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ANNOTATED CATALOGUE OF THE FOSSIL VERTEBRATES FROM ANTARCTICA HOUSED IN THE MUSEO DE LA PLATA, ARGENTINA. I. BIRDS AND LAND MAMMALS FROM LA MESETA FORMATION (EOCENE - ?EARLY OLIGOCENE)

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ABSTRACT. The fossil vertebrate collection from Antarctica housed in the Departamento Científico Paleontología Vertebrados of Museo de La Plata house more than 15,000 specimens. It includes fishes, marine reptiles, dinosaurs, birds and mammals. The material was collected from Vega, James Ross, and Seymour islands and in the Antarctic Peninsula and comes from different stratigraphic horizons, ranging from the Late Cretaceous to the ?early Oligocene. This catalogue includes birds (242 specimens, most of which are penguins) and land mammals (49 specimens) from La Meseta Formation (Eocene - ?early Oligocene) of Seymour Island. The importance of this collection lies in the great number and diversity of specimens, as well as the presence of at least 15 new taxa and the first records of many groups in Antarctica.

RESUMEN. CATÁLOGO COMENTADO DE LOS VERTEBRADOS FÓSILES DE ANTÁRTIDA DEPOSITADOS EN EL MUSEO DE LA PLATA, ARGENTINA. I. AVES Y MAMÍFEROS TERRESTRES DE LA FORMACIÓN LA MESETA (EOCENO-OLIGOCENO TEMPRANO?). La colección de vertebrados fósiles depositada en el Departamento Científico Paleontología Vertebrados del Museo de La Plata está compuesta por más de 15.000 especímenes que incluyen peces, reptiles marinos, dinosaurios, aves y mamíferos. El material procede de las islas Vega, James Ross y Marambio y de la Península Antártica y de diferentes horizontes estratigráficos, que abarcan desde el Cretácico Superior hasta el Oligoceno temprano? Este catálogo incluye aves (242 especímenes que, en su gran mayoría, son pingüinos) y mamíferos terrestres (49 especímenes) de la Formación La Meseta (Eoceno-Oligoceno temprano?) de la isla Marambio (Seymour). La importancia de esta colección, además del número de especímenes y la diversidad, radica en la presencia de por lo menos 15 taxones nuevos y varios primeros registros de algunos grupos para Antártida.

KEY WORDS. Antarctica. Seymour Island. Eocene-?early Oligocene. Birds. Mammals. La Plata Museum. Catalogue.

PALABRAS CLAVE. Antártida. Isla Marambio. Eoceno-Oligoceno temprano? Aves. Mamíferos. Museo de La Plata. Catálogo.

INTRODUCTION

Five collections of fossil vertebrates from Antarctica are well known. The oldest was acquired by J. Gunnar Anderson during the Swedish South Polar Expedition (1901-1903) under the leadership of Otto Nordenskjold. It is housed in the Riksmuseet in Stockholm. Another collection, kept in the Natural History Museum of London, was made by members of the British Antarctic Survey (BAS) in 1946. The Museo de La Plata collection was acquired in more than 15 field trips conducted by personnel of the Departamento Científico Paleontología Vertebrados of Museo de La Plata and Instituto Antártico Argentino between 1974 and 1996. A fourth collection is located in the Department of Earth Sciences, University of California, Riverside, U.S.A., and the fifth is housed at the Institute of Biology, Bialystok Branch of Warsaw University, Poland.

The Museo de La Plata collection comprises more than 15,000 specimens, including Cretaceous fishes, marine reptiles, dinosaurs and birds, and Paleogene fishes, turtles, birds, and mammals. The specimens originate from James Ross, Vega, and Seymour islands, and the Antarctic Peninsula (figure 1) and were recovered from several stratigraphic horizons (Ameghino, Santa Marta, Rabot, Hidden Lake, López de Bertodano, Sobral, Cross Valley and La Meseta Formations; table 1) ranging from Late Cretaceous to ?early Oligocene.

The shallow marine La Meseta Formation (Eocene - ?early Oligocene) of Seymour Island (Marambio) has a great abundance of fossil vertebrates, most of which are marine taxa - i.e. fishes, turtles, penguins, oceanic birds, and whales. The first land mammal (a polydolopid marsupial) was reported in 1982 (Woodburne and Zinsmeister, 1982, 1984), at which time, fossils were collected mainly by surface prospecting and dry screening. In 1984, a wet-screening method was used. This process yielded concentrate, where more fossil mammals were found. Personnel of the Museo de La Plata began dry-sieving sediment in the 1987/88 summer expedition. Since then, more land mammals and smaller marine vertebrates have been recovered.

Although representing a small percentage of the collection, the birds and land mammals from La Meseta Formation are of special interest. There are no more than

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50 specimens of land mammals, but there are nearly 2000 birds, most of which are penguins. Herein, we report 291 catalogued specimens (242 birds and 49 mammals). Several works reporting systematic, phylogenetic, paleoecologic and paleobiogeographic results have been published (Marenssi *et al.*, 1994; Goin *et al.*, 1995a, 1995b; Vizcaíno *et al.*, 1995; 1998a, 1998b; Reguero *et al.*, 1998). Although the systematic studies are still in progress, the occurrence of at least 15 new taxa emphasizes the importance of this collection.

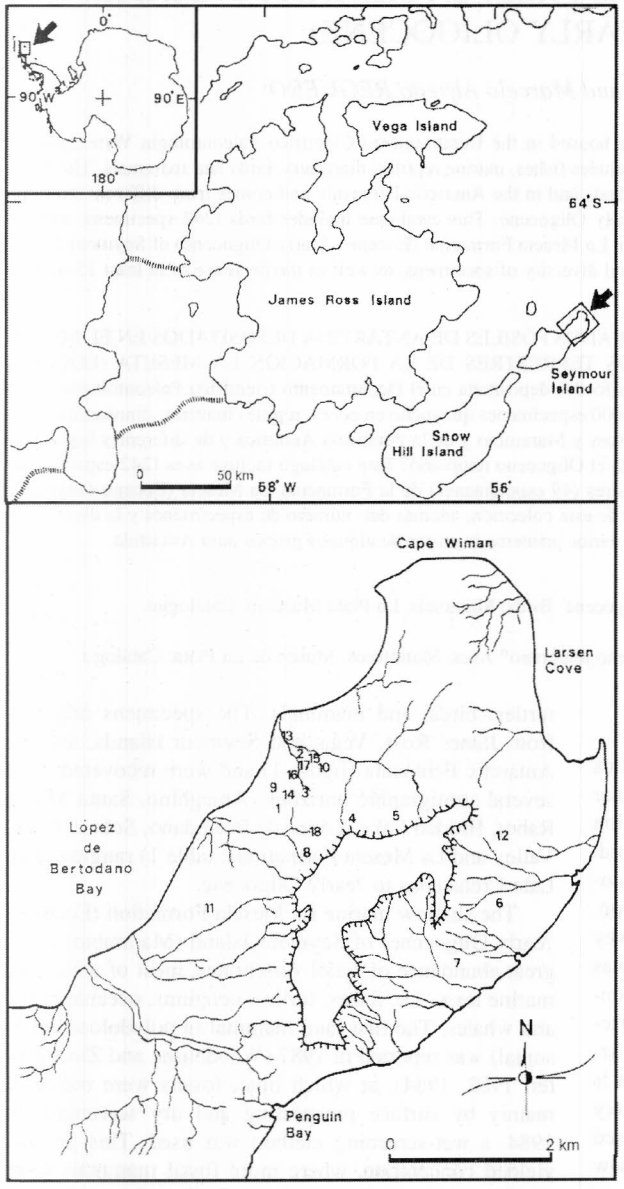

Figure 1. Sketch map showing the Antarctic Peninsula and James Ross group of islands. The northern tip of Seymour Island shows the location of the vertebrate-bearing localities. **1.** DPV 1/84, **2.** DPV 2/84, **3.** DPV 6/84, **4.** DPV 10/84, **5.** DPV 15/84, **6.** DPV 13/84, **7.** DPV 14/84, **8.** DPV 16/84, **9.** IAA 1/90, **10.** IAA 4/90, **11.** IAA 1/92, **12.** IAA 1/93, **13.** IAA 1/94, **14.** IAA 1/95, **15.** IAA 2/95, **16.** IAA 1/96, **17.** IAA 3/96, **18.** ZPAL t 4. *Mapa esquemático de la Península Antárica y del grupo de islas James Ross. El extremo norte de la isla Seymour muestra la ubicación de las localidades portadoras de vertebrados.*

MATERIALS AND METHODS

Terrestrial vertebrate-bearing localities

The fossil vertebrates reported herein were collected from 18 localities on Seymour Island (figure 1, table 2). The stratigraphic horizons (TELMs 3-7 of Sadler, 1988) of the La Meseta Formation range from middle Eocene to ?early Oligocene. The longitude and latitude of nine localities (table 2), were obtained from a GPS device (Lusky *et al.*, 1995; Reguero *et al.*, 1995). General geological descriptions can be found in Elliot and Trautman (1982), Sadler (1988), and Marenssi *et al.* (1998); specific descriptions of the localities are provided by Marenssi *et al.* (1994) and Vizcaíno *et al.* (1997b).

