

First record of the Andean-mountain cavy *Microcavia niata* (Caviidae, Rodentia) from Peru

Primer registro del cuy del Altiplano *Microcavia niata* (Caviidae, Rodentia) para Perú

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ABSTRACT

We report for the first time the presence of the Andean-Mountain Cavy, *Microcavia niata*, in Peru, being a new genus and species for Peruvian wildlife. We base our report on two specimens found in the highlands of Tacna, southwestern Peru.

RESUMEN

Reportamos por primera vez para el Perú al Cuy del Altiplano, *Microcavia niata*, la cual representa un nuevo género y especie para la fauna silvestre del Perú. Basamos este reporte en dos ejemplares encontrados en las tierras altas de Tacna, suroeste de Perú.

The South American rodents of the subfamily Caviinae (Ctenohystrica, Caviomorpha) are generally well-studied species (Dunnum & Salazar-Bravo 2009, 2010, Ojeda 2006, Spotorno *et al.* 2004, Rood 1970, 1972, Cabrera 1953, 1961, Lacher 1981), although there are still some gaps in the biology and distribution knowledge of some species.

The Caviinae from Peru is represented by two genera *Cavia* and *Galea* (Dunnum 2015, Pacheco *et al.* 2009, Woods & Kilpatrick 2005). The genus *Cavia* with three species: *Cavia aperea* Erxleben, 1777 of the Pampas del Heath (Medina *et al.* 2016, Romo *et al.* 2002); *Cavia tschudii* Fitzinger, 1857 in the Andean and coastal regions from Cajamarca to Tacna, with at least nine subspecies (Dunnum & Salazar-Bravo 2009, 2010, Osgood 1913, 1914, 1919, Thomas 1917, 1926, 1927, Sanborn 1949); and the domestic form *Cavia porcellus* Linnaeus, 1758 (Dunnum & Salazar-Bravo 2009, 2010, Chuca 1997, Spotorno *et al.*, 2004, 2007). *Galea* with only one species, *G. musteloides*, in the southern highlands between Tacna and Puno departments (Osgood 1916, Pearson & Ralph 1978, Solmsdorff *et al.*

2004, Dunnum & Salazar-Bravo 2010). In this study we report for first time the record of Andean Mountain Cavy, *Microcavia niata* (Thomas, 1898) in Peru, based on two specimens from the highlands of Tacna, southernmost Peru, which were determined in the basis of their diagnostic characters (Dunnum 2015, Anderson 1997, Quintana 1996, Marquet *et al.* 1993, Cabrera 1953) and by comparison with Chilean specimens housed at the collection Patricio Sánchez Reyes Museum of the Pontificia Universidad Católica de Chile (PSR).

We collected two specimens of small cavy, as part of a faunal inventory of terrestrial small mammals in Conchaichiri, Province of Tarata, in Tacna Department, at southernmost of Peru, located to 17° 17' 18.73" S and 69° 42' 47.19" W, 4230 m.a.s.l. (Figure 1). Conchaichiri belongs to the Puna Biogeographical Province (Morrone 2014), which is characterized by the presence of the Andean bog (known as "bofedales"), dominated by *Distichia muscoides*. Further, a great extension of puna grass and sparse cushion plants dominate the landscape, especially *Pycnophyllum molle*;

also *Werneria* spp. *Senecio humillimus*, *Azorella compacta*, also *Notothriche argentea*, *N. foetida*, *N. alternata*, *Astragalus peruvianus*, *Xenophyllum lycopodioides* and *Xenophyllum poposum*. The soil is quite poor and eroded by overgrazing and harsh climate.

These specimens are deposited at the Scientific Collection associated with the Museo de Historia Natural de la Universidad Nacional de San Agustín (MUSA), under the numbers: MUSA 8744 and MUSA 16326.

