

An additional record of *Platyrrhinus ismaeli* Velazco, 2005 on the western slope of Peru, with taxonomic comments

Edgardo M. Rengifo^{1*}, Víctor Pacheco^{1,2} & Edith Salas¹

1. Departamento de Mastozoología, Museo de Historia Natural, Universidad Nacional Mayor de San Marcos, Apartado 14-0434, Lima-14, Peru.

2. Facultad de Ciencias Biológicas de la Universidad Nacional Mayor de San Marcos.

* Corresponding author. Email: edgar_mrv@hotmail.com

Abstract

Platyrrhinus ismaeli is reported for the first time in the department of Ancash, Peru, becoming the southernmost record from the western slope of the Peruvian Andes. We discuss the lateral folds in the pinna as a valid diagnostic character for *P. ismaeli*, suggesting this character does not discriminate *P. ismaeli* from other species; and present an updated distribution map for the species.

Keywords: Ancash, distribution, *Platyrrhinus*, western slope of Peru.

Introduction

Bats of the genus *Platyrrhinus* are highly diverse (18 species, Velazco et al. 2010), found mainly in wet forests and are consumers of fruits and insects (Gardner 1977; Eisenberg & Redford 1999). *Platyrrhinus ismaeli* is currently known in Peru, Ecuador, and Colombia (Velazco 2005; Gardner 2007). In Peru, the southernmost records are in the department of San Martín (MUSM 7283-7293) in the eastern slope of the Andes, and Cajamarca (MVZ 137916) in the western slope. *Platyrrhinus ismaeli* is a potential seed disperser of *Ficus* sp. (Velazco & Salazar 2010); however, additional natural history information clearly attributable to this species is lacking (Gardner 2007).

This study reports the first record of *Platyrrhinus ismaeli* from the department of Ancash, discuss the lateral folds of the pinna as a valid diagnostic character for *P. ismaeli*; and present an updated distribution map of the species.

Material and Methods

One specimen of *Platyrrhinus ismaeli* was captured in the locality of Cascal, Quebrada Pacapchico, a tributary of Río Huarmey, District of Coris, Province of Aija, Department of Ancash, Peru (77°49'10" S, 9°52'4" W) by Lourdes García on November 2009 using one 12 × 2.6 m mist-net on a seasonal ecosystem, composed of several dispersed shrubby trees, classified as "Monte Ribereño" (Weberbauer 1945) on the western slope of the Peruvian Andes. This specimen is an adult male with enlarged testes, age class IV (sensu Pacheco & Patterson 1992) and is deposited in the Museo de Historia Natural de la

Universidad Nacional Mayor de San Marcos (MUSM 26925).

The specimen was identified using the taxonomic keys present in Gardner (2007) and Velazco et al. (2010), and also by comparisons with the holotype (MUSM 4946). In addition, the specimen was compared with other 36 specimens of *Platyrrhinus ismaeli* and six specimens of *P. masu*. Measurements were taken following Velazco (2005) and are presented in Table 1. Weight in grams (W); Total Length (TL); Hind foot length (HFL); Ear length (EL); Forearm length (FA); Greatest length of skull (not including incisor) (GSL); Condylolincisive length, occipital condyle to anterior border of incisive alveolus (CBL); Condylolincisive length, occipital condyle to anterior border of upper canines (CCL); Postorbital breadth (PB); Greatest breadth across zygomatic arches (ZB); Greatest breadth of the braincase (BB); Mastoid breadth, least breadth across the base of the zygomatic arches (MB); Maxillary toothrow length, anterior alveolar border of canine to posterior alveolar border of M3 (MXTRL) and Least breadth across palate between second upper molars (M2M2).

A map is presented with all the localities of *Platyrrhinus ismaeli* from Peru (Figure 1), based on Cadenillas (2003), Velazco (2005), Gardner (2007), Velazco & Paterson (2008) and Velazco & Salazar (2010); and databases of The Field Museum of Natural History, Chicago, EEUU (FMNH); Louisiana State University Museum of Zoology, Baton Rouge, EEUU (LSUMZ); Museum of Vertebrate Zoology University of California, Berkeley, EEUU (MZV); United States National Museum, Washington, DC, EEUU (USNM); and Museo de Historia Natural de la

Universidad Nacional Mayor de San Marcos, Lima, Peru (MUSM) (Appendix 1).

