



A new marine clupeoid fish from the Lower Cretaceous of the Sergipe-Alagoas Basin, northeastern Brazil

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Abstract

Clupeomorph fishes are largely diversified and widespread in Cretaceous strata of northeastern Brazil. They are represented by basal clupeiforms, †ellimichthyiforms, and advanced clupeoids. In this paper, a new clupeoid fish, †*Nolfia riachuelensis* **sp. nov.**, is described based on a specimen found in marine shale yielded in the Taquari Member (Albian) of Riachuelo Formation, Sergipe-Alagoas Basin. Although partially preserved (most of skull is lacking), the fish shows many informative characters, particularly in the axial skeleton. The fish is morphologically very similar to †*Nolfia kwangoensis*, a clupeoid fish originally described from marine deposit from the Upper Cretaceous (Cenomanian) of Kipala, Democratic Republic of Congo, with which it shares: 18 caudal vertebrae; long and cylindrical pleural ribs; posteriormost pleural ribs supported by long parapophyses and gradually decreasing in size posteriorly; very reduced ural centra; presence of long and distally congruent neural spines of third, second, and first preural centra; three uroneural bones (the first probably forming the pleurostyle). Otherwise, †*Nolfia riachuelensis* **sp. nov.** differs from other clupeomorphs by a unique combination of features. The number of supraneural bones, aligned rod-like postcleithra, less than 30 rays in the anal fin, and derived absence of dorsal scutes indicate its placement within Clupeidae. As far as is known, †*Nolfia riachuelensis* **sp. nov.** is the most ancient clupeoid fish known from the fossil record.

Key words: †*Nolfia riachuelensis* **sp. nov.**, Clupeoidei, Lower Cretaceous, northeastern Brazil

Introduction

In the early 1980s, a team of technicians of the PETROMISA (Petrobrás Mineração S.A., a late subsidiary of PETROBRAS, the Brazilian oil company) discovered fish remains in the grayish shales of the Taquari Member (Riachuelo Formation) in a sediment depth of 47 to 260 m at Rosário do Catete locality, State of Sergipe. This interesting material was donated to the Paleontological Collection of the Departamento de Zoologia (formerly Departamento de Biologia Animal e Vegetal) of Universidade do Estado do Rio de Janeiro, in that occasion under care of the late curator Rubens da Silva Santos (1918–1996).

Santos (1981, 1985) furnished a preliminary account of the fishes belonging to this assemblage indicating teleosts as predominant members but showing low diversity. He compared this assemblage with other fish-bearing beds known from the Lower Cretaceous of Brazil taking into account spatial and temporal distribution of certain taxa. Thus, he intuitively claimed close spatiotemporal relations among Riachuelo (Sergipe-Alagoas Basin), Santana (Araúpe Basin), and Codó (Parnaíba Basin) formations, taking into account the occurrence of the same taxa. Afterwards, the taxonomic list of Riachuelo Formation in Rosário do Catete locality was updated with the descriptions of a pycnodont, †*Camposichthys riachuelensis*, and a clupeocephalan, †*Beurlenichthys ouricuriensis* (Figueiredo & Santos, 1991, Figueiredo & Gallo, 2004).

The geology of Sergipe-Alagoas Basin has been evaluated and updated by various authors (*e.g.*, Feijó, 1994; Mohriak, Bassetto & Vieira, 1997; Azambuja-Filho, Cruz & Arienti, 1998; Souza-Lima *et al.*, 2002). As