Our specimens, an adult female (MUSA16326) and a juvenile (MUSA8744) show all the diagnostic characteristics described for *Microcavia niata* (Dunnun 2015, Anderson 1997, Thomas 1898, Quintana 1996, Marquet *et al.* 1993, Cabrera 1953). They are smaller compared with *Cavia tschudii* and *Galea musteliodes* (Table 1). Our specimens differ from *G. musteliodes* for their pale and soft fur with yellowish overtones; for having their interramal area completely covered with hair; white incisors; and the bridge of zygomatic arch with the anteorbital edge fully formed by the maxilla (Figure 2). With respect to *C. tschudii*, the collected specimens are smaller, with the coat yellowish and hairs long and silky.

The coat of Peruvian specimens is pale yellowish gray; the dorsal hairs are tricolored with gray base, dark gray in the middle, and yellow tips. The hairs on the back are about 16 to 18 mm. Cheeks, throat, and belly whitish with gray base. The hairs around the eyes are slightly paler, with eyelids and eyelashes black. The fur of the ears is black and creamy yellow, with long and abundant hairs at the base and inside the ears. Interramal hairy. Tragus and antitragus have little development but are clearly visible. Hairs on legs creamy with long hair extending from the sides of the legs. The plants are bare and black with fine grains, except on the heel that is smooth. The skull (Figure 2) seen in profile is strongly convex, the outline most rounded than others *Microcavia* (Quintana 1996, Ellerman 1940, Thomas 1898); the width of the braincase relative to skull length is 0.51 (Table 1); rostrum short and wide; nasals shorts and wide, its width represents 60% of their length; zygomatic arch expanded and solid, with a delicate and thin interorbital branch of maxilla not completely separated by the lachrymal; interorbital wide; interparietal very wide; carotid and jugular foramen ovale separated; jugal with a postorbital process; palatine foramen is well developed and laterally located, without palatal posterior

