

Baurusuchus salgadoensis, a New Crocodylomorpha from the Bauru Basin (Cretaceous), Brazil

Ismar de Souza Carvalho¹, Antonio de Celso Arruda Campos² and Pedro Henrique Nobre¹

¹ Universidade Federal do Rio de Janeiro. Departamento de Geologia, CCMN/IGEO. 21.949-900 Cidade Universitária - Ilha do Fundão. Rio de Janeiro - RJ, Brazil, E-mail: ismar@geologia.ufrj.br

² Museu de Paleontologia de Monte Alto. Praça do Centenário, Centro de Artes s/n°. 15.910-000 Monte Alto - SP, Brazil, E-mail: mpaleo@montealto.sp.gov.br

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Abstract

Baurusuchus salgadoensis is a new baurusuchid crocodylomorph from Bauru Basin (Cretaceous), Brazil, partially preserved through a complete skull. The fossil comes from a fine sandstone sequence of Adamantina Formation, General Salgado County, São Paulo State. The sedimentary sequence where it was found, located in Fazenda Buriti, is considered Turonian-Santonian in age. The described species - *Baurusuchus salgadoensis* sp. nov. - is a baurusuchid with an antorbital fenestra, double external nares with a bony septum, two well-fused supraorbitals, the supratemporal fenestrae larger than the orbits and a quadrangular-shaped laterotemporal fenestra. The position of the external nares, located on anterior and terminal portion of the rostrum together with the theropod-like lateral compression of the snout and teeth are indicators that *Baurusuchus salgadoensis* was a terrestrial crocodyliform. This was a carnivorous species and the lateral compression of the rostrum could be interpreted as a mechanism to increase the skull resistance forces during biting. The pointed, conical teeth, some with crenulated borders, could be used to perforate and to carve the prey. The geological context of *Baurusuchus salgadoensis* indicates that it probably lived in a hot and arid climate.

Key words: Crocodylomorpha, *Baurusuchus salgadoensis*, Baurusuchidae, Cretaceous, Brazil.

Introduction

The Bauru Basin (Cretaceous), located in southeastern Brazil, occupies an area of 370,000 km² (Fig. 1). During the South Atlantic opening the continental rupture originated this inland basin by the process of thermo-mechanical subsidence (Fernandes and Coimbra, 1996, 1999; Fulfaro et al., 1994) of volcanic rock. It comprises a Cretaceous sequence, with at least 300 meters of siliciclastic sediments. The age of the Bauru Basin ranges from Aptian to Maastrichtian (Fulfaro et al., 1994) and there are different proposals to the lithostratigraphy (Soares et al., 1980; Fernandes and Coimbra, 1992, 1996). The Bauru Basin sediments are generally included in the Caiuá and Bauru groups, although some authors (Fulfaro et al., 1999) proposed that the Caiuá Group is part of a separated pre-Bauru Basin of Aptian-Albian age, named Caiuá Basin. The Bauru Group was divided by Fernandes and Coimbra (1996) in three formations, namely Adamantina, Uberaba and Marília. The Adamantina Formation (Turonian-Santonian age, Castro

et al., 1999; Dias-Brito et al., 2001) is a sequence of fine sandstones intercalated by mudstones, siltstones and clayish sandstones. The lowermost part of this unit was redefined by Batezelli et al. (1999) as the Araçatuba Formation. The Uberaba Formation (Coniacian-Campanian, Goldberg and Garcia, 2000) is composed of fine greenish sandstones interbedded by siltstones, coarse sandstones, mudstones and volcanoclastics. The Marília Formation was formally proposed by Soares et al. (1980) as a sequence of coarse to conglomeratic sandstones, mudstones and carbonate levels. The sandstones are mainly classified as subfeldsarenites and feldspathic litarenites (Garcia et al., 1999; Alves and Ribeiro, 1999; Andreis et al., 1999). The age of these deposits based on the abundant vertebrate fauna is considered as Campanian-Maastrichtian (Bertini, 1993). Dias-Brito et al. (2001) based on charophyte and ostracods, established a Maastrichtian age.

Throughout the Upper Cretaceous, there was an alternation between severely hot dry and rainy seasons,

and a greatly diverse fauna and flora was established in the basin. Charophyta algae, pteridophyte sporocarps (Marsiliaceae), coniferophyte logs, ostracods, gastropods, bivalves, invertebrate and vertebrate ichnofossils as well as a diversified vertebrate fauna of fishes, amphibians, reptiles (lizards, ophidians, turtles, crocodylomorphs, Dinosauria) and mammals are frequent (Roxo, 1936; Barbosa, 1955; Petri, 1955; Suarez and Arruda, 1968; Arid and Vizotto, 1965, 1971; Estes and Price, 1973; Lima et al., 1986; Baez and Peri, 1989; Bertini, 1993, 1994a, b; Bertini et al., 1993; Kischlat et al., 1994; Manzini et al., 1996; Castro et al., 1999; Magalhães Ribeiro and Ribeiro, 1999; Senra and Silva e Silva, 1999; Magalhães Ribeiro, 2000; Musacchio, 2000; Campos et al., 2001; Gobbo-Rodrigues et al., 2001).

