicola, 2011a, 2011b). On the other hand, Burmeister commissioned his son, Carlos Burmeister, on an expedition to Santa Cruz Province, with the same purposes (Podgorny, 2002; Fernicola, 2011b). The result of this dispute is well-known; while Carlos Burmeister's findings were scarce, those of Carlos Ameghino accounted for more than 2000 pieces of fossil vertebrates. From these, Ameghino (1887) recognized 122 taxa, of which 110 were new species. This led Ameghino (1889) to define the concept of "*Formación Santacruceña*" and "*Piso Santacruceño*" ("Santacrucian Stage") (Fernicola, 2011a, 2011b; Fernicola *et al.*, 2014, 2019).

The 'forgotten' cingulate specimens from Entre Ríos Province, even though they were reported in the museum's inventory, had a dark fate in the paleontological collections of the Museo Nacional. According to the information of the different data entry books of the MACN-PV collection, the specimens of the Lelong Thévenet Collection were registered in, at least, two moments: 1) in 1886, perhaps by the same director of the museum at that moment, Dr. Burmeister; and 2) between 1940–1941, by Alejandro Federico Bordas (??–19??), maybe with Noemi Violeta Cattoi (1911–1965). In the case of the glyptodonts, most of them were referred to the Glyptodontidae and none had any nomenclatural information (see above for each case). In the case of the dasipodids, there were specific taxonomic assignments and, in some cases, nomenclatural acts, as is the case of *Proeuphractus limpidus* (MACN-PV 13001), which was designated as 'Type' or 'Cotype'. It is possible that this difference in the taxonomic information is due to the fact that Bordas focused his studies on the dasipodids of Argentina (Bordas, 1938). Unfortunately, the specimen referred as MACN-PV 13001 was not considered as the type for a long time, even though it was indicated as such on the label that accompanied it (Fig. 6), as well as stated in the catalogs of the MACN-PV. To date, we do not have precise information about who wrote 'not type' on the label, although it is possible that it was Scillato-Yané (1982) who, in his PhD thesis, considered that the type specimen was lost at the MLP (see *Proephractus limpidus*).

Regarding *Comaphorus concisus*, and according to the historical data available, its type specimen should be housed in the MLP because it was part of the Ameghino Collection at the time that it was sold to this institution (Farro, 2008, 2009; Fernicola, 2011a). However, as it occurred with other specimens that were part of this matter, they are currently found deposited at the MACN as part of the MACN-A. The situation of *Comaphorus concisus* is identical to that described for several specimens collected by Carlos Ameghino in 1887 in Santa Cruz Province, which were assumed to be housed at the MLP. However, these were appropriated by F. Ameghino in the context of his dispute with Moreno (Fernicola, 2011a; Fernández *et al.*, 2018, 2019; Olivetto *et al.*, 2022), entering MACN when the Ameghino Collection was purchased by the national state.

The figures in the Atlas of Ameghino (1889) of specimens from the Lelong Thévenet Collection, acquired by the Museo Nacional in 1886, suggests that they could have been made from their casts instead of the original specimens. Supporting this idea is the fact that Ameghino (1889) only acknowledged Burmeister for giving him access to the Museum's library, without mentioning the collections. The distance between both naturalists suggests the Director of the Museo Nacional did not offer Ameghino the specimens recently purchased by the institution for his studies. In this particular situation are the holotypes of the species erected by Ameghino in 1889: *Pseudoeuryurus lelongianus* (MACN-PV 13286) and *Lomaphorus cingulatus* (MACN-PV 13289); and the referred materials to *Neuryurus interundatus* (MACN-PV 13285) and *Paleohoplophorus antiquus* (MACN-PV 13282 and MACN-PV 13283). It is important to remark that the casts of these materials (at the MACN-A collection) are of excellent quality and identical to the originals. It is very probable that Ameghino, during his trip in October of 1884, made these extraordinary casts on which the figures of his Atlas were based.

CONCLUSIONS

It was historically known that the Lelong Thévenet Collection was acquired in 1886 by the *Museo Nacional* (nowadays MACN). However, the exact composition of the materials that comprised it was unknown. Its purchase, managed by the then museum director, German Burmeister, is documented in the archives of the museum between February and April, 1886. Even though the purchase was made between those dates, the materials that constitute the Lelong Thévenet Collection were formally entered at different instances in the MACN records. Several osteoderms of cingulates purchased in 1886 from the Lelong Thévenet family turned out to be figured in Ameghino's Atlas of 1889. Thus, some of these materials have been recognized as the type specimens or referred materials of these armored mammals, out of which we identified 10 original materials, four corresponding to holotypes and six to referred materials. Added to these, 17 casts were identified, six belonging to holotypes and 11 to materials referred and figured by Ameghino (1889). We think it is very likely that the absence of taxonomic information in the materials, plus their entry at different historical moments, has contributed to the idea that the reference specimens were lost. It is highly possible that this situation could be extrapolated to other taxonomic groups of the Lelong Thévenet Collection.

Finally, for all the reasons above, we emphasize how essential it is to carry out an analysis of the historical course of the collections, tracking, identifying and registering those materials that are apparently lost. Only then it will be possible to make any taxonomic decisions and assignations, as it is essential to have the type materials or at least the corresponding figures provided by the author of each taxon.

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