

A new *Notagogus* (Macrosemiidae, Halecostomi) species from the Albian Tlayúa Quarry, Central Mexico

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Abstract

A new *Notagogus* species from the Albian Tlayúa Quarry in Puebla, Central Mexico is described and represents the only European macrosemiid genus in the deposits. *Notagogus novomundi* sp. nov. is characterized by a small size, a rounded dermopterotic, a short preorbital region, big eyes, and unique strong and pointed coronoid teeth. A cladistic analysis supports the inclusion of the new macrosemiid in the genus *Notagogus*, as sister taxon of *Notagogus helenae* supported by the presence of two rows of supraorbitals. Both taxa branch off at the base of *Notagogus*. In this analysis *Neonotagogus* cannot be considered a different genus to *Notagogus* since this taxon falls within a polytomy with all *Notagogus* species. Stratigraphic information suggests a double migration of the family from its original distribution in Tethys Ocean to the west, following the aperture of the northern part of the Atlantic Ocean until Mexico: one within *Notagogus* and another one within its sister clade comprised by all other macrosemiid genera.

Introduction

The Lower Cretaceous (Albian) red laminated limestone deposits of Tlayúa, in the State of Puebla, Central Mexico, is the fish localities which yields the most important fossil fish biodiversity in Mexico (APPLEGATE 1996). Since 1982 there have been recovered more than 160 well preserved macrosemiids, belonging to five new species still under study (APPLEGATE et al. 2000). The Macrosemiidae is a family known from partial specimens recovered in the Upper Triassic to the Lower Cretaceous deposits of Europe. The macrosemiids of Tlayúa are the first report of this family in America. The Tlayúa taxa are among the best preserved specimens of the family world wide. They have stronger pointed teeth in the jaws, and an unusual combination of apomorphic and plesiomorphic characters never reported before in the family, which suggest their status as new genera and species. Associated to these characters are the presence of a spiral digestive tract in which remain residues of their last meal. Although most specimens collected in Tlayúa appear to belong to new genera and species, the taxon here reported is the only record of an European macrosemiid genus, here referred as a new species of *Notagogus*. The recently discovered macrosemiids in North America indicates that the family was widely distributed over the warm and shallow waters of the western margins of the Tethys Ocean.

Since the establishment of *Notagogus* AGASSIZ, 1835, six species have been described: *N. helenae* and *N. inimontis*, (Upper Jurassic of Cerin, France); *N. denticulatus* (Upper Jurassic of Eichstätt and Kelheim, Germany); *N. decoratus* (Upper Jurassic of Eichstätt, Germany); *N. parvus* (Lower Cretaceous of Belgium); *N. ferreri* (Lower Cretaceous of Montsec and Las Hoyas, Spain); and *N. pentlandi* (Lower Cretaceous of Castellammare, cited also as Capo d'Orlando, Napoli and Pietrarroia [Benavento] both in Southern Italy). When comparing *N. denticulatus* and *N. pentlandi* from Italy, BRAVI (1994) found enough differences between these taxa to establish the new genus *Neonotagogus* and named *N. denticulatus* as the type species. Because of the poorly known anatomy of the skull, the delicate body, and the small number of specimens

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