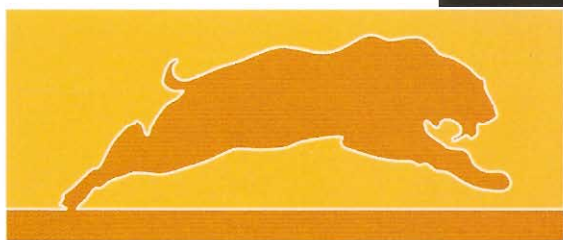
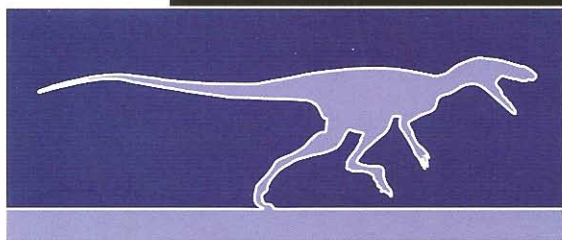
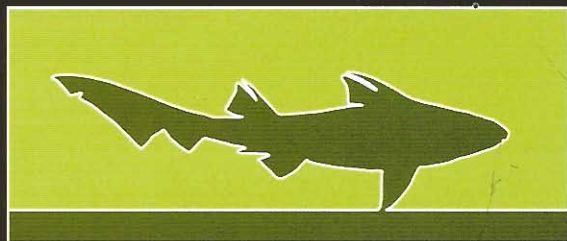




Paleontologia em Destaque

Boletim Informativo da Sociedade Brasileira de Paleontologia

Edição Especial - Maio/2008



**VI Simpósio Brasileiro de
Paleontologia de Vertebrados**

Boletim de Resumos

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Propalinal jaw movements on the Sphagesauridae (Crocodyliformes, Mesoeucrocodylia)

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The Sphagesauridae is a family of notosuchian with highly derived traits amongst the crocodyliforms and are known exclusively from the Late Cretaceous of the Adamantina Formation (Turonian-Santonian), Bauru Basin, Brazil. These animals possessed the posterior mandibular and maxillary teeth obliquely disposed with tuberculated keels on its lingual portion on the upper teeth or labial on its lower teeth, which occluded tooth-tooth and provided a powerful shearing scissors-like mechanism associated to a propalinal movement of the jaw. The teeth are coated by coarse enamel and unlike most crocodylians the posterior teeth are anteroposteriorly compressed. Some of the Sphagesauridae teeth are worn in two distinct patterns: one from the adductor-abductor movement of the mandible, and the other one from the fore-aft jaw movement. This fore-aft jaw movement, or propalinal, worn the sphagesaurid's teeth keels and in these worn surfaces its observed parallel horizontal

striae, indicating the vector that produced that sort of weariness was anteroposterior. The Sphagesauridae also present unilateral jaw movements that are observed on preferential sides. These movements had worn the teeth facets usually in the right side. Propalinal jaw movements are often associated to mastication, herbivory or omnivory, which leads to the idea that these Late Cretaceous crocodyliforms had some unusual diet when compared to most of the Crocodylomorpha. This feeding system allied to the teeth weariness suggests a durophagous diet, which might have been composed of hard shell animals such as mollusks, dry carcasses, pines, roots and other abrasive plant materials. Evidence gathered from the sphagesaurids feeding apparatus lead to a broad range of possible items that could have been included on these animals' diet. It is possible to suppose that these animals were scavengers and opportunists which would be highly advantageous on a hot semi-arid habitat with low resources during the dry seasons. [The financial support of this study was provided by Instituto Virtual de Paleontologia/Fundação de Amparo à Pesquisa do Estado do Rio de Janeiro (IVP/FAPERJ, Proc. nº E-26/152.541/2006), Coordenação de Aperfeiçoamento de Pessoal de Nível Superior (CAPES) and Conselho Nacional de Desenvolvimento Científico e Tecnológico (CNPq, Proc. nº 305780/2006-9)].