Dataset

3D models related to the publication: Phylogenetic implications of the systematic reassessment of Xenacanthiformes and ‘Ctenacanthiformes’ (Chondrichthyes) neurocrania from the Carboniferous-Permian Autun Basin (France)

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Abstract

The present 3D Dataset contains the 3D models of Carboniferous-Permian chondrichthyan neurocrania analyzed in “Phylogenetic implications of the systematic reassessment of Xenacanthiformes and ‘Ctenacanthiformes’ (Chondrichthyes) neurocrania from the Carboniferous-Permian Autun Basin (France)”.

Keywords: Carboniferous, neurocranium, Permian, Xenacanthiformes, ‘Ctenacanthiformes’

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INTRODUCTION

The Carboniferous-Permian Autun Basin (Saône-et-Loire, France) has provided many chondrichthyan remains since the 19th century. Among them, certain complete but still barely visible neurocrania are known and have been used to erect two species: the symmoriiform *Bibractopiscis niger* Heyler & Poplin 1982 and the xenacanthiform *Orthacanthus commailli* (Heyler & Poplin 1982). Therefore, their systematics is questionable and requires a global revision. Furthermore, neurocranial anatomy is a key to understanding the evolutionary history of Paleozoic chondrichthyans, highlining the interest of this revision. In the associated manuscript (Luccisano *et al.* in review), we performed a systematic reassessment of historical material from the Autun basin and a new neurocranium from the Carboniferous-Permian Bourbon-l’Archambault Basin. We used a multi-method approach including a new description thanks to 3D reconstructions (Fig. 1, Tab. 1) and geometric morphometrics.

METHODS

The 3D surfaces were extracted semi-automatically within Mimics 20.0 (Materialise) for the material from the Autun Basin and within AVIZO 7.0 (Visualization Sciences Group) for the specimen from the Bourbon-l’Archambault Basin using the segmentation threshold selection tool. The 3D surface models are provided in .ply format, and can therefore be opened with a wide range of freeware.

Inv nr.	Taxon	Collection
MNHN.F.AUT811	cf. *Triodus* sp.	MNHN, Paris
MNHN.F.AUT812	‘Ctenacanthiformes’ indet.	MNHN, Paris
MNHN.F.AUT813	Xenacanthimorpha?	MNHN, Paris
MNHN.F.AUT814	cf. *Triodus* sp.	MNHN, Paris
MHNE.2021.9.1	cf. *Triodus* sp.	MHNE, Colmar, France

Table 1. List of neurocranium models. MNHN: Muséum National d’Histoire Naturelle, Paris, France. MHNE: Musée d’Histoire Naturelle et d’Ethnographie de Colmar.

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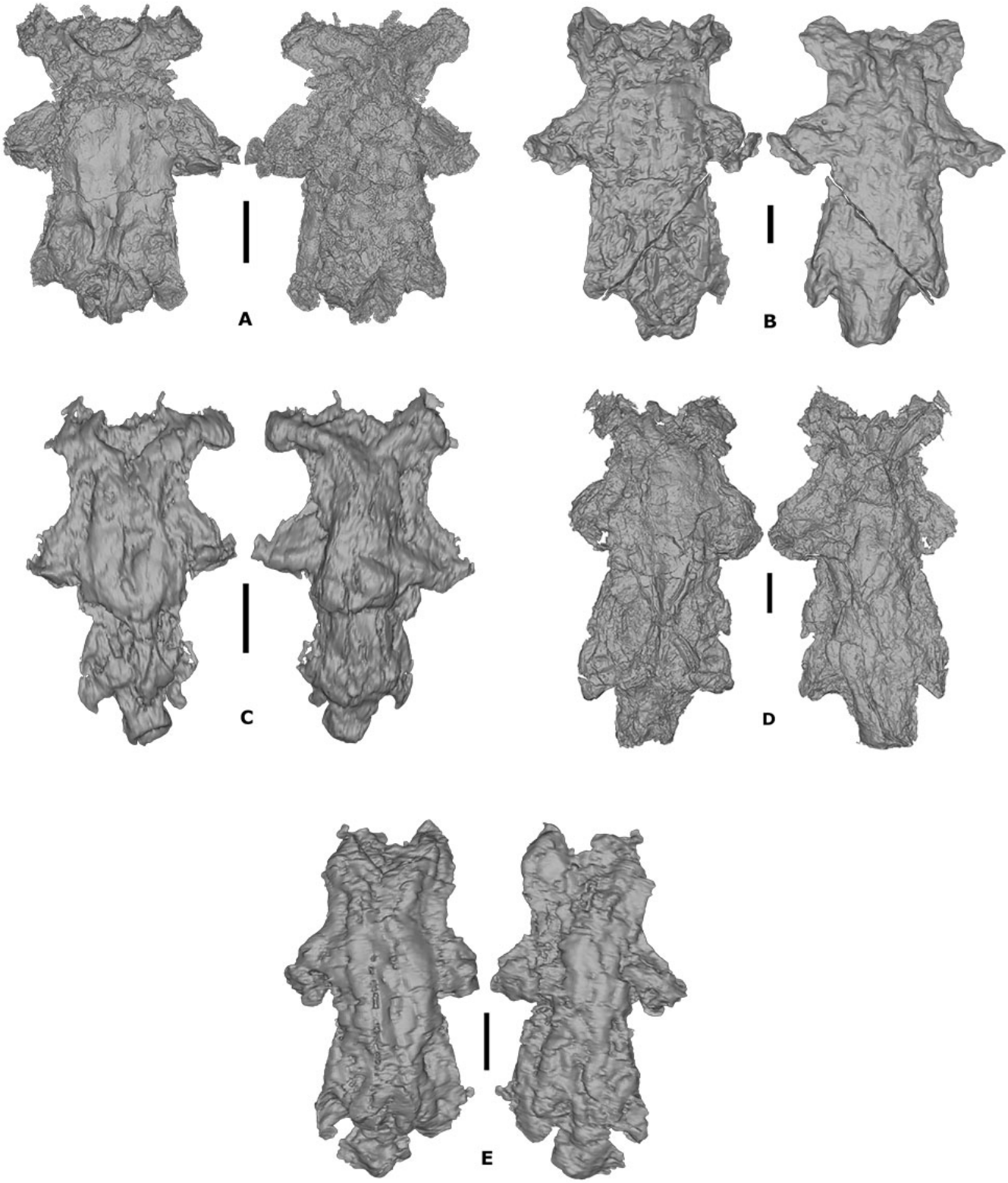

Figure 1. Surface rendering of the chondrichthyan neurocrania from the Autun and Bourbon-l'Archambault basins. (A), cf. *Triodus* sp. Specimen MNHN.F.AUT811. (B), cf. *Triodus* sp. Specimen MHNE.2021.9.1. (C), cf. *Triodus* sp. Specimen MNHN.F.AUT814. (D), Xenacanthimorpha?. Specimen MNHN.F.AUT813. (E), 'Ctenacanthiformes' indet. Specimen MNHN.F.AUT812. (A, B, C, D, E) dorsal view to the left and ventral view to the right. Abbreviations: MNHN: Muséum National d'Histoire Naturelle, Paris, France ; MHNE: Musée d'Histoire Naturelle et d'Ethnographie de Colmar, Colmar, France. Scale bars=1cm.

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