Dataset

3D models related to the publication: Comparative anatomy of the bony labyrinth of the bats *Platalina genovensium* (Phyllostomidae, Lonchophyllinae) and *Tomopeas ravus* (Molossidae, Tomopeatinae)

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Abstract

The present 3D dataset contains the 3D models analyzed in Velazco P. M., Grohé C. 2017. Comparative anatomy of the bony labyrinth of the bats *Platalina genovensium* (Phyllostomidae, Lonchophyllinae) and *Tomopeas ravus* (Molossidae, Tomopeatinae). Biotempo 14(2).

Keywords: bony labyrinth, Chiroptera, cochlea

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INTRODUCTION

We present 3D models of the bony labyrinth of two species of echolocating bats endemic to the coastal desert of Chile and Peru, both collected from the same locality in northern Peru (Table 1; Velazco et al., 2013). The long-snouted bat *Platalina genovensium* feeds primarily on pollen and nectar and belongs to the Phyllostomidae, while the blunt-eared bat *Tomopeas ravus* is an insectivore bat that belongs to the family Molossidae. Most studies using 3D models of the bony labyrinth of bats are focused on comparative measurements of the vestibular and cochlear systems (within bats and between bats and other mammalian taxa) to explore the evolution of flight and echolocation, respectively. Ekdale (2013) provides the only detailed descriptions of the bony labyrinth morphology of bats (with 4 species described: non-echolocating *Pteropus lylei* and echolocating *Nycteris grandis*, *Rhinolophus ferrumequinum*, and *Tadarida brasiliensis*, each belonging to different families). The morphological description of the bony labyrinths of *Platalina* and *Tomopeas* presented in Velazco and Grohé (2017) represents the first study of inner ear bats of the subfamilies Lonchophyllinae and Tomopeatinae (see Table 1 and Fig. 1). Cochlear attributes in *Platalina* and *Tomopeas* demonstrated unique characteristics. The aspect ratio of the cochlear spiral (height of the spiral divided by width of the basal turn) in *Platalina* is one of the greatest in bats and the second largest among placental mammals (after the rodent *Cavia*) based on comparative data from Ekdale (2013). *Tomopeas* has one of the smallest cochlear widths relative to the width of the basicranium among the Molossidae family. It shows 2 cochlear spiral turns, which is the smallest number of turns found among echolocating bats.

Museum nr	Taxon	Description
AMNH-278520	*Platalina genovensium*	Right bony labyrinth
AMNH-278525	*Tomopeas ravus*	Right bony labyrinth

Table 1. List of associated models. AMNH: American Museum of Natural History, New York, USA.

METHODS

The 3D surfaces were extracted semi-automatically within MIMICS 16.0 (Materialise NV, Belgium) using the segmentation threshold selection tool. The 3D surface models are provided in .ply format and therefore can be opened with a wide range of freeware. Additionally, we used ISE-MeshTools (Lebrun, 2014) to orientate each surface (anterior view, with horizontal placement of the lateral semicircular canal) and to label them (.flg files), as annotated in Fig.1.

