



## New semionotiform (*Neopterygii*) from the Tlayúa Quarry (Early Cretaceous, Albian), Mexico

ADRIANA LÓPEZ-ARBARELLO<sup>1</sup> & JESÚS ALVARADO-ORTEGA<sup>2</sup>

<sup>1</sup>*Bayerische Staatssammlung für Paläontologie und Geologie, Richard-Wagner-Strasse 10, D-80333 München, Germany.*

*E-mail: a.Lopez-Arbarello@lrz.uni-muenchen.de*

<sup>2</sup>*Instituto de Geología, Universidad Nacional Autónoma de México, Ciudad Universitaria, Coyoacán, México, D. F., 04510, México.*

*E-mail: alvarado@geologia.unam.mx*

### Abstract

We describe a new semionotiform fish, *Tlayuamichin itztli* **gen. et sp. nov.** from the Early Cretaceous (Albian) of Mexico, which constitutes one of the youngest semionotid articulated remains. The new taxon is represented by five well-preserved specimens from the Tlayúa Quarry near Tepexi de Rodríguez in Puebla State, central Mexico. A series of paraethmoid bones anterior to the supraorbital series, supraorbital bones extending beyond the anterior rim of the orbit, the presence of a large pentagonal supraorbital closing the anterior rim of the orbit, seven anterior infraorbitals, dorsally expanded infraorbitals at the ventral border of the orbit, and the most dorsal suborbital separating the preoperculum from the dermopterotic are potential autapomorphic features of the new taxon. The very long frontals, a dermopterotic that does not contact the anterodorsal corner of the operculum and the presence of a modified pectoral scale are additional features that help to diagnose the taxon. *Tlayuamichin itztli* **gen. et sp. nov.** resembles most closely “*Lepidotes*” *minor* from the Middle Purbeck Beds (early Berriasian), England. These two taxa share similarity with other species of *Semionotus* from the Early Jurassic of North America and the Triassic of Europe, suggesting interesting biogeographic relationships.

**Key words:** Semionotiformes, new taxon, anatomy

### Introduction

The Semionotiformes represent a monophyletic group including the poorly defined semionotids, the macrosemiids and the lepisosteids (Brito 1997; Cavin & Sutheethorn 2006; López-Arbarello 2006). The fossil record of the group goes back to the Early Triassic (Deecke 1889) and semionotiforms are very well represented, with several taxa of semionotids and the first records of macrosemiids, through the Triassic of Central Europe, suggesting a rapid radiation during that time (López-Arbarello 2008a). The occurrence of Triassic semionotids outside Europe today is doubtful because *Semionotus kanabensis* (Schaeffer & Dunkle, 1950) originally described as a species from the Chinle Formation, Utah, USA, actually is being recovered from the lithologically superficially similar, Lower Jurassic Whitmore Point Member of the Moenave Formation (Milner & Kirkland 2006: 511). Possible semionotiforms from the Triassic of Gondwana has recently been revised and there is no certain evidence for the presence of the group in this supercontinent (López-Arbarello *et al.* 2010). In the Jurassic however, the group is already widely spread with several records in Asia (Su 1996; Cavin & Sutheethorn 2006), Europe (Agassiz 1833–1844; Wenz 1968; Wenz *et al.* 1994; Lambers 1999), North America (McCune 2004), and Gondwana (López-Arbarello *et al.* 2008). Except for the lepisosteids, the fossil record of which starts in the Early Cretaceous to the present, macrosemiids and semionotids have their last appearances during the middle Cretaceous. The youngest macrosemiids are known from the Coenomanian-Turonian of Morocco (Murray & Wilson 2009) and the Cenomanian of Mexico (Alvarado-Ortega *et al.* 2009), whereas the youngest articulated remains of semionotids are known from the Cenomanian of Africa (Forey *et al.* in press), and Aptian-Albian of South America (Gallo & Brito 2004; López-Arbarello & Codorníu 2007).

In 1996 Applegate reported the occurrence of the first semionotiform found in Mexico, in the Early Cretaceous of Puebla. The record was based on two specimens from the Tlayúa quarry, near Tepexi de Rodríguez, Puebla