Table 1. Descriptive measurements of *Platyrrhinus ismaeli* including the new record from the department of Ancash, Peru; the holotype (*); and other specimens of Museo de Historia Natural de San Marcos (MUSM). Measurements taken in millimeters (mm), view abbreviations in the text. Mean and standard deviation (above), observed range and sample size (below)

	MUSM 26925	MUSM 4946*	Average
sex	♂	♂	-
W	?	35	33.58 ± 4.29 24.5 - 41(18)
TL	(78)	84	70.79 ± 10.8 50 - 87(18)
HFL	18	18	14.19 ± 1.51 10.8 - 18(19)
EL	19	20	18.34 ± 2.49 14.2 - 22(19)
FA	53.5	52	52.81 ± 1.72 49.8 - 56.5(19)
GSL	29.09	27.94	28.97 ± 0.59 28.02 - 30.48(27)
CBL	27.38	27.1	27.13 ± 0.59 26.02 - 28.6(26)
CCL	26.69	26.22	26.44 ± 0.57 25.21 - 27.91(26)
PB	6.62	6.46	6.49 ± 0.2 5.93 - 6.82(27)
AB	17.35	17.13	17.15 ± 0.46 15.85 - 18.08(27)
BB	12.29	12	11.96 ± 0.39 11.14 - 12.54(27)
MB	13.15	13.99	12.99 ± 0.26 12.46 - 13.51(27)
MXTRL	11.7	11.35	11.46 ± 0.23 10.91 - 11.85(27)
M2M2	12.65	12.63	12.44 ± 0.27 11.71 - 12.84(26)

Results and Discussion

This study reports the first record of *Platyrrhinus ismaeli* from the department of Ancash, expanding its southernmost distribution on the western slope of the Andes by approximately 310 kilometers (Figure 1). This specimen presents a dark brown dorsal coloration, forearm length

53.5 mm, condylobasal length of 27.3 mm, upper inner incisors broad with convergent tips, lingual cingulum of M1 not continuous from paracone to metacone and m1 metaconid poorly developed, all characteristics of *P. ismaeli* (Gardner 2007, Velazco et al. 2010). However, the pinnae have conspicuous lateral folds, which contradict the diagnosis for the species described by Velazco (2005) and taxonomic keys in Gardner (2007) and Velazco et al. (2010). These authors mentioned that *P. ismaeli* lack lateral folds in the pinna.

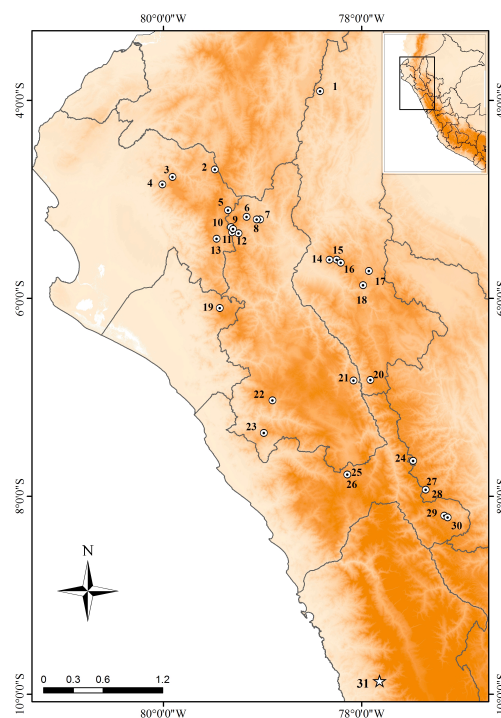


Figure 1. Map illustrating the distribution of *Platyrrhinus ismaeli* in Peru (circles) and new record for the department of Ancash (star). View number of localities in Appendix

Moreover, we found that some references are ambiguous on this character. Velazco (2002) and Velazco & Solari (2003) mentioned that *Platyrrhinus ismaeli* (formerly *P. dorsalis* “norte”) present lateral folds in the pinna poorly marked but distinguishable, different from *P. masu* (formerly *dorsalis* “centro-sur”) where the lateral folds are well marked; however, Velazco (2005: 28) reported the absence of lateral folds as a diagnostic character for *P. ismaeli*, generating some confusion to identify this species. Gardner (2007) and Velazco et al. (2010) followed Velazco (2005). Our comparison of our specimen (MUSM 26925) with the holotype (MUSM 4946) and 36 other specimens from various localities confirmed that the pinnae of *P. ismaeli* presents lateral folds; and that there is not noticeable difference, in this character, with con *P. masu*. We concluded that lateral folds in the pinna are variable, ranging from

poorly marked to well marked in *P. ismaeli* (Figure 2). This species can be separated unambiguously from *P. masu* by the lingual cingulum not continuous from the paracone to metacone of M1, and for the m1 metaconid poorly developed as described in Velazco (2005).

