

## **3D model related to the publication: A platyrrhine talus from the early Miocene of Peru (Amazonian Madre de Dios Sub-Andean Zone)**

Laurent Marivaux, Rodolfo Salas-Gismondi, Antoine Pierre-Olivier

► **To cite this version:**

Laurent Marivaux, Rodolfo Salas-Gismondi, Antoine Pierre-Olivier. 3D model related to the publication: A platyrrhine talus from the early Miocene of Peru (Amazonian Madre de Dios Sub-Andean Zone). MorphoMuseum, 2019. hal-02052216

**HAL Id: hal-02052216**

**<https://hal.umontpellier.fr/hal-02052216>**

Submitted on 28 Feb 2019

**HAL** is a multi-disciplinary open access archive for the deposit and dissemination of scientific research documents, whether they are published or not. The documents may come from teaching and research institutions in France or abroad, or from public or private research centers.

L'archive ouverte pluridisciplinaire **HAL**, est destinée au dépôt et à la diffusion de documents scientifiques de niveau recherche, publiés ou non, émanant des établissements d'enseignement et de recherche français ou étrangers, des laboratoires publics ou privés.

# 3D model related to the publication: A platyrrhine talus from the early Miocene of Peru (Amazonian Madre de Dios Sub-Andean Zone)

Marivaux Laurent<sup>1\*</sup>, Salas-Gismondi Rodolfo<sup>2</sup>, Antoine Pierre-Olivier<sup>1</sup>

<sup>1</sup>Institut des Sciences de l'Évolution de Montpellier (ISEM, UMR 5554, CNRS/UM/IRD/EPHE), Université de Montpellier, place Eugène Bataillon, 34095 Montpellier Cedex 05, France

<sup>2</sup>Departamento de Paleontología de Vertebrados, Museo de Historia Natural - Universidad Nacional Mayor San Marcos (MUSM), Av. Arenales 1256, Lima 11, Peru

\*Corresponding author: Laurent.Marivaux@UMontpellier.fr

## Abstract

This contribution contains the 3D model of the fossil talus of a small-bodied anthropoid primate (Platyrrhini, Cebidae, Cebinae) discovered from lower Miocene deposits of Peruvian Amazonia (MD-61 locality, Upper Madre de Dios Basin). This fossil was described and figured in the following publication: Marivaux et al. (2012), A platyrrhine talus from the early Miocene of Peru (Amazonian Madre de Dios Sub-Andean Zone). *Journal of Human Evolution*. <http://dx.doi.org/10.1016/j.jhevol.2012.07.005>

**Keywords:** Cebidae Cebinae, Neogene, Primates, South America, Tarsal bone

Submitted:2019-01-28, published online:2019-01-30. <https://doi.org/10.18563/journal.m3.85>

## INTRODUCTION

We present here the 3D digital model of a fossil ankle bone (MUSM-2024; Fig. 1; Table 1) documenting a small-bodied anthropoid platyrrhine primate. This tarsal bone was discovered at MD-61, a locality situated in the Madre de Dios river bank, near Atalaya, Peruvian Amazonia (2011 field campaign). The age of this fossil-bearing locality was considered as representing the ‘Pinturan’ biochronological unit (18.75-16.5 Ma; i.e., late early Miocene; Kramarz and Bellosi, 2005; Kramarz, 2006). Despite the presence of few cracks, MUSM-2024 is complete and undistorted, and represents a right talus. Only the dorsal aspect of the talar body is slightly damaged in the distal part of the medial trochlear rim, where a single and irregular pit may correspond to a tooth print resulting from peri-mortem predation (Fig. 1). Morphologically, this talus displays a combination of talar features primarily found among the Cebidae, and more especially in the Cebinae (see Marivaux et al., 2012). Following regressions of talar dimensions against body mass in living primates (Dagosto and Terranova, 1992), MUSM-2024 belonged to a small primate with a body mass ranging from about 250g to 500g. This morphologically *Saimiri*-like cebine from MD-61 had therefore a body size which rather approximated that of some living callitrichines (Cebidae, Callitrichinae) from the Neotropics, such as certain large marmosets (i.e., *Callithrix*) or small tamarins (i.e., *Saguinus*). Functionally, features and proportions of MUSM-2024 indicate that this small primate was arboreal and primarily quadrupedal, agile, with frequent horizontal leaping and vertical clinging in its locomotor repertoire (see Marivaux et al., 2012).