Systematics

The systematic arrangement follows that of McKenna and Bell (1997) for mammals, and Olson (1985) for birds.

Abbreviations

TELM: Tertiary Eocene strata of the La Meseta Formation (Sadler, 1988). MLP: Museo de La Plata, Argentina. DPV: Departamento Paleontología Vertebrados, Museo de La Plata, Argentina. BMNH: Department of Palaeontology, Natural History Museum, London, England. RM: Riksmuseet, Stockholm, Sweden. BAS: British Antarctic Survey, Cambridge, England. IAA: Instituto Antártico Argentino, Argentina. ZPAL: Institute of Palaeobiology, Polish Academy of Sciences, Warsaw, Poland. RV: Department of Earth Sciences, University of California, Riverside, USA. tmt: tarsometatarsus. tbt: tibiotarsus.

Class Mammalia
Superorder Marsupialia Illiger, 1811
Order Didelphimorphia Gill, 1872
Family Protodidelphidae Marshall, 1987
Gen. et sp. nov. 1

Referred material. MLP 95-I-10-2, right lower molar isolated.

Stratigraphic position. TELM 5.

Locality. IAA 2/95.

References. Goin *et al.* (1995a, 1995b).

Comments. Figured in Goin *et al.* (1995a, fig. 1d-f). The record of the Family Protodidelphidae

Table 1. Synopsis of the geologic, geographic and chronologic information of James Ross group of islands and Antarctic Peninsula. / *Sinopsis de la información geológica, geográfica y cronológica del grupo de islas James Ross y de la Península Antártica.*

GROUP	FORMATION	GEOGRAPHIC LOCATION	AGE
Seymour Island	La Meseta	Seymour Island	Eocene-?e. Oligocene
	Cross Valley	Seymour Island	Paleocene
Marambio	Sobral	Seymour Island	Paleocene
	López de Bertodano	Seymour, J. Ross, Vega and Snow Hill Islands	Campanian-?e. Paleocene
	Rabot	J. Ross Island	Late Campanian
	Santa Marta	J. Ross Island	Santonian-Campanian
Gustav	Hidden Lake	J. Ross Island	?Coniacian-Santonian
	Ameghino	Antarctic Peninsula	Oxfordian-E. Kimmeridgian

ranges from the Tiupampian (early Paleocene) of Bolivia. In South America the record of this group is exclusively Paleocene. The presence of this family in the Eocene of Seymour Island is considered relictual (Reguero *et al.*, 1998).

Family *incertae sedis*
Gen. et sp. nov. 2

REFERRED MATERIAL. MLP 94-III-15-11, left lower molar.
STRATIGRAPHIC POSITION TELM 5.
LOCALITY. IAA 1/90.
REFERENCES. Goin *et al.* (1995b).

Family *incertae sedis*
Gen. et sp. indet.

REFERRED MATERIAL. MLP 96-I-5-11, lower left molar.
STRATIGRAPHIC POSITION. TELM 5.
LOCALITY. IAA 1/90.

?Didelphimorphia indet.

REFERRED MATERIAL. MLP 92-II-2-2, mandibular fragment with one root.
STRATIGRAPHIC POSITION. TELM 5.
LOCALITY. IAA 1/90.

Order MICROBIOTHERIA Ameghino, 1889
Family MICROBIOTHERIIDAE Ameghino, 1887
Gen. et sp. nov. 3

REFERRED MATERIAL. MLP 88-I-1-1, horizontal ramus of left dentary with alveoli of p2-m3 and roots of m4. MLP 95-1-10-1, right mandibular fragment with posterior alveoli of m3 and m4 complete.
STRATIGRAPHIC POSITION: TELM 5.
LOCALITIES. DPV 6/84 (RV 8200): MLP 88-I-1-1. IAA1/90: MLP 95-1-10-1.
REFERENCES: Vizcaíno *et al.* (1988), Goin *et al.* (1995b), Goin and Carlini (1995).
COMMENTS. MLP 88-I-1-1 is figured in Goin and Carlini (1995, fig. 1a,b). Microbiotheriids are well represented in the Santacrucian (middle Miocene) land-mammal age, but they are recorded since the Tiupampian (early Paleocene) in Bolivia. Szalay (1982) suggested that this family belongs to the same clade as the Australian marsupials (Australidelphia). All of these marsupials share a distinctive hind-foot feature (a single and continuous surface articulation between the astragalus and calcaneum).

?Microbiotheriidae indet.

REFERRED MATERIAL: MLP 88-I-1-486, incomplete left ulna.
STRATIGRAPHIC POSITION: TELM 5.
LOCALITY: DPV 6/84 (RV-8200).

Order ?DASYUROMORPHIA Gill, 1872;
Aplin and Archer, 1987
Family incertae sedis
Gen. et sp. nov. 4

REFERRED MATERIAL: MLP 94-III-15-10, right upper molar.
STRATIGRAPHIC POSITION: TELM 5.
LOCALITY: IAA 1/90.
REFERENCES. Goin *et al.* (1995a, 1995b).
COMMENTS. Figured in Goin *et al.* (1995a, fig. 1a-c).

Order POLYDOLOPIMORPHIA
Family POLYDOLOPIDAE Ameghino, 1897
Polydolops Ameghino, 1897

Table 2. Vertebrate-bearing localities (DPV, IAA and ZPAL) and stratigraphic units (TELM) of La Meseta Formation, Seymour Island. GPS positions are given for nine localities. / *Localidades portadoras de vertebrados (DPV, IAA y ZPAL) y unidades estratigráficas (TELM) de la Formación La Meseta, Isla Seymour.*

	TELM3	TELM4	TELM5	TELM6	TELM7	GPS
DPV 1/84			x			
DPV 2/84		x				64°13' 51.195" S, 56°39' 21.992" W, 27.42 m HAE WGS-84
DPV 6/84			x			64°14' 21.782" S, 56°39' 44.840" W, 45.07 m HAE WGS-84
DPV 10/84					x	
DPV 12/84					x	
DPV 13/84					x	64°14' 47.371" S, 56°36' 11.685" W, 64.53 m HAE WGS-84
DPV 14/84					x	
DPV 16/84					x	64°14' 30.501"S, 56°38' 44.571"W, 189.53 m HAE WGS-84
IAA 1/90			x			64°14' 04.672" S, 56°39' 56.378" W, 57.19 m HAE WGS-84
IAA 4/90			x			
IAA 1/92		x				
IAA 1/93				x		
IAA 1/94	x					64°13' 53.253" S, 56°39' 51.239" W, 17.12 m HAE WGS 84
IAA 1/95			x			64°14' 28.552" S, 56°40' 18.91" W, 50.99 m HAE WGS-84
IAA 2/95			x			64°13' 57.678" S, 56°39' 5.878" W, 41.46 m HAE WGS-84
IAA 1/96			x			
IAA 3/96			x			
ZPAL 4					x	64°14'22.856" S, 56°38'43.917" W, 176.59 m HAE GWS-84

Polydolops dailyi (Woodburne and Zinsmeister, 1984)

REFERRED MATERIAL. MLP 87-II-1-1, maxilla with right P2-M1. MLP 88-I-1-2, partial left mandibular ramus with m2. MLP 88-I-1-3, partial right mandibular ramus with m2. MLP 88-I-1-4, right M1. MLP 89-III-2-1, right m2. MLP 92-II-2-1, left m2. MLP 94-III-15-13, two lower molars (m1 and m2). MLP 95-I-10-3, left p3. MLP 96-I-5-1, right m2. MLP 96-I-5-2, right m3. MLP 96-I-5-3, right mandibular fragment with p3. MLP 96-I-5-12, right mandibular fragment with p3-m3.

STRATIGRAPHIC POSITION. TELM 5.