The oldest sediments in this basin (Adamantina Formation), Turonian-Santonian in age (Castro et al., 1999) were deposited in a lacustrine environment (Batezzelli et al., 1999). Progressive increase in aridity due to the persistence of a hot climate and to topographic heights surrounding the basin, allowed the establishment of alluvial plains, braided rivers and small temporary ponds (Mezzalira, 1980; Campanha et al., 1992; Silva et al., 1994; Etchebehere et al., 1999; Goldberg and Garcia, 2000). The new baurusuchid was found in this palaeoenvironmental setting. The specimen was collected in fine sandstones deposited through sudden floods on alluvial plains during a dry and hot season (Fig. 2). A great amount of crocodylomorph eggs and eggshells also occur nearby in correlated stratigraphical levels.

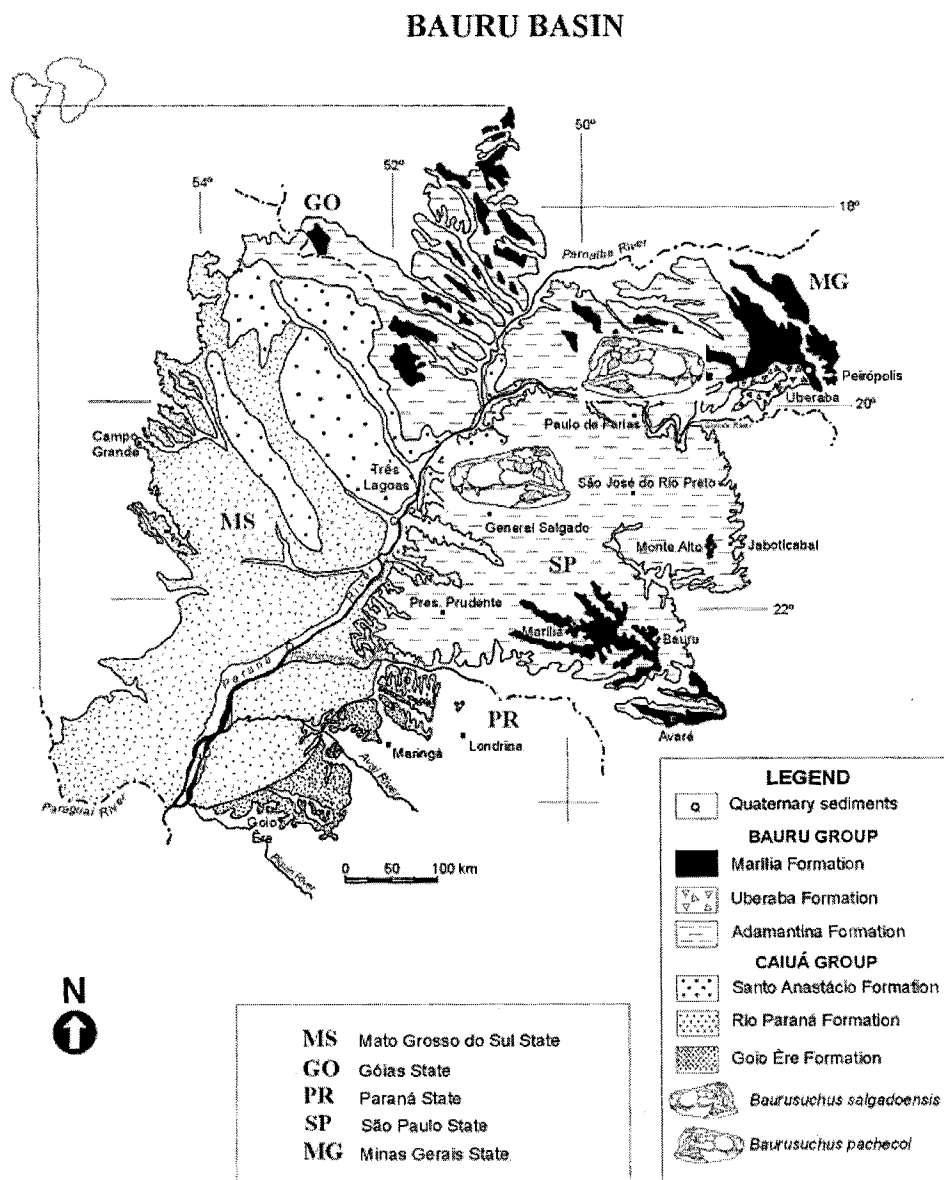


Fig. 1. Geological map of the Bauru Basin, southern Brazil in the context of Gondwana (80 Ma) (modified from Fernandes and Coimbra, 1996).

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