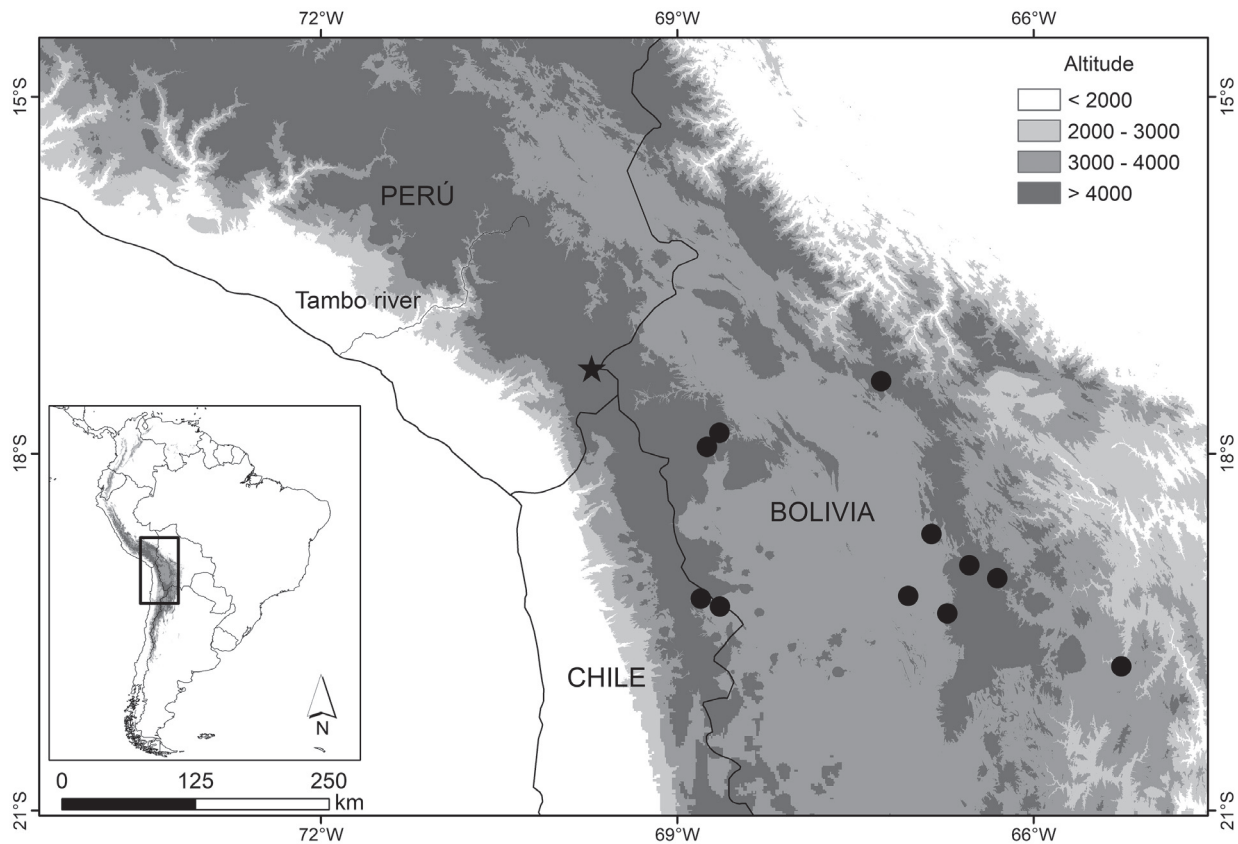


FIGURE 1. Known localities of *Microcavia niata*. Previous records (Thomas 1898, 1902; Anderson 1997; Marquet *et al.* 1993) (black circles). New record from Perú (black star). / Distribución conocida de *Microcavia niata*. Registros previos (Thomas 1898, 1902; Anderson 1997; Marquet *et al.* 1993) (círculos). Nuevo registro para Perú (estrella).

flat expansion; posterior palatal margin is slightly angular; tympanic bullae inflated; superior molar length is greater than the diastema length; external flexus in upper molars non-developed; The upper cheek teeth are simple and do not have a fold back; P4 with additional prolongation developed; M3 with a short additional prism; Incisors completely white, narrow and orthodont; m3 with additional prism large.



FIGURE 2. Dorsal, ventral, and lateral views of skull and lateral view of mandible of *Microcavia niata* (MUSA 8744) collected in Tacna, southwestern Peru. Scale bar = 10 mm. / FIGURA 2. Vista dorsal, ventral y lateral del cráneo y vista lateral de la mandíbula de *Microcavia niata* (MUSA 8744), colectado en Tacna, al suroeste de Perú. Escala = 10 mm.

Our comparative analyses confirmed that this species corresponds to *Microcavia niata*. Which turned out to be a new genus and species for Peru, extending its distributional range to 100 km from the type locality and Mount Sajama in Bolivia (Anderson 1997) and 230 km north of the Enquelga

town in the Chilean Altiplano (Marquet *et al.* 1993). This would be the northernmost record of *Microcavia niata* distribution. The distribution of *M. niata* in Peru would include highlands localities in Tacna department and adjacent areas of southwestern of Puno department.

According to the distribution of the two subspecific forms described in this species, our specimen must match the nominal form *Microcavia niata niata* (Thomas 1898, 1902). Peruvian specimens present some notable traits in relation to Chilean material, its bigger interorbital, and interparietal regions, conditions present only in immature specimens of *M. niata* (Quintana 1996). Also, in relation to the orthodont condition of upper incisors of Peruvian sample, maybe a subadult condition, because of this may vary with the ontogenetic development as in *M. robusta* (Quintana 1996) or by geographic location like *M. australis* (Taraborelli *et al.* 2007), what should be related to the bow development of the skull.

The presence of *M. niata* in Peru was predicted by Pearson (1951) because the southeast area of the department of Tacna has similar environmental characteristics to the surrounding highlands of Chile and Bolivia as a continuous ecosystem until the Barroso Mountains, in Tacna. The biogeographical barrier which delimits the northern distribution of Puna's non-volant small mammals would be the Tambo river. In fact, several rodents species are delimited by this important geographical feature (i.e. *Eligmodontia hirtipes*, *Galenomys garleppii*, *Ctenomys* spp.) (Pearson 1982).

