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Selenogonus narinoensis Stirton, 1947 (Tayassuidae, Cetartiodactyla, Mammalia): taxonomic status and paleobiogeographic implications

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Abstract. The species *Selenogonus narinoensis* was described by Stirton (1947) based on a single specimen which comes from sediments cropping out in the Cocha Verde locality, Nariño Department (Colombia), tentatively referred to the late Pliocene–Pleistocene (MGN 931; IGM p002118, Museo Geológico Nacional, Servicio Geológico Colombiano, Bogotá). However, morphological studies and comparative morphometric observations of the specimen suggest that (1) no diagnostic character supports the validity of the species *Selenogonus narinoensis* (here considered species inquirenda); (2) a combination of features (e.g., the mandibular condyle located behind the posterior edge of the vertical mandibular ramus, the angular process which projects laterally outwards, a bunolophodont crown morphology, a mesodont crown height, and a simple crown morphology of the third lobe of m3) indicates it belongs to the genus *Platygonus*; (3) this specimen corresponds to one of the largest South American peccaries; (4) taking into account certain anatomical characters as well as its morphometric range, this specimen is assigned to *Platygonus* cf. *marplatensis*. Even though the stratigraphic provenance of the specimen is still doubtful, it can be proposed that (1) it could be one of the most ancient records of tayassuids in South America, as would be expected given its geographical position, and (2) considering the new taxonomic proposal, this specimen represents the first record of *Platygonus* cf. *marplatensis* in Colombia and represents one of the northernmost South American records of the genus. This new interpretation would be of great relevance in the Great American Biotic Interchange due to its strategic geographical proximity to the Isthmus of Panama.

1 Introduction

The Tayassuidae (Mammalia, Cetartiodactyla) may have differentiated from their ancestor during the Eocene in Eurasia (Romer, 1966; Wright, 1998; Hulbert, 2001). Younger records suggest that the Tayassuidae expanded their range to North America from the late Eocene, where they reached their greatest diversity (Wright, 1998; Hulbert, 2001; Gasparini, 2007; Prothero, 2009; Prothero and Grenader, 2012; Prothero, 2015). From there they extended their distribution to South America during the Great American Biotic Interchange (GABI). They represent one of the first North American mammalian immigrants, after procyonids (Carnivora) and cricetid rodents (Woodburne, 2010; Cione et al., 2015; O'Dea et al., 2016).

The oldest unequivocal records of fossil tayassuids in South America date back to the late Pliocene (ca. 4–3.3 Ma; see Prevosti et al., 2006; Gasparini, 2013) and were found in sediments cropping out in southeastern Buenos Aires Province, Argentina. In contrast, Frailey and Campbell (2012), followed by Prothero and Pollen (2013), support the hypothesis of an early arrival of the Tayassuidae in South America, earlier than late Miocene and well before most of the Great American Biotic Interchange (GABI) that had occurred by the late Pliocene (Cione et al., 2015; O'Dea et al., 2016). This is based on the supposed record of peccaries, among other mammals of Nearctic origin (e.g., gomphotheres, tapirs, dromomerycine ruminants), coming from the Madre de Dios Formation (late Miocene) outcrops in southeastern Peru (Frailey and Campbell, 2012; Prothero and Pollen, 2013; Prothero et al., 2014) and on the divergence times suggested by molecular analyses (Theimer and Keim, 1998; Gongora and Moran, 2005; Perry et al., 2017). However, the chronological information about the sediments containing these remains and their taxonomic assignment is not accurate (Perini et al., 2016; Parisi Dutra et al., 2017a; Gasparini et al., 2021). According to these authors, the supposedly extinct Miocene species are indistinguishable from modern tayassuids (*Tayassu pecari* and *Dicotyles tajacu*), and the stratigraphic provenance of the specimens is highly dubious, and the fossils are likely Quaternary in age.