LOCALITIES. DPV 6/84 (RV-8200): MLP 87-II-1-1, MLP 88-I-1-2-3 and 4, MLP 89-III-2-1. IAA 1/90: MLP 92-II-2-1, MLP 94-III-15-13, and MLP 96-I-5-12. IAA 2/95: MLP 95-I-10-3, MLP 96-I-5-1, 2 and 3.

REFERENCES. Woodburne and Zinsmeister (1984), Candela and Goin (1995).

COMMENTS. *Antarctodolops dailyi* Woodburne and Zinsmeister, 1984, was the first land mammal recovered from Antarctica. The holotype is a left mandibular fragment with p3-m2 (UCR 20910). Some dental features (e.g., absence of P2), led the authors to suggest that the species probably was derived from Casamayoran (early Eocene) species of *Polydolops*. Candela and Goin (1995), based on comparative studies, placed *Antarctodolops dailyi* within the genus *Polydolops*. The record of this group ranges from the Itaboraian (late Paleocene) land-mammal age of Patagonia to the "Tinguiririan" (late Eocene-early Oligocene) of central Chile.

Polydolops seymouriensis (Case, Woodburne and Chaney, 1988)

REFERRED MATERIAL. MLP 90-I-20-4, left P3.

STRATIGRAPHIC POSITION. TELM 5.

LOCALITIES. IAA 1/90.

REFERENCES. Case *et al.* (1988), Candela and Goin (1995).

COMMENTS. Case *et al.* (1988) described a second Seymour Island species, *Eurydolops seymouriensis*, based on a P3 isolated (UCR 22355). Candela and Goin (1995), after comparative studies, assigned the species to *Polydolops*.

Polydolops sp. nov.

REFERRED MATERIAL. MLP 95-I-10-4, left M1.

STRATIGRAPHIC POSITION. TELM 5.

LOCALITY. IAA 1/90.

?Polydolopidae indet.

REFERRED MATERIAL. MLP 95-I-10-5, mandibular fragment with incisor root. MLP 96-I-5-4, edentulous mandibular fragment.

STRATIGRAPHIC POSITION. TELM 5.

LOCALITIES. IAA 1/90: MLP 95-I-10-5. IAA 2/95: MLP 96-I-5-4.

?Marsupialia indet.

REFERRED MATERIAL. MLP 96-I-5-29, edentulous maxillar fragment.

STRATIGRAPHIC POSITION: TELM 5.

LOCALITY. IAA 1/90.

Superorder XENARTHRA Cope, 1883
Order PILOSA Flower, 1883
Suborder PHYLOPHAGA Owen, 1842
Tardigrada indet.

REFERRED MATERIAL. MLP 94-III-15-14, upper caniniform incomplete.

STRATIGRAPHIC POSITION. TELM 4.

LOCALITY. DPV 2/84.

REFERENCES. Vizcaíno and Scillato Yané (1995a, 1995b).

COMMENTS. Figured in Vizcaíno and Scillato Yané (1995a, fig. 1a - c). It represents the earliest record of Tardigrada. The first record of this group in South America is from the Deseadan (Oligocene) land mammal age of Patagonia and Bolivia (Hoffstetter, 1982; Engelmann, 1987).

?Tardigrada or ?Vermilingua indet.

REFERRED MATERIAL. MLP 88-I-1-95, ungual phalanx.

STRATIGRAPHIC POSITION. TELM 5.

LOCALITY. DPV 6/84 (RV 8200).

REFERENCES. Carlini *et al.* (1990), Marenssi *et al.* (1994).

COMMENTS. The specimen was figured in Marenssi *et al.* (1994, fig. d). It is the first placental mammal recorded in Antarctica, and initially identified as a Megatherioidea (Tardigrada) by Carlini *et al.* (1990). But because it is indistinguishable from the oldest Vermilingua (early Miocene) recorded in Patagonia (Carlini *et al.*, 1992), it was reidentified as ?Tardigrada or ?Vermilingua.

UNGULATA Linné, 1766
Order LITOPTERNA Ameghino, 1889
Family MACRAUCHENIIDAE Gervais, 1855
Subfamilia SPARNOTHERIODONTINAE Soria, 1980
Gen. et sp. nov. 5

REFERRED MATERIAL. MLP 90-I-20-1, left M1 or M2. MLP 90-I-20-3, right I3. MLP 90-I-20-5, left upper premolar (?P3). MLP 91-II-4-1, right m1 or m2. MLP 91-II-4-5, right premolar (P1?). MLP 94-III-15-3, lower right insiciviform? MLP 95-I-10-6, left M3. MLP 95-I-10-7, upper molar. MLP 96-I-5-5, left ?I1. MLP 96-I-5-9, p1. MLP 96-I-5-10, I3.

STRATIGRAPHIC POSITION. TELMs 4, 5 and 7.

LOCALITIES. DPV 2/84: MLP 91-II-4-1. DPV 16/84: MLP 95-I-10-6. IAA 1/90: MLP 90-I-20-1, 3 and 5, MLP 91-II-4-5 and MLP 94-III-15-3. IAA 1/95: MLP 95-I-10-7. IAA 2/95: MLP 96-I-5-5. IAA 1/96: MLP 96-I-5-10. IAA 3/96: MLP 96-I-5-9.

REFERENCES. Bond *et al.* (1990), Marenssi *et al.* (1994), Bond *et al.* (1995), Vizcaíno *et al.* (1997a, 1997b).

COMMENTS. Specimens MLP 90-I-20-1, MLP 91-II-4-1, MLP 90-I-20-3, MLP 90-I-20-5, MLP 91-II-4-5 are illustrated in Marenssi *et al.* (1994, figs. 5 e,f and 6 a,b,e,f respectively). MLP 91-II-4-5 is incorrectly designated as MLP 90-I-20-3 in Marenssi *et al.* (1994, fig. 6 e-f). MLP 95-I-10-6 is figured in Vizcaíno, *et al.* (1998a and 1998b) and represents the most recent record of a land mammal from Antarctica. Representatives of the Family Sparnotheriodontidae are recorded in the Itaboraian (late Paleocene) of Brazil, Riochican (late Paleocene) of Patagonia, Casamayoran (early Eocene) of Patagonia, and Divisaderan (?late Eocene) of Mendoza. This Antarctic taxon is closely related to *Victorlemoinea*, from the Itaboraian of Patagonia and Brazil and Casamayoran of Patagonia, but possesses several derived dental features (Bond *et al.*, 1993). Whereas this group is poorly represented by only a few specimens in Patagonia, it is well represented by numerous individuals on Seymour Island (Reguero *et al.*, 1998).

Sparnotheriodontidae indet.

REFERRED MATERIAL: MLP 92-II-2-135, enamel fragment. MLP 92-II-2-136, molar fragment.

STRATIGRAPHIC POSITION. TELMs 3 and 5.

Localities: DPV 6/84 (RV 8200): MLP 92-II-2-136. IAA 1/94: MLP 92-II-2-135.

COMMENTS. MLP 92-II-2-135 and MLP 94-III-15-2 were recovered from the same horizon and locality. These represent the oldest records of land mammals in Antarctica (Vizcaíno *et al.*, 1997b).

?Sparnotheriodontidae indet.

REFERRED MATERIAL. MLP 92-II-2-72, ?lower incisiviform.

STRATIGRAPHIC POSITION. TELM 4.

LOCALITY. IAA 1/92.

Order ASTRAPOTHERIA Lydekker, 1894
Family TRIGONOSTYLOPIDAE Ameghino, 1901
Trigonostylops Ameghino, 1897
Trigonostylops sp.

REFERRED MATERIAL. MLP 90-I-20-6, left upper molar.

STRATIGRAPHIC POSITION. TELM 5.

LOCALITY. IAA 1/90.

REFERENCES. Bond *et al.* (1990).

COMMENTS. This taxon is figured in Marenssi *et al.* (1994, fig. 6d). The record of the family Trigonostylopidae ranges from the Itaboraian (late Paleocene) to the Mustersan (middle Eocene) in Patagonia. The genus *Trigonostylops* is known from the Riochican (late Paleocene) to Mustersan in Patagonia.

Trigonostylopidae indet.

REFERRED MATERIAL. MLP 90-I-20-2, fragment of upper right molar.

STRATIGRAPHIC POSITION. TELM 5.

LOCALITY. IAA 1/90.

REFERENCES. Bond *et al.* (1990).

COMMENTS. This taxon is illustrated in Marenssi *et al.* (1994, fig. 6c). Hooker (1992, fig. 1a-c) described a metaconal fragment of a left upper molar (BMNH BAS M2584) from TELM 4, and referred the specimen to Trigonostylopidae indet.

