3D models related to the publication: A new traversodontid cynodont with a peculiar postcanine dentition from the Middle/Late Triassic of Namibia and dental evolution in basal gomphodonts.

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Abstract

The present 3D Dataset contains the 3D models analyzed in Hendrickx, C., Gaetano, L. C., Choiniere, J., Mocke, H. and Abdala, F. in press. A new traversodontid cynodont with a peculiar postcanine dentition from the Middle/Late Triassic of Namibia and dental evolution in basal gomphodonts. *Journal of Systematic Palaeontology.*

Keywords: Cynodontia, Gomphodontia, postcanine, teeth, Traversodontidae

Model ID	Description
M3#557_GSNF1591	Surface model of the skull derived from µCT data
M3#558_GSNF1591	Photogrammetric 3D surface model of the postcanines
M3#559_GSNF1591	Photogrammetric 3D surface model of the skull

Table 1. List of models representing the holotype of *Etjoia dentitransitus* (GSN F1591). Collection: Geological Survey of Namibia, Windhoek, Namibia.

INTRODUCTION

We here present three 3D models of a new gomphodont cynodont from the Ladinian/Carnian Upper Omingonde Formation of central Namibia. *Etjoia dentitransitus* Hendrickx et al. (in press), gen. et sp. nov., is a medium-sized (basal skull length of 88 mm) omnivorous gomphodont represented by an almost complete skull and a few cervical vertebrae (Figure 1). The material consists of 3D reconstructions of the holotype (two models) and the lower gomphodont postcanines from the right portion of the mandible. It is hoped that these 3D models (see Table 1), generated through µCT-scan and photogrammetry techniques, will be useful for comparative purposes in the future.

METHODS

3D-models of the holotype and the lower gomphodont postcanines of *Etjoia dentitransitus* (GSN F1591) were generated through photogrammetry using Agisoft Photoscan Standard (Version 1.3.4) and photos taken with a camera Canon PowerShot SX60 for the holotype and a digital microscope AM411T Dino-Lite Pro for the postcanines. The batch process followed in Agisoft Photoscan to reconstruct both the holotype and the

postcanines in 3D consisted of four steps: i) photos taken in all views were aligned using the standard options (i.e., with generic pre-selection and 40,000 and 4,000 key point limit and tie point limit, respectively) and with a medium accuracy for photos taken with the camera and the highest accuracy for photos taken with the digital microscope. ii) a dense cloud was built in high quality with an aggressive depth filtering and no reuse depth map; iii) the mesh was then built with a medium to high face count and default options (i.e., a custom face count of 200,000 faces, arbitrary surface type, interpolation enabled and vertex color calculated); iv) the texture was finally added using the default options (i.e., generic mapping mode, texture from all cameras, mosaic blending mode, texture size and count of 4,096 and 1, respectively, no color correction and using the hole filling option). The 3D models were prepared in Agisoft Photoscan and exported as .ply files with texture as .jpeg files. Because photogrammetry was done for the left and right sides of the holotype, the two resulting 3D models were aligned and scaled in Meshlab version 2020.06 BETA (Cignoni et al. 2008) using the "Align" and "Transform: Scale, Normalize" options, respectively. The two models were then merged into a single one (keeping the texture of the models) using the join tool (CTRL+J) of Blender version 2.83 (https://www.blender.org/).