Tayassuids have been found in late-Cenozoic deposits mainly in Argentina and Brazil but also in Uruguay, Bolivia, Colombia, Peru, and Venezuela (Rincón et al., 2009; Gasparini, 2013; Montellano-Ballesteros et al., 2014; Parisi Dutra et al., 2017b), with 6 genera and 12 species (Gasparini, 2013; Parisi Dutra et al., 2017c). *Platygonus* Le Conte, 1848a (late Pliocene–Early to Middle Pleistocene; Argentina, Uruguay, Bolivia, and Colombia), is represented by 5 species: *Platygonus kraglievichi* Rusconi, 1930 (late Pliocene–earliest Pleistocene; Argentina); *Platygonus scagliai* Reig, 1952 (late Pliocene–earliest Pleistocene; Argentina); *Platygonus marplatensis* Reig, 1952 (late Pliocene–earliest Pleistocene; Argentina); *Platygonus chapadmalensis* (Ameghino, 1908) (late Pliocene? latest Pliocene–earliest Pleistocene; Argentina); and *Platygonus cinctus* (Ameghino, 1886) (Early to Middle Pleistocene; Argentina). *Catagonus* Ameghino, 1904 (late Pliocene? Early Pleistocene–Late Pleistocene/Early Holocene; Argentina and Uruguay), is represented by two species: *Catagonus metropolitanus* Ameghino, 1904 (Early to Middle Pleistocene; Argentina), and *Catagonus bonaerensis* (Ameghino, 1904) (Middle Pleistocene? Late Pleistocene/Early Holocene; Argentina and Uruguay). *Brasiliochoerus* Rusconi, 1930 (Middle Pleistocene–Late Pleistocene/Early Holocene; Argentina, Brazil, Bolivia, and Uruguay) is monospecific, *Brasiliochoerus stenocephalus* (Lund in Reinhardt, 1880). *Parachoerus* Rusconi, 1930 (Middle Pleistocene? Late Pleistocene–recent; with paleontological records in Argentina and Uruguay), is represented by two species: *Parachoerus carlesi* (Rusconi, 1930) (Middle Pleistocene? Late Pleistocene; Argentina), and *Parachoerus wagneri* (Rusconi, 1930) (Late Pleistocene/Early Holocene–recent; fossil records in Argentina and Uruguay and currently endemic to the Dry Chaco in Argentina, Bolivia, and Paraguay). *Tayassu* Fischer, 1814 (Middle Pleistocene–recent; fossil records in Argentina, Brazil, Uruguay, and Venezuela and currently inhabits southeastern Mexico to northern Argentina), has one extant species, *Tayassu pecari* (Link, 1795). Finally, *Dicotyles* Cuvier, 1816 (Middle Pleistocene–recent; fossil records in Argentina, Brazil, Peru, and Venezuela and currently from southwestern USA to north-central Argentina), has one extant species *Dicotyles tajacu* (Linnaeus, 1758).

In Colombia, very few remains of tayassuids have been registered (Stirton, 1947; Villarroel et al., 1989; Gasparini, 2013; Moreno Mancilla et al., 2019). One of them is the holotype and single specimen of *Selenogonus narinoensis* Stirton, 1947, which comes from sediments cropping out at the Cocha Verde locality, Nariño Department, tentatively referred to the late Pliocene–Pleistocene. However, the chronological information of the fossil-bearing sediments is not accurate. In turn, Menégaz and Ortiz Jaureguizar (1995), considering the hypotheses of Kraglievich (1959, pp. 233–234) and Reig (1981, p. 41), suggested a lower- to middle-Pliocene age for those fossil-bearing sediments. Fossil remains described as *Platygonus* sp. were found in sediments cropping out in the Villa de Leyva locality (Boyacá Department), but chronologic and stratigraphical information is still unknown (Gasparini et al., 2019). Other Tayassuidae remains were registered in Late Pleistocene sediments cropping out in the paleontological site named Los Hoyos located at the Tatacoa Desert (Huila Department) (*Tayassu* aff. *tajacu* sensu Villarroel et al., 1989).

The goals of this contribution are (1) to report the results of study of the fossil specimen from Nariño (Colombia); (2) to comment on the systematic validity of *Selenogonus narinoensis* Stirton, 1947; and (3) to discuss the paleobiogeographic and paleoecological significance of this peccary.

2 Material and methods

2.1 Repositories and institutional abbreviations

AMNH: American Museum of Natural History, New York, USA; ANSP: Academy of Natural Sciences of Drexel University, Philadelphia, USA; MACN: Museo Argentino de Ciencias Naturales "Bernardino Rivadavia", Ciudad Autónoma de Buenos Aires, Argentina; MLP: Museo de La Plata, Argentina; MGN: Museo Geológico Nacional, Bogotá, Colombia; MMP: Museo Municipal de Mar del Plata, Buenos Aires, Argentina; UF: Florida Museum of Natural History, University of Florida, Gainesville, FL, USA.

The studied specimen (MGN 931; IGM p002118) is housed at the Museo Geológico Nacional (MGN), Servicio Geológico Colombiano (Bogotá, Colombia). Taxonomic classification follows the proposal of Parisi Dutra et al. (2017c). For nomenclatural assignments of collared and white-lipped peccaries, we followed Acosta et al. (2020).

The material was compared with North American and South American extinct and extant tayassuids. The following materials were included in the morphometric comparisons: *Platygonus* sp. – UF 10422, UF 8922, UF 12942, UF 62700, UF 66679, UF 63904, UF 67178, MACN 10959, MACN 5337, MMP 1139, MMP 1212; *P. vetus* – UF 220478, UF 221010, UF 221174, UF 220479, UF 221766, UF 221767; *P.* cf. *P. vetus* – UF 67177; *P. cumberlandensis* – UF w/"no." material, in exposition collection, AMNH 27871, AMNH 27872; *P. compressus* – AMNHFLA 6–90, AMNH Type 45724; *P. kraglievichi* – MACN Type 5341; *P. scagliai* – MMP-S 156, MMP-S 553, MMP-M 878; *P. marplatensis* – MMP-S Type 25, MACN 19726; *P. chapadmalensis* – MMP-M 246. Measurements were taken using Vernier calipers, with 0.01 mm accuracy; data are expressed in millimeters.

