

Supplemental Article 2

Large mammal burrows in late Miocene calcic paleosols from central Argentina: palaeoenvironment, taphonomy and producers by M.C. Cardonatto and R.N. Melchor

Systematic paleontology

Subclass Eutheria Huxley, 1880
Superorder XENARTHRA Cope, 1889
Order Tardigrada Latham and Davies in Forster, 1795
Family Mylodontidae Gill, 1872
Subfamily Scelidotheriinae Ameghino, 1904
Genus *Proscelidodon* Bordas, 1935
Proscelidodon sp.
Fig. S1A-B

Material: Associated elements from SG (# 665). GHUNLPam 18807-1, right mandibular fragment with m_{1-2} and m_4 (Fig. S1A); GHUNLPam 18807-2, distal part of metacarpal II (Fig. S1B); GHUNLPam 18807-3 proximal part of metacarpal II; GHUNLPam 18807-4, carpal fragment; GHUNLPam 18807-5, fragmented radius distal epiphysis with articular facets; GHUNLPam 18807-6, posterior part of basicranium.

Description: In the mandibular fragment, the m_{1-2} are elongated antero-posteriorly, m_4 is bilobed and larger than the remaining teeth. Fragmentary metapodial remains corresponding to metacarpal II, including a distal portion with articular facets for the phalange and a proximal portion with articular facets with the carpal bones. The radius epiphysis fragment exhibits a concave facet that match the carpal remain.

Comments: The association of the postcranial elements with the mandible remain, and a consistent size of both suggest the assignation of the postcranial elements to *Proscelidodon* sp. Within the Cerro Azul Formation, *Elassotherium altirostre* (Rovereto, 1914) was mentioned by Cabrera (1939) from two nearby localities of the Buenos Aires province: Epecuén lake and Laguna La Paraguaya; whereas Zetti (1972) recorded this species from SG, La Pampa province. This taxon was considered a junior subjective synonym of *Proscelidodon almagroi* (Rovereto) by McDonald (1987) including the holotype of *E. altirostre* from Laguna La Paraguaya. This author mentioned two species of Scelidotheriinae in the Huayquerian SALMA: *P. gracillimus* at SG, Guaminí, Epecuén lake and Las Huayquerias de San Carlos (Mendoza province); and *P. almagroi* from Laguna La Paraguaya and Andalhualá (Catamarca province). Molar configuration of the available material is typical of *Proscelidodon* sp, but a more detailed assignation is not possible.

Order Cingulata Illiger, 1811
Superfamily Glyptodontoidea Gray, 1869
Family Glyptodontidae Gray, 1869
Subfamily Hoplophorinae Huxley, 1864
Tribe Hoplophorini Huxley, 1864 (= Sclerocalyptini Ameghino, 1895)
Genus *Eosclerocalyptus* Ameghino, 1919
Eosclerocalyptus sp.
Fig. S1D

Material: MGH-P126/ 34, a portion of carapace composed of four articulated and fragmented osteoderms associated to four broken osteoderms from Laguna La Paraguaya (# 702).

Description: All osteoderms show a central circular to oval figure fringed by small peripheral figures bounded by marked grooves.

Comments: The surface ornamentation allows assignation to *Eosclerocalyptus* sp. The genus *Hoplophractus* was synonymized under *Eosclerocalyptus* by Zurita and Tomassini (2006). The holotype of

Hoplophractus tapinocephalus Cabrera, 1939 was collected at Laguna La Paraguaya locality, and this species was also identified at SG (Zetti, 1972) and Laguna Chillhué (Montalvo et al., 1995).

Glyptodontidae indet.

Fig. S1C, E, F

Material: GHUNLPam 18817 five isolated osteoderms from SG (# 632A); and MGH-P126/38, two articulated osteoderms plus eight isolated osteoderms, including two incomplete (# 687); MGH-P126/37 three isolated osteoderms (# 688) (Fig. S1E, F), and MGH-P126/41 a carapace fragment with several osteoderms and two isolated ones (# 670) (Fig. S1C), the three later from Laguna La Paraguaya.

Comments: The poor preservation of this material precludes a more detailed assignation.

Superfamily Dasypodoidea Gray, 1821

Family Dasypodidae Gray, 1821

Subfamily Euphractinae Pocock, 1924

Tribe Eutatini Bordas, 1933

Genus *Doellotatus* Bordas, 1932

Doellotatus sp.

Fig. S1G

Material: MGH-P126/40 a broken mobile osteoderm from Laguna La Paraguaya (# 720).

Description: Osteoderm with a wide central figure, surrounded by a shallow groove.

Comments: The first report of *Doellotatus* from La Pampa was by Bordas (1933), who described *D. chapadmalensis*; a species later reported by Esteban et al. (2001) and Urrutia et al. (2008) from SG. The last authors also recorded *D. inornatus* in SG. A more detailed taxonomic assignation is not possible because of the fragmentary state of the remain.

Order Notoungulata Roth, 1903

Suborder Typotheria Zittel, 1893

Family Hegetotheriidae Ameghino, 1894

Subfamily Pachyrukhinae Kraglievich, 1934

Genus *Paedotherium* Burmeister, 1888

Paedotherium minor Cabrera, 1937

Fig. S1H

Material: MGH-P126/39 a right mandibular fragment with a m_3 (# 698) and an uncollected tooth from the upper jaw included in a calcareous concretion (# 699) both from Laguna La Paraguaya.

Comments: *Paedotherium minor* is very common in the Cerro Azul Formation outcrops both from the eastern La Pampa province and western Buenos Aires province (Montalvo et al., 2016; Cerdeño et al., 2017).

Family Mesotheriidae Alston, 1876

Subfamily Mesotheriinae Simpson, 1945

Mesotheriinae indet.

Fig. S1I

Material: MGH-P126/42 a broken upper left incisor from Laguna La Paraguaya (# 689).

Description: The upper incisor exhibits a labial convexity and a subquadrangular section.

Comments: Cerdeño and Montalvo (2001) concluded that the only valid Mesotheriinae species for the late Miocene of central Argentina are: *Pseudotypoherium subinsigne* and *Typoheriopsis silveyrai*. The dental features that distinguish both species are scarce and they do not include any feature of the incisors, for this reason the described material can only be assigned to the subfamily level.

Undetermined mammal

Material: MGH-P126/35 axis, MGH-P126/36 a tibia fragment, two phalanges and a metapodial (# 701); MGH-P126/43 a cranial fragment (# 723) from Laguna La Paraguaya; and GHUNLPam 18808 a cranial remain and four metapodial fragments (# 660) from SG.

Comments: The fragmentary state of these fragments precludes a more detailed assignation.

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