Our specimen of *Platyrrhinus ismaeli* was collected with *Artibeus fraterculus* (MUSM 26922-26924). Six bat species are then known for the western slope of Ancash, including *Desmodus rotundus* (MUSM 3854), *Histiotus montanus* (MUSM 2978), *Glossophaga soricina* (LSUMZ 14107, FMNH 81084), and *Myotis oxyotus* (MUSM 3042).

Platyrrhinus ismaeli is then known in the western slopes of the Peruvian Andes, and has the large distribution, from the department of Piura (Cadenillas 2003) to the department of Ancash in the western slope, supporting Pacheco (2002) who sustain that Amazonian mammalian fauna could extends to central Peru on the western slope of the Andes.

The habitat of *Platyrrhinus ismaeli* in Ancash corresponds to a “monte ribereño” which is characterized by a seasonal ecosystem, composed of several dispersed shrubby trees, similar to those found in the northern region of the department of Lima (Weberbauer 1945). This suggests that the range distribution of *P. ismaeli* might reach at least to the department of Lima.

The other species of *Platyrrhinus* in the western slope of Peru is *P. matapalensis* (Velazco 2005; Pacheco et al. 2009), this species is distributed in Peru only in Tumbes (Pacheco et al. 2007; Velazco & Patterson 2008) however, this species is not sympatric with *P. ismaeli*. It is worth mentioning that these species have different lineages, *P. ismaeli* is of oriental origin and belongs to the Andean group (Velazco & Paterson 2008) meanwhile *P. matapalensis* belongs to the *P. helleri* complex that has a Central American origin (Velazco et al. 2010).

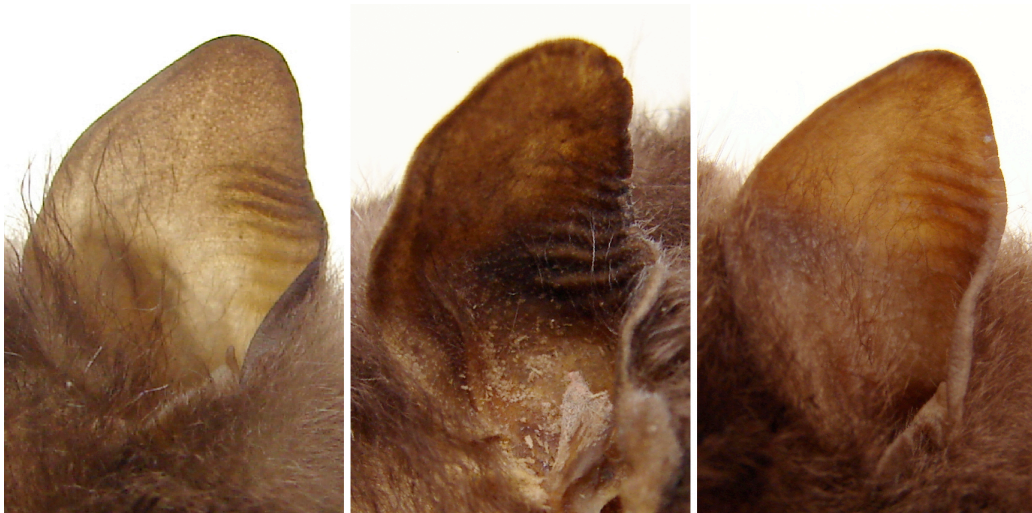


Figure 2. Lateral view of the pinnae of specimens of *Platyrrhinus ismaeli* and *P. masu* from Peru. Note the presence of lateral folds in both species. From left to right; *P. ismaeli* (MUSM 26925), Ancash, Cascal, Quebrada Pacap chico; *P. ismaeli*, (MUSM 4946-holotype), Amazonas, Balsas, 19 km by rd E and *P. masu* (MUSM 8853) Cusco, Paucartambo, San Pedro.

Acknowledgements

We thank Lourdes Garcia for the capture of specimen, and our colleagues Carlos Tello, Richard Cadenillas, Cindy Hurtado and Wilfredo Ramirez for comments and assistance in the preparation of this paper.