The holotype was additionally µCT-scanned at the Evolutionary Studies Institute (ESI) of the University of the Witwatersrand (Johannesburg) using a Nikon Metrology computed tomography XTH 225/320 LC, with the following setup: 130 kV, 195 microamps, a voxel size of 0.0604 mm, and 1 second of acquisition time with two frames averaged, generating 1999 images. A 3D external surface model of the holotype was generated with VGStudio MAX 3 using the µCT data. All 3D models of the holotype and the lower gomphodont postcanines were exported,
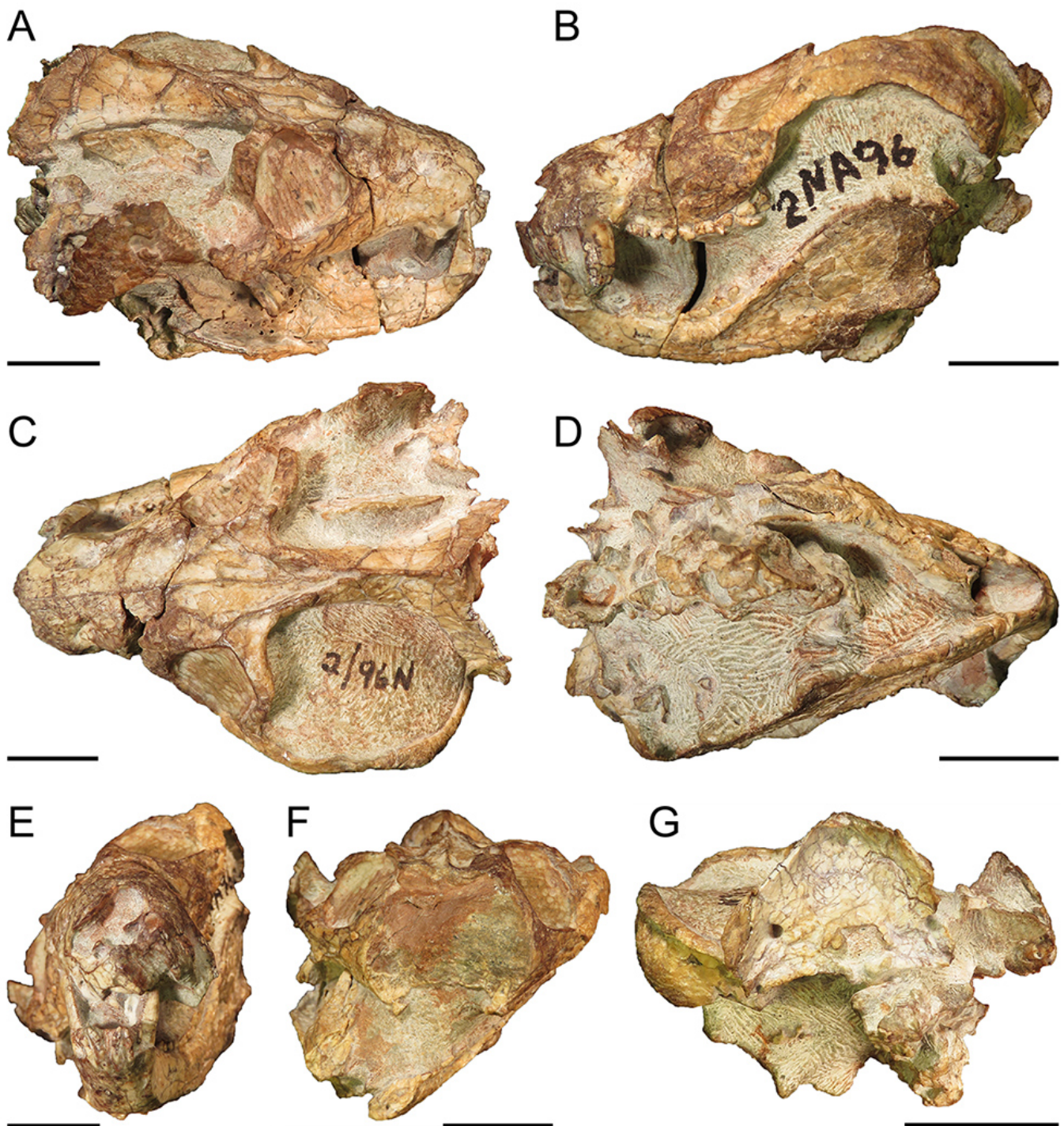
Figure 1. Holotype specimen of *Etjoia dentitransitus* gen. et sp. nov. (GSN F1591). Skull in A, dorsolateral; B, left lateral; C, dorsal; D, ventral; E-F, anterior; and G, posterior views, with F, corresponding to a coronal section of the rostrum and mandible at the level of a main crack through the skull. Scale bar equals 2 cm.

oriented and scaled in Meshlab. Given its particularly large size (>230 Mo; >4.8 million faces), the 3D model of the holotype generated from μCT data was simplified into a model of 2.4 million faces using the "Quadric Edge Collapse Decimation" (standard options) in Meshlab.

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