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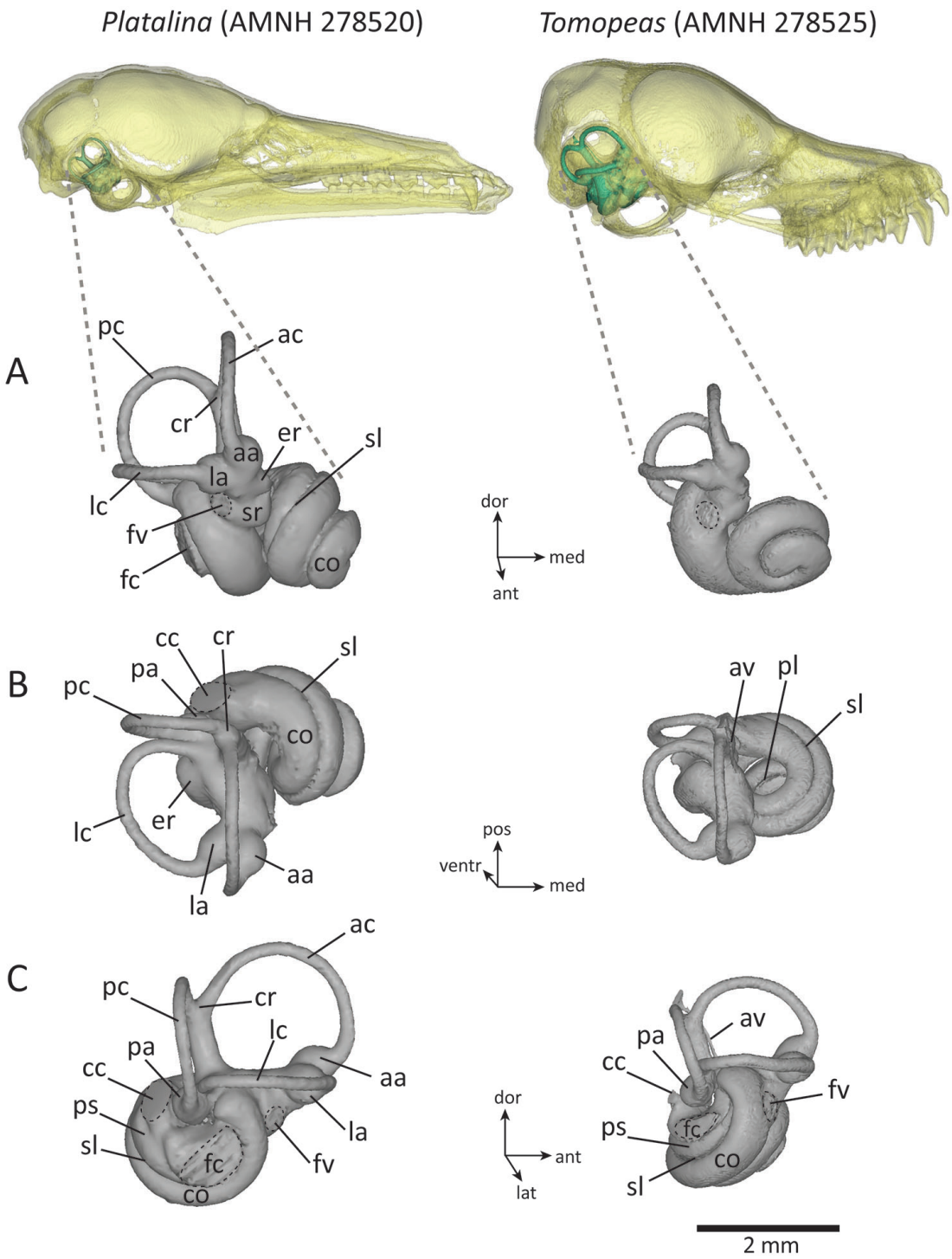

Figure 1. Right bony labyrinths of the long-snouted bat *Platalina genovensium* (AMNH 278520; left) and the blunt-eared bat *Tomopeas ravus* (AMNH 278525; right) adapted from Velazco and Grohé, 2017. Labeled digital endocasts in anterolateral view (A), dorsal view (B), posterolateral view (C). **Abbreviations: aa**, anterior ampulla; **ac**, anterior semicircular canal; **ant**, anterior direction; **av**, bony channel for vestibular aqueduct; **cc**, canaliculus cochleae for cochlear aqueduct; **co**, cochlea; **cr**, common crus; **dor**, dorsal direction; **er**, elliptical recess of vestibule; **fc**, fenestra cochleae; **fv**, fenestra vestibuli; **la**, lateral ampulla; **lat**, lateral direction; **lc**, lateral semicircular canal; **med**, medial direction; **pa**, posterior ampulla; **pc**, posterior semicircular canal; **pl**, primary bony lamina; **pos**, posterior direction; **ps**, outpocketing for perilymphatic sac; **sl**, secondary bony lamina; **sr**, spherical recess of vestibule; **ventr**, ventral direction. Skulls not to scale.

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Velazco, P. M., Grohé, C. 2017. Comparative anatomy of the bony labyrinth of the bats *Tomopeas ravus* (Molossidae, Tomopeatinae) and *Platalina genovensium* (Phyllostomidae, Lonchophyllinae). Biotempo 14 (2).

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