2.2 Measurements abbreviations

Hrmv: height of the vertical branch of the mandible, taken from the ventral part of the angular process to the depression between the coronoid process and the condyle; Hrmhm3: depth of horizontal ramus below m3; Lm3: maximum length of molar 3 in a parallel line to the sagittal plane; Am3: maximum width of molar 3 in a perpendicular line to the sagittal plane.

3 Systematic paleontology

Class **Mammalia** Linnaeus, 1758

Order **Cetartiodactyla** Montgelard, Catzeflis, and Douzery, 1997

Suborder **Suiformes** Jaeckel, 1911

Infraorder **Suoidea** Gray, 1821

Family **Tayassuidae** Palmer, 1897

Subfamily **Tayassuinae** Palmer, 1897

Tribe **Platygonini** Parisi Dutra et al., 2017c

Genus *Platygonus* Le Conte, 1848a

1848a *Platigonus*, Le Conte, p. 103 (lapsus calami).
1848b *Platygonus*, Le Conte, p. 258.
1848a *Hyops*, Le Conte, p. 104.
1848b *Protochoerus*, Le Conte, pp. 105–106 (nomen dubium).
1852a *Dicotyles*, Le Conte (in part), p. 3.
1852b *Dicotyles*, Le Conte (in part), p. 5.
1853 *Euchoerus*, Leidy, p. 340.
1857 *Dicotyles*, Leidy (in part), p. 100.
1886 *Antaodon*, Ameghino, p. 149.
1887 *Coyametla*, Duges, p. 16.
1904 *Listriodon*, Ameghino, p. 76.
1930 *Mylohyus*, Rusconi, pp. 191–195 (nec Cope, 1889: p. 134).
1947 *Selenogonus*, Stirton, p. 322.
1959 *Argyrohyus*, Kraglievich, p. 230.

Type species

Platygonus compressus Le Conte, 1848a (ANSP 11512, ANSP 11515, ANSP 11522, ANSP 11524, ANSP 11533, ANSP 11534, ANSP 11539), Pleistocene sediments from a fissure fill near Galena, Jo Daviess County, Illinois, USA.

Occurrence

Late Miocene–Late Pleistocene (North America); late Pliocene–Early to Middle Pleistocene (South America). In South America there are paleontological records in Argentina (Buenos Aires and Jujuy provinces), Bolivia (Tarija valley), Uruguay (Canelones Department), and Colombia (Boyacá and Nariño departments) (Gasparini et al., 2010; Gasparini and Ubilla, 2011; Gasparini, 2013; Gasparini et al., 2019; Moreno Mancilla et al., 2019).

Remarks

The original spelling was actually "*Platigonus*", but there is sufficient indication that this was a misprint. The name is differently misprinted (*Platydonus*) in another paper by Le Conte, published almost simultaneously. "*Platygonus* is now universally used and may be retained" (Simpson, 1945, p. 146) (see McKenna and Bell, 1997). See also the International Code of Zoological Nomenclature (1999), articles 32 and 33.

Platygonus marplatensis Reig, 1952

1927 *Homo chapadmalensis*, Castellanos, pp. 1–15.
1941 *Homo neogaeus* (not Lehmann Nitsche, 1907), Vignati, pp. 274–358 (misidentification)
1952 *Platygonus marplatensis*, Reig, pp. 121–122.
1959 *Argyrohyus chapadmalensis*, Kraglievich, p. 230.
1977 *Platygonus marplatensis*, Wetzel, pp. 1–36.
1995 *Platygonus marplatensis*, Menégaz and Ortiz Jaureguizar, pp. 314–315.
2002 *Platygonus marplatensis*, Quintana, pp. 263–275.
2007 *Platygonus marplatensis*, Gasparini, pp. 178–183.
2013 *Platygonus marplatensis*, Gasparini, p. 58.
2017b *Platygonus marplatensis*, Parisi Dutra et al., p. 355.

Holotype

MMP-S Type 25. Partial mandible. Layer 3, Chapadmalal Formation, Barranca de los Lobos, General Pueyrredón county, Buenos Aires Province, Argentina; late Pliocene (Fig. 1c).

Occurrence

Late Pliocene–earliest Pleistocene (Chapadmalalan Stage/Age, Marplatan Stage/Age (Sanandresian Substage/Subage sensu Cione et al., 2015); coastal cliff in Chapadmalal region and Miramar (General Pueyrredón and General Alvarado counties), in southeastern Buenos Aires Province, Argentina (Kraglievich, 1952; Reig, 1952; Quintana, 2002; Gasparini, 2004; Gasparini and Ubilla, 2011; Gasparini, 2013) (Fig. 2).

