

# ABSTRACT VOLUME

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## THE GIGANTISM OF THE CRETACEOUS CONCHOSTRACA FROM SOUSA BASIN, BRAZIL

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The Sousa Basin comprises an area of 1,250 km<sup>2</sup> in Northeastern Brazil and its origin is related to the South Atlantic Ocean opening during the Early Cretaceous. The main lithologies in the Sousa Basin are clastic rocks. They are subdivided into the Antenor Navarro, Sousa and Rio Piranhas formations. In the Sousa Formation (comprised of mudstones, siltstones, sandstones, marls and limestones), a large amount of big-sized conchostracans Palaeolimnadiopsidae (*Palaeolimnadiopsis reali*) are found. The specimens reach 4.5 cm in length, which represents an anomalous size for conchostracans. Living species inhabit fresh alkaline waters (pH between 7 and 9), usually in well-oxygenated environments that determine the morphological aspects of their shells. Then the proliferation of an abundant big-sized fauna requires specific physical-chemical characteristics of the water. Chemical analyses of the rocks of the Sousa Formation allow the evaluation of the geochemical conditions in which these Cretaceous conchostracans lived. Larger specimens (average length of 30 mm) from Pedregulho appear in rocks with 6.4% of calcium, 1.8% of magnesium and 21.7% of silicon ions. This same species, in the Lagoa dos Patos locality, is smaller (average length of 20 mm), and the rocks that contain it have 1.0% of calcium, 1.6% of magnesium and 31.7% of silicon ions. The higher calcium and magnesium concentration in the Pedregulho locality could be one of the determining factors for the larger size of the specimens. The concentration of phosphorus is important as it allows the blooming of algae and other microorganisms and also has a direct relation in current lakes with their eutrophization. Once again, it is possible to notice that the occurrence of *Palaeolimnadiopsis reali* is related to a phosphorous nutrient-rich environment. The values for phosphorus ions in the Pedregulho and Lagoa dos Patos localities, both located in the Sousa Basin, are among the highest ones (0.17% and 0.10%, respectively) for the analyzed samples. The large-size of this species must be directly related to the availability of nutrients, in which phosphorus is one of the most important element. The enrichment of nutrients in the Sousa Basin is probably due to the tectonic activity during the Early Cretaceous when chemical elements were remobilized throughout hydrothermal solutions that fed into the lakes. This might have been responsible for the nutrient-enrichment and the maintenance of the alkaline pH allowing then, the blooming of the big-sized Palaeolimnadiopsidae conchostracans. [Supported by FAPERJ and CNPq].