Inv. number	Taxon	Description
MUSM-2024	Cebinae indet. sp.	Right talus.

**Table 1.** The MUSM-2024 specimen figured in this paper is housed in the paleontological collections of the *Departamento de Paleontología de Vertebrados, Museo de Historia Natural - Universidad Nacional Mayor San Marcos (MUSM)*, Lima, Peru.

## METHODS

AVIZO 7.1 (Visualization Sciences Group) software was used for visualization, segmentation and 3D rendering. The teeth were prepared within a “labelfield” module of AVIZO, using the segmentation threshold selection tool. The 3D model is provided in .ply format, and then can be opened with a wide range of freeware. The .ply file was generated with MorphoDig 1.0.0., an open-source 3D freeware (Lebrun, 2018).

## ACKNOWLEDGEMENTS

The 3D data presented in this work was produced through the technical facilities of the Montpellier RIO Imaging (MRI) platform and of the LabEx CeMEB. We particularly thank R. Lebrun (ISE-M, Université de Montpellier) for his help and advices during micro-CT scan acquisitions and treatments. Many thanks to A.-L. Charruault (ISE-M, PALASIAFRICA) for micro-CT surface reconstructions. The paleontological fieldwork (August 2011) was financially supported by the CNRS/INSU/IRD ‘Paleo2’ and Toulouse University ‘SPAM’ (P.-O. Antoine). The past and recent laboratory analyses were financially supported by the L. S. B. Leakey Foundation (L. Marivaux and P.-O. Antoine). This work also currently benefits from an “Investissements d’Avenir” grant managed by the Agence Nationale de la Recherche, France (CEBA, ANR-10-LABX-0025-01). ISE-M publication n° 2019-019-SUD.



**Figure 1.** Ankle bone (talus) of a platyrrhine primate (Cebidae, Cebinae) from the late early Miocene of Peru (Atalaya, Amazonian Madre de Dios Sub-Andean Zone). A-F) MUSM-2024, right talus in dorsal (A), medial (B), lateral (C), proximal (D), distal (E), and plantar (F) views.

**BIBLIOGRAPHY**

- Dagosto, M., and Terranova, C. J., 1992. Estimating the body size of Eocene primates: a comparison of results from dental and postcranial variables. *International Journal of Primatology* 13, 307-344. <https://doi.org/10.1007/BF02547818>
- Kramarz, A. G., 2006. *Neoreomys* and *Scleromys* (Rodentia, Hystricognathi) from the Pinturas Formation, late early Miocene of Patagonia, Argentina. *Revista del Museo Argentino de Ciencias Naturales, Nueva Series* 8, 53-62.
- Kramarz, A. G. and Bellosi, E. S., 2005. Hystricognath rodents from the Pinturas Formation, early-middle Miocene of Patagonia, biostratigraphic and paleoenvironmental implications. *Journal of South American Earth Sciences* 18, 199-212. <https://doi.org/10.1016/j.jsames.2004.10.005>
- Lebrun, R., 2018. MorphoDig, an open-source 3D freeware dedicated to biology. 5th International Paleontological Congress (IPC5) – *The Fossil Week*, July 9-13th, 2018 (Paris, France). Abstract volume, 399.
- Marivaux, L., Salas-Gismondi, R., Tejada, J., Billet, G., Louterbach, M., Vink, J., Bailleul, J., Roddaz, M. and Antoine, P.-O., 2012. A platyrrhine talus from the early Miocene of Peru (Amazonian Madre de Dios Sub-Andean Zone). *Journal Human Evolution* 63, 696-703. <https://doi.org/10.1016/j.jhevol.2012.07.005>