Remarks

Castellanos (1927) referred some teeth exhumed from the southeastern coast of Buenos Aires Province to *Homo chapadmalensis*. Vignati (1941) included these remains in the species *Homo neogaeus* Lehmann Nitsche, 1907, a species based on a fossil found in the Monte Hermoso cliff. Reig (1952) established the species *Platygonus marplatensis* based on a partial mandible found in the Chapadmalal Formation, Barranca de los Lobos, General Pueyrredón county, Buenos Aires Province. Kraglievich (1959) created the genus *Argyrohyus* with the species *Argyrohyus chapadmalensis* and included in the synonym *Homo chapadmalensis* Castellanos, 1927; *Homo neogaeus* sensu Vignati, 1941; and *Platygonus marplatensis* Reig, 1952. Menégaz and Ortiz Jaureguizar (1995) suggested that *A. chapadmalensis* could be a synonym of *Platygonus marplatensis*.

Concerning the specific reassignment, it is worth mentioning that Rusconi (1930) included the species *Listriodon chapadmalensis* Ameghino, 1908, in the genus *Platygonus*. This generates a case of secondary homonymy (they are homonyms as a consequence of a new combination and not as a consequence of origin), and it must be solved by priority. Thus, the species of Ameghino, 1908, may continue to be called *Platygonus chapadmalensis*, while for that of Castellanos, 1927, a replacement must be considered. Therefore, the oldest name is *Platygonus marplatensis* Reig, 1952 (see Wetzel, 1977; Gasparini, 2007, 2013; Parisi Dutra et al., 2017c).

Platygonus cf. *marplatensis* Reig, 1952

Material examined

Portion of vertical ramus of a left hemimandible with m3 partially preserved (*Selenogonus narinoensis* Stirton, 1947, holotype MGN 931 (IGM p002118)) (Fig. 1a, b).

Occurrence

Dark-green fine-grained sandstone exposed in Cocha Verde, Túquerres highway, Tangua Municipality, Nariño Department, Colombia. Late Pliocene or Pleistocene (sic Stirton, 1947, p. 322) (Fig. 2).

Description

This mandible corresponds to a large specimen. It has a shallow but sharply outlined masseteric fossa and a deep internal temporal fossa. The angular process projects forward to the middle part of m3, and its lower edge is slightly projecting laterally outwards. The lower border of the horizontal ramus is sharply hooked (accentuated) distally. The mandibular condyle is located behind the posterior edge of the vertical mandibular ramus. The coronoid process ascends behind m3.

The lower molar 3 only preserves the distal pair of main cusps (hypoconid and entoconid) and the third lobe, which has a well-developed single cusp, and a pair of smaller accessory cusps both located labially and lingually. Despite its incompleteness, a mesodont and bunolophodont dental morphology is observed.

Measurements

See Table 1.

4 Discussion

4.1 Taxonomic comments and comparisons

Stirton (1947) erected the genus and species *Selenogonus narinoensis* for this specimen based on some features that basically coincide with those of the *Platygonus* genus. Mainly these features are

> Large, evidently about equal in size to *Platygonus uquiensis* Rusconi; masseteric fossa shallow but sharply outlined; internal temporal fossa deep; [. . .] ascending ramus relatively and actually higher than in other peccaries; angle below lower border of horizontal ramus, sharply hooked anteriorly; [. . .] m3 hypso-brachyodont; evidently more lophiodont than in *Platygonus*. (Stirton, 1947, p. 322)

However, these features do not differ from those described for *Platygonus*, given the diversity observed within the genus (Gasparini, 2007; Gasparini and Ubilla, 2011; De los Reyes et al., 2014). In addition, the following morphological features support the inclusion of this specimen within the genus *Platygonus*: mandibular condyle located behind the posterior edge of the vertical mandibular ramus, angular process projected laterally outwards, bunolophodont crown morphology,

Table 1. Measurements (mm) with MGN 931 (IGM p002118) and comparative materials.