References

- Cadenillas R.E. 2003. Especies del suborden microchiroptera en el departamento de Piura, y sus posibles relaciones filogeneticas. Tesis para obtener el título de biólogo, Universidad Nacional de Piura, Facultad de Ciencias Biológicas.
- Eisenberg J.F. & K.H. Redford. 1999. Mammals of the Neotropics. Volume 3. The Central Neotropics: Ecuador, Peru, Bolivia, Brazil. The University of Chicago Press, Chicago.
- Gardner A.L. 2007. Genus *Platyrrhinus* Saussure, 1860. In: Mammals of South America, Volume 1: Marsupials, xenarthrans, shrews, and bats (edited by Gardner A.L.), pp. 329–342. University of Chicago Press, Chicago, IL.
- Pacheco V. 2002. Mamíferos del Perú. In: Diversidad y conservación de los mamíferos neotropicales (edited by Ceballos G. & Simonetti J.), pp. 503–550. Conabio-UNAM, México, D.F.

- Pacheco V. & Patterson B.D. 1992. Systematics and biogeographic analyses of four species of *Sturnira* (Chiroptera: Phyllostomidae), with emphasis on Peruvian forms. In: Biogeografía, Ecología y Conservación del Bosque Montano en el Perú (edited by Young, K.R. & N. Valencia), pp. 57–81. Memorias del Museo de Historia Natural UNMSM 21.
- Pacheco V.; Cadenillas R.; Velazco S.; Salas E. & Fajardo U. 2007. Noteworthy bat records from the Pacific Tropical rainforest region and adjacent dry forest in northwestern Peru. *Acta Chiropterologica* 9:409–422.
- Pacheco V.; Cadenillas R.; Salas E.; Tello C. & Zeballos H. 2009. Diversidad y endemismo de los mamíferos del Perú. *Revista Peruana de Biología* 16:5–32
- Velazco S. & Salazar S. 2010. Rol de las aves y murciélagos en la regeneración del bosque. In: Conociendo el santuario nacional Tabaconas Namballe (edited by Mena J. L. & Valdivia G.), pp. 83–88. World Wildlife Fund-Oficina del Programa Perú, Lima
- Velazco P.M. & Solari S. 2003. Taxonomía de *Platyrrhinus dorsalis* y *Platyrrhinus lineatus* (Chiroptera: Phyllostomidae) en Perú. *Mastozoología Neotropical* 10(2): 303–319.
- Velazco P.M. 2002. Análisis filogenético del género *Platyrrhinus* (Chiroptera: Phyllostomidae). Tesis para optar el grado académico de Magíster en Zoología, Mención en sistemática y evolución. Universidad Nacional Mayor de San Marcos. Facultad de Ciencias Biológicas, Escuela de Postgrado.
- Velazco P.M. 2005. Morphological phylogeny of the bat genus *Platyrrhinus* Saussure, 1860 (Chiroptera: Phyllostomidae) with the description of four new species. *Fieldiana Zoology* 105:1–53.
- Velazco P.M.; Gardner A.L. & Patterson B.D. 2010. Systematics of the *Platyrrhinus helleri* species complex (Chiroptera: Phyllostomidae), with descriptions of two new species. *Zoological Journal of the Linnean Society* 159: 785–812.
- Velazco P.M. & Patterson B.D. 2008. Phylogenetics and biogeography of the broad-nosed bats, genus *Platyrrhinus* (Chiroptera: Phyllostomidae). *Molecular Phylogenetics and Evolution* 49: 749–759.
- Weberbauer, A. 1945. El Mundo Vegetal de los Andes Peruanos. Ministerio de Agricultura, Lima.

APPENDIX 1

The following list includes all localities, in brackets, used for elaboration of the distribution map; specimens examined in this study are marked with an asterisk. See Materials and Methods for abbreviations.