Ungulata indet.

REFERRED MATERIAL. MLP 90-I-20-4a, fragment of right upper molariform. MLP 94-III-15-2, ?upper molariform. MLP 94-III-15-6, distal fragment of tibia.

STRATIGRAPHIC POSITION. TELMs 3, 4 and 5.

LOCALITIES. DPV 2/84: MLP 94-III-15-6. IAA 1/90: MLP 90-I-20-4a. IAA 1/94: MLP 94-III-15-2.

REFERENCES. Vizcaíno *et al.* (1997a).

COMMENTS. MLP 94-III-15-2 is figured in Vizcaíno, *et al.* (1997b, fig. 2 a), and represents the oldest record of land mammal from Antarctica.

Mammalia indet.

REFERRED MATERIAL. MLP 91-II-4-297, teeth fragment. MLP 94-III-15-186, ?metapodial.

STRATIGRAPHIC POSITION. TELMs 3 and 5.

LOCALITIES. DPV 6/84 (RV 8200): MLP 91-II-4-297. IAA 1/94: MLP 94-III-15-186.

Mammalia *incertae sedis*
Gen. et sp. indet.

REFERRED MATERIAL. MLP 91-II-4-3. ?upper molar.

STRATIGRAPHIC POSITION. TELM 5.

LOCALITY. IAA 1/90.

REFERENCES. Goin and Reguero (1993), Marenssi *et al.* (1994).

COMMENTS. This taxon was figured by Marenssi *et al.* (1994, fig. 5c). The morphology of this specimen led the authors to consider it an "enigmatic insectivore", that probably is related to Chiroptera.

Class AVES Linné, 1758
RATITAE Wetmore, 1960
Ratitae indet.

REFERRED MATERIAL. MLP 94-III-15-1, distal fragment of right tmt without trochlea IV.

STRATIGRAPHIC POSITION. TELM 7.

LOCALITY. ZPAL 4.

REFERENCES. Tambussi *et al.* (1994a, 1994b).

COMMENTS. Figured in Tambussi *et al.* (1994a, fig. 2 and 1994b, fig. 2), this taxon represents the first record of this group of flightless birds in Antarctica.

Order FALCONIFORMES Sharpe, 1874
Family FALCONIDAE Vigors, 1824
Subfamily POLYBORINAE Lafresnay, 1839
Gen. et sp. indet.

REFERRED MATERIAL. MLP 95-I-10-8, distal fragment of left tmt.

STRATIGRAPHIC POSITION. TELM 5.

LOCALITY. IAA 2/95.

REFERENCES. Tambussi *et al.* (1995), Noriega and Tambussi (1996).

COMMENTS. To date, the earliest record of the subfamily came from Patagonia (early Miocene). Thus this specimen represents the earliest record of the group (middle Eocene), and also, the first record of Falconidae in Antarctica.

Order CHARADRIIFORMES Huxley, 1867
Charadriiformes indet.

REFERRED MATERIAL. MLP 92-II-2-6, right scapula.

STRATIGRAPHIC POSITION. TELM 5.

LOCALITY. IAA 1/90.

REFERENCES. Noriega and Tambussi (1996).

Charadriiformes cf. Phoenicopteridae indet.

REFERRED MATERIAL. MLP 87-II-1-2, incomplete right radius.

STRATIGRAPHIC POSITION. TELM 5.

LOCALITY. DPV 6/84 (RV 8200).

REFERENCES. Noriega and Tambussi (1996).

Order PROCELLARIIFORMES Fürbringer, 1888
Procellariiformes indet.

REFERRED MATERIAL. MLP 90-I-20-9, distal fragment of right tmt without troclea.

STRATIGRAPHIC POSITION. TELM 7.

LOCALITY. DPV 16/84.

REFERENCES. Noriega and Tambussi (1996).

Family PROCELLARIIDAE Boie, 1826
Procellariidae indet.

REFERRED MATERIAL. MLP 88-I-1-5, incomplete tmt. MLP 95-I-10-14, left coracoid. MLP 96-I-5-8, distal end of rostrum (beak). MLP 91-II-4-6, distal fragment of right ulna.

STRATIGRAPHIC POSITION. TELM 5.

LOCALITIES. DPV 6/84 (RV 8200): MLP 88-I-1-5 and MLP 95-I-10-14. IAA 1/90: MLP 91-II-4-6 and MLP 96-I-5-8.

REFERENCES. Noriega and Tambussi (1996).

COMMENTS. MLP 88-I-1-5, identified as a diomedeidid by Tambussi and Tonni (1988), is now considered to be a procellariidid (Noriega and Tambussi, 1996).

Family DIOMEDEIDAE (Gray, 1840)
Diomedeidae indet.

REFERRED MATERIAL. MLP 88-I-1-6, distal end of rostrum.

STRATIGRAPHIC POSITION. TELM 5.

LOCALITY. DPV 6/84 (RV 8200).

REFERENCES. Noriega and Tambussi (1996).

Order ANSERIFORMES Wagler, 1831
Family PRESBYORNITHIDAE Wetmore, 1926
Presbyornithidae indet.

REFERRED MATERIAL. MLP 96-I-5-19, proximal fragment of left scapula.

STRATIGRAPHIC POSITION. TELM 5.

LOCALITY. IAA 2/95.

REFERENCES. Noriega and Tambussi (1996).

COMMENTS. The first presbyornithid from Antarctica was reported by Noriega and Tambussi (1995) from Late Cretaceous strata of Vega Island, Antarctic Peninsula. Based on Ericson's (1992) phylogenetic analysis, these authors considered Presbyornithidae to be the sister

group of Anatidae within the Anseriformes. MLP 96-I-5-19 is the second Antarctic record of this family.

?Presbyornithidae indet.

REFERRED MATERIAL. MLP 95-I-10-9, proximal fragment of left ulna. MLP 96-I-5-7, ulna.

STRATIGRAPHIC POSITION. TELM 5.

LOCALITIES. DPV 6/84 (RV 8200): MLP 96-I-5-7. IAA 2/95: MLP 95-I-10-9.

REFERENCES. Noriega and Tambussi (1996).

Order PELECANIFORMES Sharpe, 1891
Suborder ODONTOPTERYGIA Spulski, 1910
Family PELAGORNITHIDAE Fürbringer, 1888
Gen. et sp. indet.

REFERRED MATERIAL: MLP 78-X-26-1, proximal fragment of rostrum. MLP 83-V-30-1, incomplete articular portion of a right mandible. MLP 83-V-30-2, probably mandibular fragment with a "teeth" and the root of other.

STRATIGRAPHIC POSITION. TELM 7.

LOCALITIES. DPV 13/84: MLP 83-V-30-1 and 2. MLP 78-X-26-1 is from an unknown locality.

REFERENCES. Tonni and Cione (1978); Tonni (1980); Tonni and Tambussi (1985).

COMMENTS. According to Tonni and Tambussi (1985), it is probable that at least two different taxa of this group come from the same stratigraphic horizon. No remains of pelagornithids were found in the lower horizons.

Order SPHENISCIFORMES Sharpe, 1891
Family SPHENISCIDAE Bonaparte, 1831

The record of this group is very rich in the La Meseta Formation. With the exception of fishes, the remains of penguins of the Eocene of Seymour Island are the most numerous of the Antarctic collections of the Museo La Plata.

Different authors (Wiman, 1905; Ameghino, 1905; Simpson, 1946, 1971; Marples, 1953; Myrcha *et al.*, 1990) recognized several penguin taxa. Wiman (1905) sorted various isolated skeletal elements into eight size groups (Groups 1-8). A great variety of body sizes was recorded in La Meseta Formation. Simpson (1975, 1976) sorted the La Meseta penguins into six size classes based on Wiman's measurements of the most frequently encountered bones (i.e., the humerus, tibiotarsus, tarsometatarsus, femur, and coracoid). Simpson recognized the following species: *Orthopterix gigas* (Group 1 of Wiman, the largest), *Anthropornis nordenskjoeldi* (Group 3), *Pachypteryx grandis* (Group 4), *Eosphaeniscus gunnari* (Group 5), *Delphinornis larsenii* (Group 7), and *Ichthyopteryx gracilis* (Group 8, the smallest).

The spheniscifom material listed below is being studied by Tambussi, Noriega and Myrcha (in prep.) as a part of a study that also includes material from Polish collections.

Delphinornis Wiman, 1905
Delphinornis sp.