Species	Collection number	Geographical and stratigraphic provenance	Hrmv	Hrmhm3	Lm3	Am3
P. cf. *marplatensis*	MGN 931 (IGM p002118)	Colombia, Nariño; late Pliocene or Pleistocene	122.00	55.00	23.00*	14.8/12.8
Platygonus sp.	UF 10422	USA, Florida, Santa Fe Isl., Santa River, Gilchrist – Columbia; Blancan		50.46	24.59	15.44
Platygonus sp.	UF 8922	USA, Florida, Santa Fe River 1–6		52.68	26.87	15.22
Platygonus sp.	UF 12942	USA, Florida, Payne Creek Mine, Polk			24.93	14.69
Platygonus sp.	UF 62700	USA, Florida, Haile 21A, Newberry Quad., Alachua; middle Irvingtonian	95.34	59.77	26.17	15.19
Platygonus sp.	UF 66679	USA, Florida, Haile 21A, Newberry Quad., Alachua; Irvingtonian			25.52	15.27
Platygonus sp.	UF 63904	Florida, USA; Leisey Shell Pit, Ruskin Quad., Hillsborough; Irvingtonian		53.63	19.28	12.12
Platygonus sp.	UF 67178	USA, Florida, Leisey Shell Pit, Ruskin Quad., Hillsborough; Irvingtonian		42.47	21.09	13.33
Platygonus vetus	UF 220478	USA, Florida, Haile 21A, Polk; middle Irvingtonian	90.17	53.15		
Platygonus vetus	UF 221010	USA, Florida, Haile 21A, Alachua; early Irvingtonian		54.68	23.08	15.07
Platygonus vetus	UF 221174	USA, Florida, Haile 21A, Alachua; early Irvingtonian			22.33	14.53
Platygonus vetus	UF 220479	USA, Florida, Haile 21A, Alachua; middle Irvingtonian			25.70	14.21
Platygonus vetus	UF 221766	USA, Florida, Haile 21A, Alachua; early Irvingtonian			23.86	13.24
Platygonus vetus	UF 221767	USA, Florida, Haile 21A, Alachua; early Irvingtonian		56.41	25.78	15.11
Platygonus cf. *P. vetus*	UF 67177	USA, Florida, Leisey Shell Pit 1 A, Ruskin Quad., Hillsborough; Irvingtonian		50.92	22.70	14.54
Platygonus cumberlandensis	UF unknown number	Unknown provenance	84.15	54.21	24.52	
Platygonus cumberlandensis	AMNH 27871	USA, Maryland, northwest of Cumberland; early Rancholabrean	141.74		25.21	14.98
Platygonus cumberlandensis	AMNH 27872	USA, Maryland, Cumberland Bone Cave; early Rancholabrean		61.41		
Platygonus compressus	AMNHFLA 6–90	USA, Florida, Devil's Den, Levy; Rancholabrean	103.25	58.85	22.88	13.57
Platygonus compressus	AMNH 45724 Type	USA, Missouri, Cherokee Cave, St. Louis; Pleistocene	92.70	52.60	22.25	12.28
P. kraglievichi	MACN 5341 Type	Argentina, Jujuy, Uquía; late Pliocene–earliest Pleistocene	71.90	49.00	26.20	14.40
P. scagliai	MMP-S 156 Type	Argentina, Buenos Aires, Gen. Pueyrredón; late Pliocene	86.00	46.80	22.50	12.95
P. scagliai	MMP-S 553	Argentina, Buenos Aires, Gen. Pueyrredón; late Pliocene			22.35	13.15
P. scagliai	MMP-M 878	Argentina, Buenos Aires, Gen. Pueyrredón; late Pliocene	99.60	56.60	26.15	15.95
P. marplatensis	MMP-S 25 Type	Argentina, Buenos Aires, Gen. Pueyrredón; late Pliocene	116.55	75.10	27.55	16.20
P. marplatensis	MACN 19726	Argentina, Buenos Aires, Gen. Pueyrredón; late Pliocene–earliest Pleistocene	58.65			
P. chapadmalensis	MMP-S 246	Argentina, Buenos Aires, Gen. Pueyrredón; late Pliocene–earliest Pleistocene	94.40	55.00	20.50	13.45
Platygonus sp.	MACN 10959	Argentina, Buenos Aires, Gen. Alvarado, Miramar; Early to Middle Pleistocene			25.00	13.00
Platygonus sp.	MACN 5337	Argentina, Jujuy, Uquía; late Pliocene		57.00	21.35	13.00
Platygonus sp.	MMP 1139	Argentina, Buenos Aires, Gen. Pueyrredón; late Pliocene	97.00	60.20	22.75	14.60
Platygonus sp.	MMP 1212	Argentina, Buenos Aires, Gen. Alvarado; late Pliocene	108.15	52.65	26.00	15.20

* The length of m3 is partial because it only preserves the distal pair of main cusps (hypoconid and entoconid) and the third lobe.