Platyrrhinus ismaeli. AMAZONAS: 6 road km SW Lake Pomacochas [18] 5°52'8" S, 77°59'13" W (LSUMZ 19056); 12 trail km E La Peca [15] 5°36'40" S, 78°19'33" W (LSUMZ 21775); 33 rd. km NE Ingenio on road to Laguna Pomacocha [17] 5°43'30" S, 77°55'38" W (LSUMZ 20734); Balsas, 19 km by rd E. [20] 6°49'40" S, 77°54'47" W (MUSM 4944*, 4945*, 4946*); Ca. 20 trail km E La Peca [14] 5°36'40" S, 78°15'14" W (LSUMZ 21773); Cordillera Colán, SE La Peca (ridge W of peaks) [16] 5°38'31" S, 78°12'43" W (LSUMZ 21774); Cordillera del Condor, Valle Río Comaina; Puesto Vigilancia 3, Alfonso Ugarte [1] 3°54'28" S, 78°25'15" W (USNM 581960); ANCASH: Cascal, Quebrada Pacap chico [31] 9°52'4" S, 77°49'10" W (MUSM 26925*); CAJAMARCA: 35 mi WSW Cajamarca [23] 7°21'43" S, 78°59'16" W (MVZ 137916); Hda Limón on rd from Celendín to Balsas [21] 6°49'59" S, 78°4'59" W (FMNH 129139); San Ignacio, Chirinos, Nuevo Chalaquito "El Chaupé" [7] 5°12'16" S, 79°1'40" W (MUSM 12885*, 12886*, MUSM 12888*); San Ignacio, El Sauce [6] 5°10'42" S, 79°9'46" W (MUSM

18224*, 18225*, MUSM 18171*); San Miguel, 12 km SSW by rd [22] 7°1'59" S, 78°54'0" W (FMNH 129147, MUSM 4949*); Tabaconas, 4 km. oeste de El Chaupé [8] 5°12'19" S, 79°3'38" W (MUSM 10650); Tabaconas, Anexo La Lama, Quebrada el Salado [10] 5°18'3" S, 79°17'54" W (MUSM 24960); Tabaconas, Cachango [9] 5°16'57" S, 79°19'12" W (MUSM 25032, 25033, 25034 MUSM 25036, 25037 25038); Tabaconas, Huascaray [11] 5°20'7" S, 79°18'31" W (MUSM 25039); Tabaconas, Manchara [12] 5°20'40" S, 79°14'33" W (MUSM 25148); LA LIBERTAD: Cumpang, above Utcubamba, on trail to Ongón [29] 8°12'0" S, 77°10'1" W (LSUMZ 24776); Sanagorán (Río Chuyuhual) [26] 7°47'0" S, 78°8'46" W (MUSM 24627*, 24628*, 24629*, 24630*, 24631*, 24777*); Sanagorán [25] 7°46'59" S, 78°8'47" W (MUSM 17269*); Utcubamba, on trail to Ongón [30] 8°13'1" S, 77°7'59" W (LSUMZ 24777); LAMBAYEQUE: Ferreñafe, Bosque Chiñama [19] 6°6' S, 79°26' W (MUSM 925*, 926*); PIURA: Ayabaca, ca 44 km ESE. por camino de Ayabaca, ladera Cerro Mayordomo [2] 4°40'0" S, 79°31' W (MUSM 996*, 998*); Ayabaca, lúculo [3] 4°46'32" S, 79°54'22" W (Cadenillas 2003); Carmen de la Frontera, Alto Samaniego [5] 5°6'40" S, 79°20'59" W (MUSM 18172*); 15 km E Canchaque on rd to Huancabamba [13] 5°24'0" S, 79°27'54" W (LSUMZ 19053*); Ayabaca, coletas

[4] 4°51'3" S, 80°0'46" W (Cadenillas 2003); SAN MARTIN: Huallaga, entre "La Morada" y "La Rivera" coordinates not found (MUSM 16167*, 16168*); P.N. Río Abiseo, La Playa [24] 7°38'41" S, 77°28'52" W (MUSM 7280*, 7282*, 7284*); P.N. Río Abiseo, Las Palmas [27] 7°56'13" S, 77°21'18" W (MUSM 7286*, 7287*, 7288*, 7290*, 7291*, 7292*, 7293*); P.N. Río Abiseo, Las Papayas [28] 7°56'13" S, 77°21'18" W (MUSM 7294).

Platyrrhinus masu. CUZCO: Paucartambo, Consuelo, km 165, 17 km by road W Pilcopata 13°29'30" S, 71°29'31" W (MUSM 9854*); Paucartambo, Kosñipata, Bosque nublado San Pedro 13°3'16" S, 71°32'46" W (MUSM 11792*); Paucartambo, Kosñipata, San Pedro 13°3'16" S, 71°32'46" W (MUSM 8853*, 8854*); Paucartambo, Pillahuata 13°9'42" S, 71°36'10" W (MUSM 11793*, 11794*)