REFERRED MATERIAL. MLP 84-II-1-9, incomplete right tmt. MLP 88-I-1-353, incomplete right tmt.

STRATIGRAPHIC POSITION. TELMs 5 and 7.

LOCALITIES. DPV 6/84 (RV 8200): MLP 88-I-1-353. DPV 13/84: MLP 84-II-1-9.

COMMENTS. *Delphinornis* is based on an incomplete tarsometatarsus (Wiman, 1905: 250, pl. 12, fig. 1).

Delphinornis sp. nov.

REFERRED MATERIAL. MLP 93-X-1-92 incomplete left tmt. MLP 94-III-15-29 incomplete tmt.

STRATIGRAPHIC POSITION. TELM 7.

LOCALITIES. DPV 14/84: MLP 93-X-1-92. DPV 16/84: MLP 94-III-15-29.

Gen. et sp. nov. 6

REFERRED MATERIAL. MLP 84-II-1-79, incomplete left tmt. MLP 91-II-4-174 left tmt. MLP 91-II-4-175 incomplete left tmt.

STRATIGRAPHIC POSITION. TELMs 5 and 7.

LOCALITIES. IAA 1/90: MLP 91-II-4-174 and 175. DPV 13/84: MLP 84-II-1-79.

Gen. et sp. nov. 7

REFERRED MATERIAL. MLP 93-X-1-111, right tmt.

STRATIGRAPHIC POSITION. TELM 7.

LOCALITY. DPV 13/84.

Ichthyopteryx Wiman, 1905
Ichthyopteryx gracilis Wiman, 1905

REFERRED MATERIAL. MLP 83-V-20-75, tmt. MLP 83-V-20-96, incomplete right tmt.

STRATIGRAPHIC POSITION. TELM 7.

LOCALITY. DPV 13/84.

COMMENTS. *Ichthyopteryx* is based on a fragmentary tarsometatarsus (Wiman, 1905: 251).

Archaeospheniscus Marples, 1952
Archaeospheniscus wimani (Marples, 1953)

REFERRED MATERIAL. MLP 90-I-20-24, incomplete left tmt. MLP 91-II-4-173, incomplete left tmt. MLP 84-II-1-180, incomplete left tmt.

STRATIGRAPHIC POSITION. TELMs 5 and 7.

LOCALITIES. IAA 4/90: MLP 90-I-20-24. IAA 1/90: MLP 91-II-4-173. DPV 14/84: MLP 84-II-1-180.

Anthropornis Wiman, 1905
Anthropornis nordenskjoeldii Wiman, 1905

REFERRED MATERIAL. MLP 83-V-20-50 incomplete right tmt. MLP 84-II-1-7 incomplete left tmt. MLP 84-II-1-19 incomplete right tmt.

STRATIGRAPHIC POSITION. TELM 7.

LOCALITY. DPV 13/84: MLP 83-V-20-50, MLP 84-II-1-7 and 19.

COMMENTS. *Anthropornis* is the largest penguin known in the world. Wiman (1905: 249, pl. 12, fig. 6) based this genus on an incomplete left tarsometatarsus. It occurs only in TELM 7.

Anthropornis grandis (Wiman, 1905)

REFERRED MATERIAL. MLP 83-V-20-84, incomplete left tmt. MLP 84-II-1-12, incomplete left tmt. MLP 84-II-1-66, incomplete left tmt. MLP 84-II-1-176, incomplete left tmt. MLP 86-V-30-19 incomplete left tmt.

STRATIGRAPHIC POSITION. TELM 7.

LOCALITIES. DPV 13/84: MLP 83-V-20-84, MLP 84-II-1-12 and 66. DPV 14/84: MLP 84-II-1-176. MLP 86-V-30-19 is from an unknown locality.

Palaeeudyptes Huxley, 1859
Palaeeudyptes sp.

REFERRED MATERIAL. MLP 78-X-26-17, incomplete right tmt. MLP 83-V-20-34, incomplete right tmt. MLP 83-V-20-41, incomplete right tmt. MLP 84-II-1-47, incomplete right tmt. MLP 84-II-1-65, incomplete left tmt MLP 84-II-1-178, incomplete left tmt. MLP 92-II-2-118, incomplete right tmt. MLP 93-X-1-83, incomplete right tmt. MLP 93-X-1-95, incomplete left tmt.

STRATIGRAPHIC POSITION. TELM 7.

LOCALITIES. DPV 13/84: MLP 84-II-1-47 and 65. DPV 14/84: MLP 83-V-20-34 and 41, MLP 84-II-1-178, MLP 93-X-1-83 and 95. MLP 78-X-26-17 and MLP 92-II-2-118 are from unknown localities.

COMMENTS. The genus *Palaeeudyptes* is recorded in New Zealand, Australia, and Seymour Island. It is closely related to *Anthropornis* Wiman, 1905 and *Pachydyptes* Oliver, 1930. Four species of *Palaeeudyptes* are known: *P. antarcticus* Huxley, 1859, *P. gunnari* (Wiman, 1905), *P. marplesi* Brodkorb (1963), and *P. klekowskii* Myrcha, Tatur and Del Valle, 1990. *Palaeeudyptes klekowskii* is the largest.

Palaeeudyptes klekowskii Myrcha, Tatur and Del Valle, 1990

REFERRED MATERIAL. MLP CX-60.214, incomplete right tmt. MLP 78-X-26-18, incomplete right tmt. MLP 83-V-20-42, incomplete right tmt. MLP 84-II-1-5, incomplete right tmt. MLP 84-II-1-8, incomplete left tmt. MLP 84-II-1-49, incomplete left tmt. MLP 84-II-1-76, incomplete right tmt. MLP 84-II-1-78, left tmt. MLP 84-II-1-80, tmt. MLP 84-II-1-124, incomplete right tmt. MLP 84-II-1-126, incomplete right tmt. MLP 84-II-1-171, tmt. MLP 84-II-1-177, incomplete right tmt. MLP 87-II-1-97, incomplete right tmt. MLP 93-X-1-6, incomplete right tmt. MLP 93-X-1-25, incomplete right tmt. MLP 93-X-1-63, left tmt. MLP 93-X-1-65, incomplete right tmt. MLP 93-X-1-106, incomplete right tmt. MLP 93-X-1-108, left tmt. MLP 93-X-1-120, incomplete right tmt. MLP 93-X-1-142, right tmt. MLP 94-III-15-4, incomplete left tmt. MLP 94-III-15-18, incomplete left tmt. MLP 95-I-10-158, incomplete right tmt.

STRATIGRAPHIC POSITION. TELMs 5, 6 and 7.

LOCALITIES. DPV 1/84: MLP 87-II-1-97. DPV 10/84: MLP 93-X-1-6, 63 and 65. DPV 12/84: MLP 93-X-1-106 and 108. DPV 13/84: MLP 84-II-1-5, 8, 49, 76, 78 and 80, MLP 93-X-1-120 and 142 , MLP 94-III-15-4 and 18. DPV 14/84: CX-60.214, MLP 83-V-20-42, MLP 84-II-1-124, 126, 171 and 177. DPV 16/84: MLP 95-I-10-158. IAA 1/93: MLP 93-X-1-25.

MLP 78-X-26-18 is from an unknown locality.

COMMENTS. The holotype is based on an incomplete right tarsometatarsus (IB/P/B-0065, Myrcha *et al.*, 1990: 195-205, fig. 2A).

Palaeeudyptes gunnari (Wiman, 1905)

REFERRED MATERIAL. MLP 82-IV-23-5, incomplete right tmt. MLP 82-IV-23-6, tmt. MLP 83-V-20-27, incomplete left tmt. MLP 84-II-1-6, incomplete left tmt. MLP 84-II-1-45, incomplete right tmt. MLP 84-II-1-75, incomplete left tmt. MLP 87-II-1-75, incomplete tmt. MLP 91-II-4-222, left tmt. MLP 93-X-1-84, incomplete right tmt. MLP 93-X-1-112, incomplete left tmt. MLP 93-X-1-117, incomplete left tmt. MLP 94-III-15-16, incomplete left tmt.

STRATIGRAPHIC POSITION. TELMs 5 and 7.

LOCALITIES. DPV 1/84: MLP 87-II-1-75. DPV 13/84: MLP 84-II-1-6, 45 and 75, MLP 93-X-1-112 and 117. DPV 14/84: MLP 82-IV-23-5 and 6, MLP 83-V-20-27 and MLP 93-X-1-84. DPV 15/84: MLP 91-II-4-222. ZPAL 4: MLP 94-III-15-16.