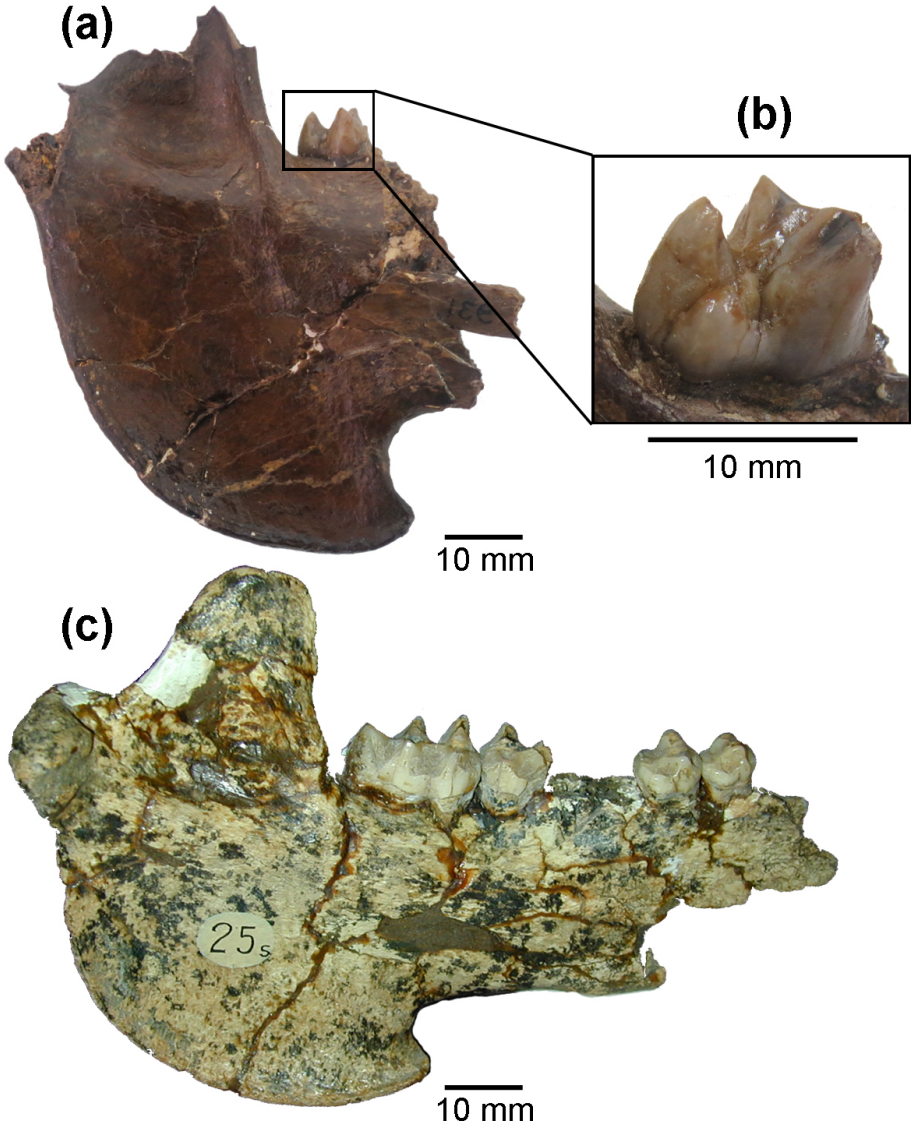

Figure 1. *Platygonus* cf. *marplatensis* MGN 931 (IGM p002118). **(a)** Lateral view of the portion of vertical ramus of the left hemimandible; **(b)** m3 partially preserved. *Platygonus marplatensis* MMP-S Type 25. **(c)** Lateral view.

mesodont crown height, and simple crown morphology of the third lobe of m3.

The development of mesodont and bunolophodont cheek teeth in *Platygonus* differs from the brachyodont and bunodont morphology observed in *Tayassu pecari, Dicotyles tajacu, Parachoerus carlesi*, and *Brasiliochoerus stenocephalus*; from the mesodont and bunodont cheek teeth typical of *Catagonus metropolitanus* and *Catagonus bonaerensis*; and from the mesodont crown height and bunodont with high crowns (referred to as "zygodont" by some authors (Gasparini, 2007; Prothero and Grenader, 2012; Gasparini et al., 2013)) observed in *Parachoerus wagneri*.

The sharp outline of the masseteric fossa is remarkable in the specimen studied. A similar condition was observed in *Platygonus marplatensis, Platygonus chapadmalensis, Platygonus* sp. (MMP 1212), *Brasiliochoerus stenocephalus* among South American species, and *Platygonus compressus* among North American species.

The lower margin of the horizontal ramus in the specimen studied is also singular. A sharply hooked (accentuated) distal condition was observed only in the holotype of *Platygonus marplatensis* (MMP-S Type 25; see Fig. 1c). However, this character is not present in the other specimens assigned to this species (MACN 5420 type synonym, MMP-S 200, MMP-S 188, MMP-S 199, MMP-S 674, MACN 19725, MACN 19726) due to their partial preservation.

