

3D models related to the publication: Dental remains of cebid platyrrhines from the earliest late Miocene of Western Amazonia, Peru: macroevolutionary implications on the extant capuchin and marmoset lineages

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Abstract

This contribution contains the 3D models of the isolated teeth attributed to stem representatives of the *Cebuella* and *Cebus* lineages (*Cebuella* sp. and *Cebus* sp.), described and figured in the following publication: Marivaux et al. (2016), Dental remains of cebid platyrrhines from the earliest late Miocene of Western Amazonia, Peru: macroevolutionary implications on the extant capuchin and marmoset lineages. American Journal of Physical Anthropology. <http://dx.doi.org/10.1002/ajpa.23052>

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INTRODUCTION

We present here the 3D digital models of five isolated teeth (Fig. 1; Table 1) documenting two distinct fossil Cebidae: *Cebus* sp., a medium-sized capuchin (Cebinae) and *Cebuella* sp., a tiny marmoset (Callitrichinae). The fossils were recently discovered in Peruvian Amazonia (Contamana, Loreto Department) from fluvial deposits (CTA-43) dating from the early late Miocene (ca. 11 Ma; i.e., Mayoan South American Land Mammal Ages [SALMA]; Antoine et al., 2016). They were recovered after wet-screening of about 800 kg of sediment. The material documenting *Cebus* sp. is a single lower m1 (Fig. 1A), lacking its entire buccal margin (about four-fifths of the crown are preserved). *Cebuella* sp. is documented by three premolars (one lower p4, one half P3 or P4, and one upper P2; Fig. 1B-D, respectively) and one particularly worn upper incisor (I2; Fig. 1E). Although limited, this new fossil material of platyrrhine primates is particularly critical because it testifies of the first and oldest records of the modern *Cebuella* and *Cebus/Sapajus* lineages in the lower latitudes of the Neotropics. This discovery has therefore substantial macroevolutionary implications about the origin of extant marmosets and capuchins, and it implies significant changes regarding their historical biogeography (see Marivaux et al., 2016).

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

Model IDs	Taxon	Description
MUSM-3243	<i>Cebus</i> sp.	Left lower m1 (lingual part)
MUSM-3239	<i>Cebuella</i> sp.	left lower p4
MUSM-3240	<i>Cebuella</i> sp.	right upper P3 or P4 (buccal part)
MUSM-3241	<i>Cebuella</i> sp.	right upper P2
MUSM-3242	<i>Cebuella</i> sp.	upper I2

Table 1. List of models. All specimens come from the Museo de Historia Natural - Universidad Nacional Mayor San Marcos (MUSM), Lima, Peru.

the segmentation threshold selection tool. The 3D models are provided in .ply format, and then can be opened with a wide range of freeware.