COMMENTS. *Palaeeudyptes gunnari* (Wiman, 1905) is based on an incomplete right tarsometatarsus (RM N° A7).

Wimanornis seymourensis Simpson, 1975

REFERRED MATERIAL. MLP CX 60.201, incomplete left humerus.

STRATIGRAPHIC POSITION. TELM 7.

LOCALITY. DPV 14/84.

Spheniscidae indet.

REFERRED MATERIAL. MLP CX 60.223, right humerus. MLP CX 60.225, incomplete right humerus. MLP CX 60.227, incomplete left tbt. MLP CX 60.232, incomplete right humerus. MLP CX 60.248, incomplete right tmt. MLP 82-IV-23-1, incomplete left humerus. MLP 82-IV-23-2, incomplete right humerus. MLP 82-IV-23-3, incomplete left humerus. MLP 82-IV-23-4, incomplete left humerus. MLP 82-IV-23-58, incomplete right humerus. MLP 82-IV-23-59, incomplete right humerus. MLP 82-IV-23-60, incomplete left humerus. MLP 82-IV-23-61, incomplete right humerus. MLP 83-V-20-5, right tmt. MLP 83-V-20-9, incomplete left tmt. MLP 83-V-20-25, incomplete left humerus. MLP 83-V-20-28, incomplete right humerus. MLP 83-V-20-30, incomplete left humerus. MLP 83-V-20-31, incomplete right humerus. MLP 83-V-20-33, incomplete left humerus. MLP 83-V-20-47, incomplete left tbt. MLP 83-V-20-51, incomplete right humerus. MLP 83-V-20-81, incomplete left humerus. MLP 83-V-30-3, incomplete right humerus. MLP 83-V-30-4, incomplete right humerus. MLP 83-V-30-5, incomplete left humerus. MLP 83-V-30-6, incomplete right humerus. MLP 83-V-30-7, incomplete left humerus.

MLP 83-V-30-8, incomplete right humerus. MLP 83-V-30-9, incomplete right humerus. MLP 83-V-30-11, incomplete right humerus. MLP 83-V-30-13, incomplete left humerus. MLP 83-V-30-14, incomplete left humerus. MLP 83-V-30-15, right tmt. MLP 83-V-30-16, incomplete left tmt. MLP 83-V-30-17, incomplete right tmt. MLP 83-V-30-88, incomplete right tbt. MLP 84-II-1-1, incomplete left humerus. MLP 84-II-1-2, incomplete left humerus. MLP 84-II-1-4, incomplete left humerus. MLP 84-II-1-6a, incomplete left humerus. MLP 84-II-1-11, incomplete right humerus. MLP 84-II-1-12a, incomplete left humerus. MLP 84-II-1-16, incomplete right humerus. MLP 84-II-1-24, incomplete left tmt. MLP 84-II-1-40, incomplete right tmt. MLP 84-II-1-41, incomplete left humerus. MLP 84-II-1-51, incomplete right tbt. MLP 84-II-1-54, incomplete right tbt. MLP 84-II-1-55, incomplete left humerus. MLP 84-II-1-58, incomplete right tbt. MLP 84-II-1-110, incomplete right humerus. MLP 84-II-1-111, incomplete left humerus. MLP 84-II-1-112, incomplete left humerus. MLP 84-II-1-113, incomplete right humerus. MLP 84-II-1-114, incomplete left humerus. MLP 84-II-1-115, incomplete left humerus. MLP 84-II-1-116, incomplete left humerus. MLP 84-II-1-117, incomplete left humerus. MLP 84-II-1-125, incomplete left tmt. MLP 84-II-1-144, incomplete left humerus. MLP 84-II-1-169, incomplete right humerus. MLP 84-II-1-179, incomplete right tmt. MLP 84-II-1-208, incomplete right tbt. MLP 84-II-1-231, incomplete right tmt. MLP 86-V-30-8, incomplete left humerus. MLP 86-V-30-15, incomplete left humerus. MLP 86-V-30-16, incomplete left humerus. MLP 87-II-1-42, incomplete left humerus. MLP 87-II-1-43, incomplete left humerus. MLP 87-II-1-44, incomplete right humerus. MLP 88-I-1-190, left humerus. MLP 88-I-1-256, incomplete left humerus. MLP 88-I-1-257, incomplete left humerus. MLP 88-I-1-357, incomplete right tbt. MLP 88-I-1-358, incomplete left tbt. MLP 88-I-1-463, incomplete left humerus. MLP 88-I-1-464, incomplete left humerus. MLP 88-I-1-469, incomplete right humerus. MLP 88-I-1-470, incomplete right humerus. MLP 88-I-1-471, incomplete left tbt. MLP 88-I-1-472, incomplete left humerus. MLP 88-I-1-484, incomplete right tmt. MLP 88-I-1-485, incomplete right tmt. MLP 90-I-20-8, left tbt. MLP 90-I-20-314, incomplete right tmt. MLP 90-I-20-315, incomplete right tmt. MLP 90-I-20-316, incomplete right tmt.MLP 91-II-4-216, incomplete left humerus. MLP 91-II-4-220, incomplete right tbt. MLP 93-X-1-1, incomplete left tbt. MLP 93-X-1-2, incomplete right tbt. MLP 93-X-1-3, incomplete left humerus. MLP 93-X-1-4, incomplete left humerus. MLP 93-X-1-21, incomplete right humerus. MLP 93-X-1-22, incomplete left humerus. MLP 93-X-1-24, incomplete left humerus. MLP 93-X-1-27, incomplete right humerus. MLP 93-X-1-30, incomplete left humerus. MLP 93-X-1-31, incomplete left humerus. MLP 93-X-1-32, incomplete left humerus. MLP 93-X-1-33, left humerus. MLP 93-X-1-34, incomplete left humerus. MLP 93-X-1-39, incomplete left humerus. MLP 93-X-1-40, incomplete right tbt. MLP 93-X-1-41, incomplete right humerus. MLP 93-X-1-45, incomplete left tmt. MLP 93-X-1-47, incomplete left tbt. MLP 93-X-1-49, incomplete left tbt. MLP 93-X-1-60, incomplete left tbt. MLP 93-X-1-61, incomplete right tbt. MLP 93-X-1-62, incomplete left tbt. MLP 93-X-1-64, incomplete right tbt. MLP 93-X-1-70, incomplete left humerus. MLP 93-X-1-74, incomplete right tbt. MLP 93-X-1-75, left tbt. MLP 93-X-1-97, incomplete left humerus. MLP 93-X-1-104, left humerus. MLP 93-X-1-105, incomplete left humerus. MLP 93-X-1-109, incomplete left tbt. MLP 93-X-1-110, incomplete right tbt. MLP 93-X-1-122, incomplete left humerus. MLP 93-X-1-123, incomplete right humerus. MLP 93-X-1-135, incomplete left tmt. MLP 93-X-1-143, incomplete right humerus. MLP 93-X-1-144, incomplete right humerus. MLP 93-X-1-146, left humerus. MLP 93-X-1-147, right humerus. MLP 93-X-1-148, incomplete right tmt. MLP 93-X-1-149, incomplete left tmt. MLP 93-X-1-150, incomplete right tmt. MLP 93-X-1-151, right tmt. MLP 93-X-1-152, incomplete left tmt. MLP 93-X-1-153, incomplete right tmt. MLP 93-X-1-154, incomplete left tmt. MLP 93-X-1-155, incomplete left tmt. MLP 93-X-1-156, incomplete right tmt. MLP 94-III-15-17, incomplete right humerus. MLP 94-III-15-20, right tmt. MLP 94-III-15-175, incomplete left humerus. MLP 94-III-15-176, incomplete left humerus. MLP 94-III-15-177, incomplete right humerus. MLP 94-III-15-178, incomplete right tmt. MLP 94-III-15-179, incomplete left tmt. MLP 94-III-15-180, incomplete left tmt. MLP 94-III-15-187, right tmt. MLP 95-I-10-16, incomplete left tmt. MLP 95-I-10-126, incomplete right tbt. MLP 95-I-10-128, incomplete left tbt. MLP 95-I-10-132, incomplete left tmt MLP 95-I-10-133, incomplete left tbt. MLP 95-I-10-135, incomplete left tmt. MLP 95-I-10-136, incomplete right tmt. MLP 95-I-10-142, incomplete right tmt. MLP 95-I-10-149, right humerus. MLP 95-I-10-154, incomplete left humerus. MLP 95-I-10-156, incomplete left tmt. MLP 95-I-10-157, incomplete left tmt.