The incomplete state of preservation of the material prevents us from obtaining absolute measurements. However, taking into account its relative size, this specimen is within the proportions observed in species of the genus *Platy-*

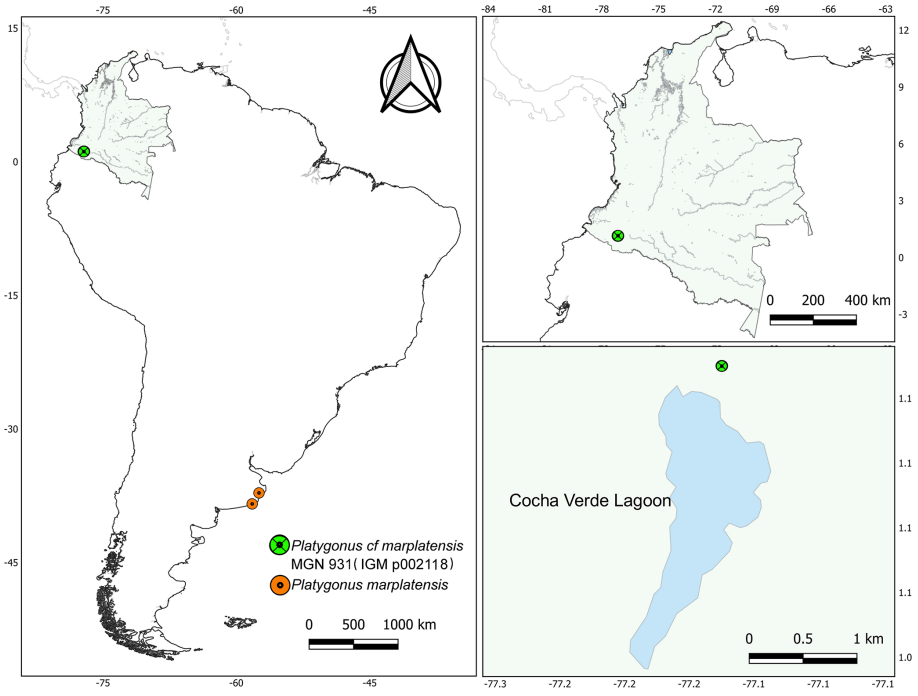

Figure 2. Geographical location of the MGN 931 (IGM p002118) and fossil records of *Platygonus marplatensis* in South America.

gonus (see Table 1). It is worth mentioning that the vertical mandibular ramus of this specimen is one of the largest among South American species, only comparable to *P. marplatensis*, *P. chapadmalensis*, and *P. scagliai* and to the largest specimens of North American *Platygonus* (e.g., *Platygonus cumberlandensis* Gidley, 1920).

The specimen under study has no diagnostic characters that support the species *Selenogonus narinoensis* as valid and identifiable (species inquirenda). The combination of features suggests it pertains to the genus *Platygonus*. As a consequence, based on the reflected taxonomic problems and taking into account certain anatomical characters (e.g., the position of the mandibular condyle, the outline and laterally outward projection of the angular process, the crown height and morphology of the tooth, and the distal condition of the lower margin of the horizontal ramus) as well as its morphometric range, this specimen is considered *Platygonus* cf. *marplatensis*.

4.2 Paleobiogeographical aspects

The Tayassuidae represent one of the first North American immigrant mammals as well as the first ungulates that entered South America during the GABI (Gasparini, 2013; Cione et al., 2015; O'Dea et al., 2016).

According to phylogenetic analyses as well as chronological and geographical evidence, *Platygonus* represents a Tayassuidae lineage that originated in North America and corresponds to the first group of peccaries that entered South America during the late Pliocene (Prevosti et al., 2006; Gasparini and Ubilla, 2011; Gasparini, 2013; De los Reyes et al., 2014; Parisi Dutra et al., 2017c). The greatest specific diversity of *Platygonus* is recorded during the late Pliocene–earliest Pleistocene in South America, mainly in Argentina (represented by *P. marplatensis, P. chapadmalensis, P. scagliai*, *P. kraglievichi*, and *Platygonus* sp.) and Uruguay (*Platygonus* sp.) (Gasparini and Ubilla, 2011; Gasparini, 2013, and bibliographies cited therein). If the stratigraphic provenance of the fossil specimen found in Nariño (Colombia) is confirmed, it could be one of the most ancient records of tayassuids on this continent, as would be expected given its geographical position. In addition, considering the new taxonomic proposal, this specimen represents the first record of *Platygonus* cf. *marplatensis* in Colombia. At the same time, it is remarkable that this Colombian record, together with the one registered in Villa de Leyva, represents the northernmost South American records of the genus *Platygonus*. This could have had great relevance in the Great American Biotic Interchange due to its strategic geographical proximity to the Isthmus of Panama.

In the Early to Middle Pleistocene, the taxonomic diversity and abundance of records of *Platygonus* are notably reduced (*P. cinctus*) and the genus *Catagonus* (*C. metropolitanus*) appears reliably for the first time in the paleontological record and only in Argentina (Gasparini, 2013).