M. niata is one of the least known Caviidae, their descriptions have been quite poor and based on few specimens (Marquet *et al.* 1993, Anderson 1997). According to Marquet *et al.* (1993) is a gregarious species; this species and other caviids have been reported using abandoned burrows of *Ctenomys* (Marquet *et al.* 1993, Mann 1978, Pearson 1951), and could share burrows with other species (Juan Perez, unpublished data). This species appears to be associated with Andean bogs where it would find most of their food (Marquet *et al.* 1993). Their presence in Peru is notable because allow us to incorporate a new genus and species to Peruvian fauna, which now contains all living genera of Guinea Pigs of Subfamily Caviinae. In terms of conservation status we haven't information, however, appears to be a rare species in contrast to other guinea pigs and other rodents. These species depend on burrows from other species and Andean bogs with a reduced area for their refuge and food; maintains a range restricted to the highlands of Bolivia, Chile, and Peru, is located in an area that would be hard hit by water shortages in a climate change scenario and a growing mining. By these considerations should be considered as Vulnerable in Peru. However, it is necessary to increase the study focused on this species, and caviids in general, to improve this proposal and the knowledge of this important subfamily of charismatic rodents.

TABLE 1. External and cranial measurements of *Microcavia niata*. Type specimens of *M. niata niata* (*) and *M. niata pallidior* (**), deposited in the British Museum (BM), were taken from Thomas (1898, 1902). Measurements of the Sajama's specimens from Bolivia, were taken from Anderson (1987), deposited in the Field Museum (FMNH). Measures for Enquelga's specimens of Chile were obtained in the Patricio Sánchez Reyes Museum (PSR) at Pontificia Universidad Católica de Chile. All measurements in millimeters (mm). / TABLA 1. Medidas craneales y externas de *Microcavia niata*. Las medidas de especímenes tipo de *M. niata niata* (*) y *M. niata pallidior* (**), depositados en el British Museum (BM), fueron tomadas de Thomas (1898, 1902). Las medidas de los especímenes de Bolivia (Sajama), fueron tomadas de Anderson (1987). Las medidas de los especímenes de Chile (Enquelga), fueron obtenidos en el Museo Patricio Sánchez Reyes (PSR) de la Pontificia Universidad Católica de Chile.

LOCALITY	BM	BM	FMNH	FMNH	FMNH	PSR	PSR	MUSA	MUSA
	1716*	1642**	53658	53669	53671	s/n	s/n	8744	16326
	BOLIVIA			CHILE		PERU			
	SAJAMA	AULLAGA		SAJAMA		ENQUELGA		TACNA	
Total length	190	200		170 - 190				119	
Hind foot length	34	41		30 - 35				31	
Ear length	13	22		20				14	
Greatest skull length		46.5	40.6	41.2	40.6	42	40.1	35	41.71
Basal length	36.6					40.1	39.4	30.5	35.69
Basilar length	33.5	35.5	38.2	38.5	38.1	38.6	38.4	29.41	30.13
Skull width			21.1	20.8	20.5	22.7	22.9	18.3	20.5
Skull deep						22.2	22.2	16.2	18.23
Nasal length	15					15.7	16	13	13.53
Nasal width	9.1					9.4	9.4	5.9	6.91
Diastema length	9.3					9.6	10.1	7.4	9.48
Palatal length	18.5		19.4	18.7	18.9	19.7	19.9	13.1	16.99
Interorbital width	11		11	10.7	11.6	11.6	11.4	10.1	11.29
Zygomatic arch width		32	29.4	29.8	30.8	31.1	30.3	21	25.34
Incisors length						6.5	7.1	5.2	5.79
Incisors width						2.1	2.2	2.1	2.43
Molar length	10.2	12				11	10.4	8.3	9.84
Fourth molar width						12.6	11.4	10.6	12
Bullae length						11.7	11.7	11.1	12.16
Bullae width						8.7	8.3	7.5	8.86
Interbullar length						4.2	4.5	2	2.38
Mandibular length						34.4	35.2	23.4	35.25

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