STRATIGRAPHIC POSITION. TELMs 4, 5, 6 and 7.

LOCALITIES. DPV 1/84: MLP 87-II-1-42, 43 and 44, MLP 90-I-20-314, 315 and 316. DPV 2/84: MLP 95-I-10-142, 156 and 157. DPV 6/84 (RV 8200): MLP 88-I-1-190, 256, 257, 470, 471, 472, 484 and 485, MLP 95-I-10-16. DPV 10/84: MLP 91-II-4-216 and 220, MLP 93-X-1-60, 61, 62 and 64. DPV 12/84: MLP 93-X-1-105, 143 and 144. DPV 13/84: MLP 83-V-20-47, 51 and 81, MLP 83-V-30-3, 4, 5 , 6, 7, 8, 9, 11, 13, 14, 15, 16 , 17 and 88, MLP 84-II-1-1, 2, 4, 6a, 11, 12a, 16, 24, 40, 41, 51, 54 and 58, MLP 93-X-1-74, 75, 104, 109, 110, 122, 123, 135, 146, 147, 148, 149 and 150, MLP 94-III-15-20. DPV 14/84: MLP CX 60.223, 225, 227, 232 and 248, MLP 82-IV-23-1, 2 , 3, 4, 58, 59, 60 and 61, MLP 83-V-20-5, 9, 25, 28, 30, 31 and 33, MLP 84-II-1-110, 111, 112, 113, 114, 115, 116, 117, 125, 144, 169, 179, 208 and 231, MLP 93-X-1-97. DPV 16/84: MLP 93-X-1-30, 31 and 33 , MLP 95-I-10-126, 128, 132, 133, 135, 136 and 149. IAA 1/90:MLP 90-I-20-8, MLP 94-III-15-175, 176,

177, 178, 179, 180 and 187, MLP 95-I-10-154. IAA 1/93: MLP 93-X-1-1, 2, 3, 4, 21, 22, 24, 27, 32, 34, 39, 40, 41, 45, 47, 49, 70, 75, 151, 152, 153, 154, 155 and 156. ZPAL 4: MLP 94-III-15-17. MLP 86-V-30-8, 15 and 16, MLP 88-I-1-357, 358, 463, 464 and 469 are from unknown localities.

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REFERENCES

Ameghino, F. 1897. Mammifères crétacés de l'Argentine. (Deuxième contribution à la connaissance de la faune mammalogique des couches à Pyrotherium). *Boletín del Instituto Geográfico Argentino*, 405-521. Buenos Aires.

Ameghino, F. 1905. Enumeración de los impennes fósiles de Patagonia y de la isla Seymour. *Anales del Museo Nacional de Buenos Aires,* Ser. 3, 6: 97-167. Buenos Aires.

Bond, M., Pascual, R., Reguero, M. A., Santillana, S. N. and Marenssi, S. A., 1990. Los primeros "ungulados" extinguidos sudamericanos de la Antártida. *Ameghiniana*, 26: 240. Buenos Aires.

Bond, M., Reguero, M. A. and Vizcaíno, S. F., 1993. Mamíferos continentales de la Formación La Meseta (Terciario, Antártida): biocronología. *Resumos 13º Congreso Brasileiro de Paleontologia y 1º Simpósio Paleontológico do Cone Soul*, UNISINOS: 93. Sao Leopoldo.

Bond, M., Vizcaíno, S. F. and Reguero, M. A., 1995. El registro más moderno de mamíferos fósiles de Antártida. *Resúmenes 11º Jornadas Argentinas de Paleontología Vertebrados*: 9. Tucumán

Brodkorb, P., 1963. Catalogue of fossil birds. Part I (Archaeopterygiformes through Ardeformes). *Bulletin of the Florida State Museum, Biological Sciences*, 7: 179-293. Gainesville.

Candela, A. and Goin, F. J., 1995. Revisión de las especies antárticas de marsupiales polidolopinos (Polydolopimorphia, Polydolopidae). *3º Jornadas sobre Investigaciones Antárticas*: 55-56. Buenos Aires

Carlini, A. A., Pascual, R., Reguero, M. A., Scillato Yané, G. J., Tonni, E. P. and Vizcaíno, S. F., 1990. The first Paleogene land placental mammal from Antarctica: its paleoclimatic and paleobiogeographical bearings. *Abstracts 4º International Congress of Systematic and Evolutionary Biology*: 325. Maryland

Carlini, A. A., Scillato Yané, G. J., Vizcaíno, S. F. and Dozo, M. T., 1992. Un singular Myrmecophagidae (Xenarthra, Vermilingua) de edad Colhuehuapense (Oligoceno tardío-Mioceno temprano) de Patagonia, Argentina. *Ameghiniana*, 29: 176. Buenos Aires.

Case, J., Woodburne, M. O. and Chaney, D., 1988. A new genus of polydolopid marsupial from Antarctica. In: Feldmann, R. M. and Woodburne, M. O. (Eds.), *Geology and Paleontology of Seymour Island, Antarctic Peninsula,* pp. 503-521. Memoir of the Geological Society of America, 169. Boulder.

Elliot, D. H. and Trautman, T., 1982. Lower Tertiary strata on Seymour Island, Antarctic Peninsula. In: Craddock, C. (Ed.), *Antarctic Geoscience*, pp. 287-298. University of Wisconsin Press, Madison.

Engelmann, G. F., 1987. A new Deseadan sloth (Mammalia: Xenarthra) from Salla, Bolivia, and its implications for the primitive conditions of the dentition in edentates. *Journal of Vertebrate Paleontology*, 7: 217-223. Lawrence.

Ericson, P., 1992. Evolution and systematic elements of the Paleogene family Presbyornithidae. *Abstracts 3º Symposium Society of Avian Paleontology and Evolution* (SAPE), 1: 16. Frankfurt.

Goin, F. J. and Carlini, A. A., 1995. An early Tertiary microbiotheriid marsupial from Antarctica. *Journal of Vertebrate Paleontology*, 15(1): 205-207. Lawrence.

Goin, F. J. and Reguero, M. A. 1993. Un enigmático mamífero eoceno de Antártida. *Ameghiniana*, 30(1): 108. Buenos Aires.

Goin, F. J., Reguero, M. A. and Vizcaíno, S. F., 1995a. Novedosos hallazgos de "comadrejas" (Marsupialia) del Eoceno medio de Antártida. *3º Jornadas sobre Investigaciones Antárticas*: 59-60. Buenos Aires

Goin, F. J., Vizcaíno, S. F. and Reguero, M. A., 1995b. Las "comadrejas" (Mammalia, Marsupialia) del Eoceno de Antártida. *Resúmenes 11º Jornadas Argentinas de Paleontología Vertebrados*: 11. Tucumán.

Hoffstetter, R., 1982. Les édentés xenarthres, un groupe singulier de la faune neotropicale (origines, affinités, radiation adaptative, migrations et extinctions). In: Montanaro Gallitelli, E. (Ed.) *Proceedings of the First International Meeting on "Paleontology, Essential of Historical Geology"*, pp. 385-443. S.T.E.M. Mucchi, Modena.

Hooker, J. J., 1992. An additional record of a placental mammal (Order Astrapotheria) from the Eocene of West Antarctica. *Antarctic Science*, 4: 107-108. Cambridge.

Huxley, T. H., 1859. On a fossil bird and a fossil cetacean from New Zealand. *Quarterly Journal of the Geological Society of London,* 15: 670-677. London.

Lusky, J. C., Reguero, M. A. and Vizcaíno, S. F., 1995. Geographical position applying Global Position System (GPS) in the Eocene land vertebrate-bearing localities from Seymour (Marambio) Island, Antarctic Peninsula. *3º Jornadas sobre Investigaciones Antárticas*: 53-55. Buenos Aires.

Marenssi, S. A., Reguero, M. A., Santillana, S. N. and Vizcaíno, S. F., 1994. Review Eocene land mammals from Seymour Island, Antarctica: palaeobiogeographical implications. *Antarctic Science* 6(1): 3-15. Cambridge.

Marenssi, S. A., Santillana, S. N. and Rinaldi, C. A., 1998. Stratigraphy of La Meseta Formation (Eocene), Marambio Island, Antarctica. *Asociación Paleontológica Argentina, Publicación Especial 5. Paleógeno de América del Sur y de la Península Antártica*: 137-146. Buenos Aires.