The greatest specific diversity and abundance of tayassuids is documented during the Middle Pleistocene to Late Pleistocene–Early Holocene in South America (e.g., Argentina, Brazil, Uruguay, Bolivia, Peru, Colombia, and

Venezuela) represented by *Catagonus, Parachoerus, Brasiliochoerus, Tayassu*, and *Dicotyles* (Gasparini, 2013; Parisi Dutra et al., 2017b). In the Middle Pleistocene the genera *Brasiliochoerus*, *Tayassu*, and *Dicotyles* and probably the species *Parachoerus carlesi* and *C. bonaerensis* appear for the first time in the South American fossil record (Gasparini, 2013). In the Late Pleistocene–Early Holocene, *P. wagneri* is registered for the first time (e.g., Uruguay) and *P. carlesi* and *C. bonaerensis* are reliably recorded (e.g., Argentina and Uruguay) on this continent. At the Pleistocene–Holocene boundary (about 10 000 years ago) all megamammals and most of the large mammals became extinct in South America in a remarkable extinction event. The tayassuids were affected by this extinction, and only 25 % of their taxonomic diversity has survived. Currently, peccaries are represented by only three species (*Tayassu pecari*, *Dicotyles tajacu*, and *Parachoerus wagneri*) (Gasparini, 2013; Parisi Dutra et al., 2017c; Acosta et al., 2020).

4.3 Ecological and anatomical considerations

The peccaries of the genus *Platygonus* have certain morphological features that allow some inferences about their habits: a great development of nasal sinuses and chambers, orbits located in a superior–posterior position and behind upper molar 3 due to elongation of the rostrum, a possession of a distinct basicranial flexure, a laterally outward projection of the angular process of the jaw (providing a greater surface for insertion of the lateral deep masseter muscle), a reduction of the lateral digits in the limbs, a mesodont crown height, and a bunolophodont crown morphology, among others. Therefore, this set of anatomical characters indicates that these large-sized peccaries have diurnal habits, a herbivorous diet, and probably a foraging habit and lived in dry and relatively open environments (Guilday et al., 1971; Wetzel, 1977; Menégaz and Ortiz Jaureguizar, 1995; Gasparini, 2007; Gasparini and Ubilla, 2011). Paleoecological studies (e.g., dental microwear and isotopic analysis) on North American *Platygonus* have shown a C_3-browser to mixed-feeder diet and probably a C_4-grass diet, under special conditions (Feranec and MacFadden, 2000; Feranec, 2007; Schmidt, 2008).

The faunal changes that have occurred since the late Pliocene could have been strongly influenced by climate (Cione et al., 2015, and references cited therein). The open and arid environments of great latitudinal extent developed during glacial cycles allowed the dispersion of *Platygonus, Catagonus, Brasiliochoerus*, and *Parachoerus*.

Based on paleontological records, as well as certain anatomical features (e.g., crown teeth morphology, limb development) linked to diet and life habits, together with body mass, it can be inferred that the species of *Catagonus, Brasiliochoerus*, and *Parachoerus* have replaced those of *Platygonus* since the Middle Pleistocene, probably as a consequence of the reduction of the open environments for which *Platygonus* species would be more specialized. This predominantly arid or semi-arid and cold period alternating with brief more humid and warmer pulses would have allowed the late expansion of the species of *Tayassu* and *Dicotyles*.

5 Conclusions

5.1 Taxonomic final remarks

Morphological studies and comparative morphometric observations of the Colombian specimen suggest that (1) no diagnostic character supports the validity of the species *Selenogonus narinoensis* (here considered species inquirenda); (2) a combination of features (e.g., the mandibular condyle located behind the posterior edge of the vertical mandibular ramus, the angular process that projects laterally outwards, a bunolophodont crown morphology, a mesodont crown height, and a simple crown morphology of the third lobe of m3) indicates it belongs to the genus *Platygonus*; (3) this specimen corresponds to one of the largest South American peccaries; and (4) taking into account certain anatomical characters as well as its morphometric range, this specimen is assigned to *Platygonus* cf. *marplatensis*.

5.2 Paleobiogeographical remarks

Even though the stratigraphic provenance of the specimen found in Nariño (Colombia) is still doubtful (late Pliocene or Pleistocene?), it can be proposed that (1) it could be one of the most ancient records of tayassuids in South America, as would be expected given its geographical position, and (2) considering the new taxonomic proposal, this specimen represents the first record of *Platygonus* cf. *marplatensis* in Colombia and, together with the one registered in Villa de Leyva, establishes the northernmost South American records of the genus. This new interpretation would be of great relevance in the Great American Biotic Interchange due to its strategic geographical proximity to the Isthmus of Panama.

Sample availability. The studied specimen (MGN 931, IGM p002118) is housed at the Museo Geológico Nacional (MGN), Servicio Geológico Colombiano (Bogotá, Colombia). The holotype and referred materials for *Platygonus marplatensis* are housed at Museo Municipal de Mar del Plata and Museo Argentino de Ciencias Naturales "Bernardino Rivadavia" (Buenos Aires, Argentina).

Author contributions. GMG conducted the analysis and wrote the manuscript with contributions from all co-authors. OFMM prepared the figures. OFMM and JLC were in charge of the logistics to study the specimen (MGN 931, IGM p002118) housed at the Museo Geológico Nacional (MGN), Servicio Geológico Colombiano (Bogotá, Colombia).

Competing interests. The authors declare that they have no conflict of interest.

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