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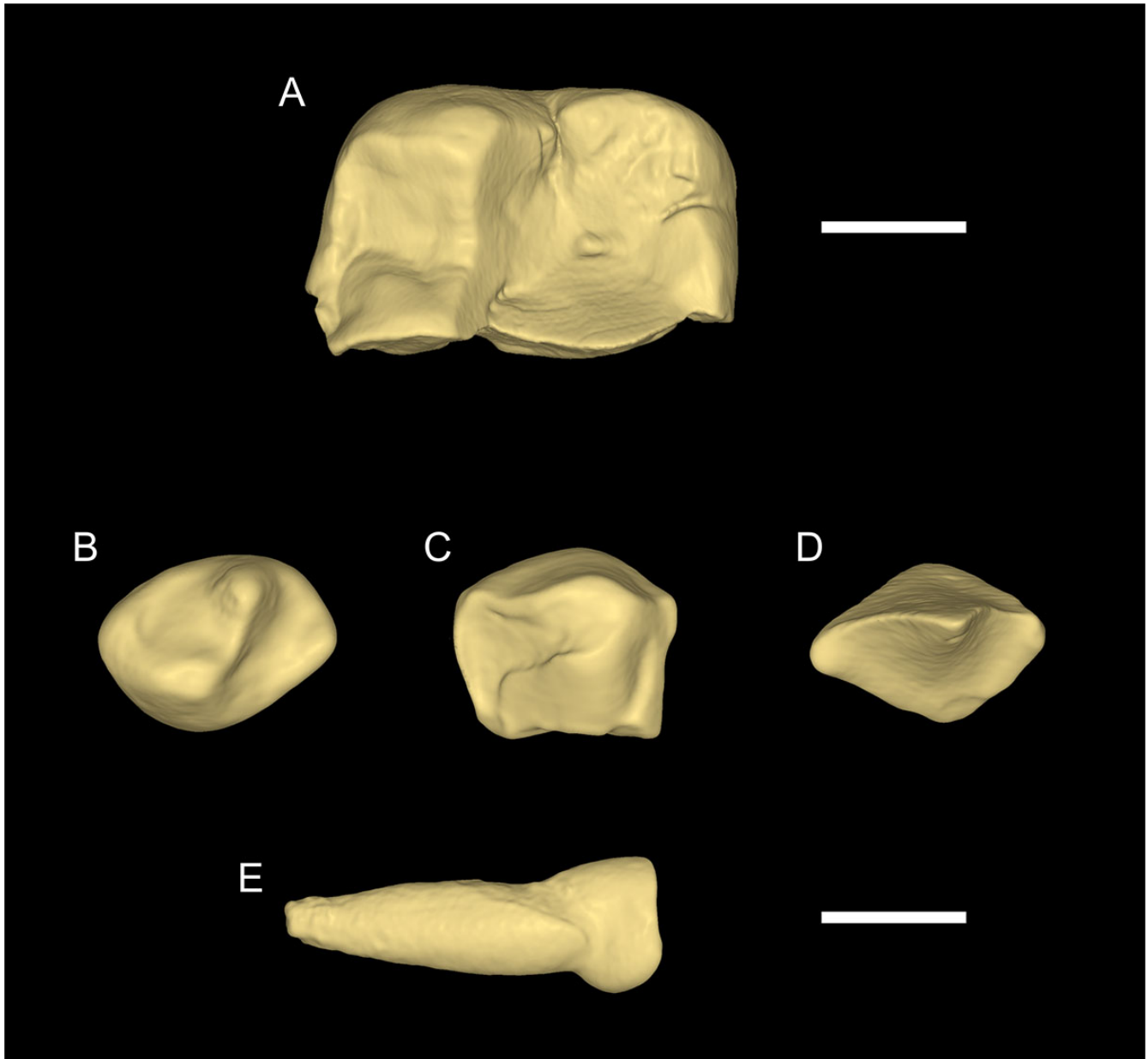


Figure 1. Fossil dental specimens of *Cebus* sp. and *Cebuella* sp. from the early late Miocene (Mayoan SALMA) of Contamana locus n°43 (CTA-43), Peruvian Amazonia. *Cebus* sp.: A) MUSM-3243, left m1 (lingual part). *Cebuella* sp. (B-E): B) MUSM-3239, left p4; C) MUSM-3240, right P3 or P4 (buccal part); D) MUSM-3241, right P2; E) MUSM-3243, upper I2. Teeth from A to D are in occlusal view, while the upper incisor is in buccal view. Scale bar = 1 mm.

BIBLIOGRAPHY

- Antoine, P.-O., Abello, M. A., Adnet, S., Altamirano-Sierra, A. J., Baby, P., Billet, G., Boivin, M., Calderón, Y., Candela, A. M., Chabain, J., Corfu, F., Croft, D. A., Ganerød, M., Jaramillo, C., Klaus, S., Marivaux, L., Navarrete, R. E., Orliac, M. J., Parra, F., Pérez, M. E., Pujos, F., Rage, J.-C., Ravel, A., Robinet, C., Roddaz, M., Tejada-Lara, J. V., Vélez-Juarbe, J., Wesselingh, F. P., Salas-Gismondi, R., 2016. A 60-million year Cenozoic history of western Amazonian ecosystems in Contamana, Eastern Peru. *Gondwana Research* 31, 30-59. <http://dx.doi.org/10.1016/j.gr.2015.11.001>
- Marivaux, L., Adnet, S., Altamirano-Sierra, A. J., Pujos, F., Ramdarshan, A., Salas-Gismondi, R., Tejada-Lara, J. V., Antoine, P.-O., 2016. Dental remains of cebid platyrrhines from the earliest late Miocene of Western Amazonia, Peru: macroevolutionary implications on the extant capuchin and marmoset lineages. *American Journal of Physical Anthropology* 161(3), 478-493. <http://dx.doi.org/10.1002/ajpa.23052>