Marples, B. J., 1952. Early Tertiary penguins of New Zealand. *New Zealand Geological Survey, Paleontological Bulletin*, 20: 1-66. Wellington.

Marples, B. J., 1953. Fossil penguin from the mid-Tertiary of Seymour Island. *Falkland Islands Dependencies Survey Scientific Reports*, 5: 185-195. London.

McKenna, M. C. and Bell, S. K., 1997. *Classification of Mammals*. 631 p. Columbia University. New York.

Myrcha, A., Tatur, A. and Del Valle, R., 1990. A new species of fossil penguin from Seymour Island, West Antarctica. *Alcheringa*, 14: 195-205.

Noriega, J. I. and Tambussi, C. P., 1995. A Late Cretaceous Presbyornithidae (Aves: Anseriformes) from Vega Island, Antarctic Peninsula: Paleobiogeographic implications. *Ameghiniana*, 32(1): 57-61. Buenos Aires.

Noriega, J. I. and Tambussi, C. P., 1996. The non-penguin avifauna from the Eocene (?early Oligocene) of Seymour Island, Antarctic Peninsula. *4th International Meeting, Society of Avian Paleontology and Evolution, Abstracts*: 13-14. Washington.

Oliver, W. R. B., 1930. Description of a new genus of fossil penguin, *Pachydyptes*, and two new species, *P. ponderosa* and *P. novaehollanadae*, from the Oamaru District. Pp. 85-86. In: Oliver, W. R. B. (Ed.) *New Zealand Birds*, Fine Arts, Wellington.

Olson, S. O., 1985. The fossil record of birds. *Avian Biology*, 3(2): 79-252. New York.

Reguero, M. A., Santillana, S. N., Marenssi, S. A., Vizcaíno, S. F., Elliot, D. H., Lusky, J. C. and Moly, J. J., 1995. Nuevas localidades con vertebrados fósiles de la isla Marambio (Seymour), Antártida. *Resúmenes 11º Jornadas Argentinas de Paleontología Vertebrados*: 13, Tucumán.

Reguero, M. A., Vizcaíno, S. F., Goin, F. J., Marenssi, S. A. and Santillana, S. N., 1998. Eocene high-latitude terrestrial vertebrates from Antarctica as biogeographic evidence. *Asociación Paleontológica Argentina, Publicación Especial 5, Paleógeno de América del Sur y de la Península Antártica*: 185-198. Buenos Aires.

Sadler, P., 1988. Geometry and stratification of uppermost Cretaceous and Paleogene units on Seymour Island, northern Antarctic Peninsula. In: Feldmann, R. M. and Woodburne, M. O. (Eds.), *Geology and Paleontology of Seymour Island, Antarctic Peninsula,* pp. 303-320. Memoir of the Geological Society of America, 169. Boulder.

Simpson, G. G., 1946. Fossil penguins. *Bulletin of the American Museum of Natural History*, 87: 1-99. New York.

Simpson, G. G., 1971. Review of fossil penguins from Seymour Island. *Proceedings of the Royal Society of London,* B178: 357-387. London.

Simpson, G. G., 1975. Notes on variation in penguins and on fossil penguins from the Pliocene of Langebaanweg, Cape Province, South Africa. *Annals of the South African Museum*, 69: 59-72. Cape Town.

Simpson, G. G., 1976. *Penguins Past, Present, Here and There*. Yale University Press, New Haven.

Szalay, F. S., 1982. A new appraisal of marsupial phylogeny and classification. In: Archer, M. (Ed.) *Carnivorous Marsupials*, pp. 621-640. Royal Zoological Society of New South Wales. Sydney.

Tambussi, C. P. and Tonni, E. P., 1988. Un Diomedeidae (Aves: Procellariformes) del Eoceno tardío de Antártida. *Resúmenes 5º Jornadas Argentinas de Paleontología de Vertebrados*: 34-35. La Plata.

Tambussi, C. P., Noriega, J. I., Gazdzicki, A., Tatur, A., Reguero, M. A. and Vizcaíno, S. F., 1994a. The fossil record of land mammals from Antarctica. *21º Polar Symposium*: 49-54. Warszawa.

Tambussi, C. P., Noriega, J. I., Gazdzicki, A., Tatur, A., Reguero, M. A. and Vizcaíno, S. F., 1994b. Ratite bird from the Paleogene La Meseta Formation, Seymour Island, Antarctica. *Polish Polar Research*, 15(1-2): 15-20. Warszawa.

Tambussi, C. P., Noriega, J. I., Santillana, S. N. and Marenssi, S. A., 1995. Falconid bird from the middle Eocene La Meseta Formation, Seymour Island, West Antarctica. *Journal of Vertebrate Paleontology, Abstracts,* 15(3): 55A. Lawrence.

Tonni, E. P., 1980. Un Pseudodontornithidae (Pelecaniformes, Odontopterygia) de gran tamaño del Terciario temprano de Antártida. *Ameghiniana*, 18(3): 273-276. Buenos Aires.

Tonni, E. P. and Cione, A. L., 1978. Una nueva colección de vertebrados del Terciario inferior de la isla Vicecomodoro Marambio (Seymour Island), Antártida. *Obra del Centenario del Museo de La Plata*, 5: 73-79. La Plata.

Tonni, E. P. and Tambussi, C. P., 1985. Nuevos restos de Odontopterygia (Aves: Pelecaniformes) del Terciario temprano de Antártida. *Ameghiniana*, 21(2-4): 121-124. Buenos Aires.

Vizcaíno, S. F. and Scillato Yané, G. J., 1995a. Short note. An Eocene Tardigrade (Mammalia, Xenarthra) from Seymour Island, West Antarctica. *Antarctic Science,* 7(4): 407-408. Cambridge.

Vizcaíno, S. F. and Scillato Yané, G. J., 1995b. Un Tardigrada (Mammalia, Xenarthra) del Eoceno medio de la Isla Marambio (Seymour), Antártida. *3º Jornadas sobre Investigaciones Antárticas*: 63-64. Buenos Aires.

Vizcaíno, S. F., Carlini, A. A. and Reguero, M. A., 1988. Primer registro de un marsupial Didelphimorphia en Antártida. Su implicancia biogeográfica. *Resúmenes 5º Jornadas Argentinas de Paleontología Vertebrados*: 30-31. La Plata.

Vizcaíno, S. F., Reguero, M. A., Goin, F. J., Tambussi, C. P. and Noriega, J. I., 1995. Eocene terrestrial vertebrate assemblage from Antarctica: an essay on community structure and paleozoogeography. *Journal of Vertebrate Paleontology, Abstracts*, 15(3): 58A. Lawrence.

Vizcaíno, S. F., Bond, M., Reguero, M. A. and Pascual, R., 1997a. The youngest record of fossil land mammals from Antarctica; its significance on the evolution of the terrestrial environment of the Antarctic Peninsula during the Late Eocene. *Journal of Paleontology*, 71(2): 348-350. Lawrence.

Vizcaíno, S. F., Reguero, M. A., Marenssi, S. A. and Santillana, S. N., 1997b. New land mammal-bearing localities from the Eocene La Meseta Formation, Seymour Island, Antarctica. In: Feldmann, R. (Ed.), The Antarctic Region: Geological Evolution and Processes, pp. 997-1000. *Proceedings 7º International Symposium on Antarctic Earth Sciences.* Siena.

Vizcaíno, S. F., Reguero, M. A., Goin, F. J., Tambussi, C. P. and Noriega, J.I., 1998a. Community structure of eocene terrestrial vertebrates from Antarctic Peninsula. *Asociación Paleontológica Argentina, Publicación Especial 5, Paleógeno de América del Sur y de la Península Antártica*: 177-183. Buenos Aires.

Vizcaíno, S. F., Pascual, R., Reguero, M. A. and Goin, F. J., 1998b. Antarctica as background for mammalian evolution. *Asociación Paleontológica Argentina, Publicación Especial 5, Paleógeno de América del Sur y de la Península Antártica:* 199-209. Buenos Aires.

Wiman, C., 1905. Die Alttertiären Vertebraten der Seymour-Insel. *Wissenschaftliche Ergebnisse der Schwedischen Südpolar-Expedition* 1901-1903, 3: 1-37.

Woodburne, M. O. and Zinsmeister, W. J., 1982. Fossil land mammal from Antarctica. *Science*, 218: 284-286. Washington.

Woodburne, M. O. and Zinsmeister, W. J., 1984. The first land mammal from Antarctica and its biogeographic implications. *Journal of Paleontology*, 58: 913-948. Lawrence.

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