

AN AUTOCHTHONOUS LATE PALEOZOIC PELECYPOD ASSEMBLAGE FROM THE RIO DO SUL FORMATION (PERMIAN), PARANÁ BASIN, BRAZIL*

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INTRODUCTION

Pelecypods are common components of Permian marine strata (Tubarão and Passa Dois groups, Middle Carboniferous-Late Permian), in the Paraná Basin, Brazil. Shells occur mainly in parautochthonous-allochthonous and allochthonous concentrations and thus furnish only limited information on species diversity, size-frequency distribution, commensal relations and substrate preferences. A possible exception is the occurrence of shells preserved in life position (census assemblage) of the Baitaca assemblage in Teixeira Soares, Paraná (Rocha-Campos, 1968).

PALEOECOLOGY

In Teixeira Soares, three lithofacies (Passinho shale, Baitaca siltstone and Rio da Areia sandstone) that occur in succession in the upper part of Rio do Sul Formation (Early Permian) represent a short transgressive-regressive episode at the end of the Paleozoic glaciation. The impoverished fauna of Passinho shale is dominated by shallow burrowing, detritivorous pelecypods (*Nuculana*, *Phestia*) preserved with pyritized shells, suggesting deep water with low oxygen content and muddy substrate, rich in organic remains and sulphides. The Baitaca assemblage is more diversified than that of Passinho shale and is dominated by slow, deep burrowing, suspension feeding, opportunistic pelecypods ("*Allorisma*" *barringtoni*, *Vacunella* cf. *etheridgei*?). Slow, shallow burrowing, suspension feeding forms [*Myonia* (or *Vacunella*)? sp.; *Myonia*? sp., *Sanguinolites* sp., *Schizodus* sp.] and byssate, epifaunal, suspension feeding species (*Aviculopecten multiscalptus*, *Limipecten* sp.) are common. Shells of burrowing forms are preserved articulated, in situ, with dorso-ventral flattening. Butterflied or disarticulated specimens are rare among the burrowers. Epifaunal shells are disarticulated. The assemblage of the Rio da Areia sandstone is characterized by a high proportion of epifaunal, disarticulated and fragmented valves, indicating shallow water and stable substrate conditions. The Passinho and Rio da Areia assemblages are typically parautochthonous-allochthonous. As discussed below, an in situ, autochthonous origin is postulated for the Baitaca assemblage.

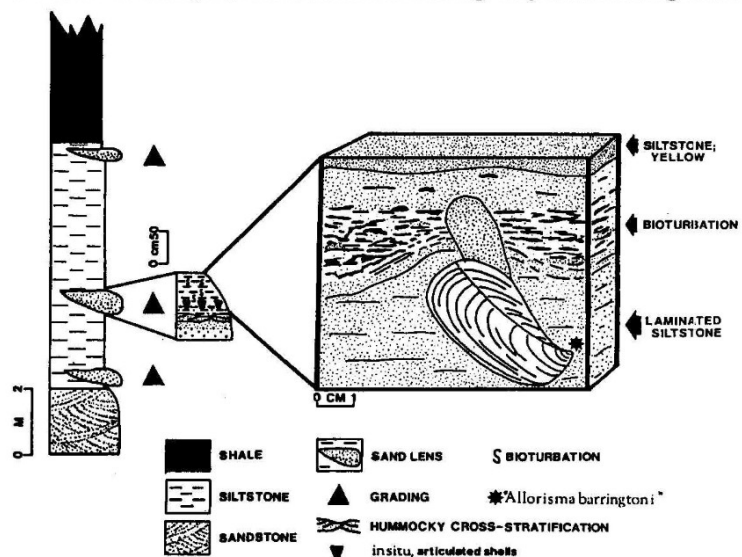


Figure 1 - Columnar section of the upper part of the Rio do Sul Formation, approximately 2,2 km SE of Teixeira Soares, Paraná.

TYPE OF THE SKELETAL CONCENTRATION (PROCESSES AND PRODUCTS)

In the "type"-section at Baitaca (2,2 km SE of Teixeira Soares) sand lenses about 1m thick with fining-up grading intercalate within a thick sequence of siltstone (fig. 1). At the base of lenses, medium to fine-grained sandstone with hummocky cross-stratification grading upwards to yellow siltstone occur in sharp contact with the underlying siltstone (fig. 1). Laminated siltstone above the sandstone contains shells of "Allorisma barringtoni" and *Vacunella cf. etheridgei*? in life position, without evidence of escape structures. The siltstone is recovered by siltstone and mudstone showing incipient parallel or undulating lamination, with small disarticulated shells of *Aviculopecten multiscalptus*. These sediments are intensely bioturbated. In shallow marine environments, tempestites tend to be subtractive and additive in the distal settings (Einsele & Seilacher, 1982). In fact, immediate burial ("obrution") by sudden increase in sedimentation rate, induced by storms in lagoonal (Peterson, 1985) and marine environments, is one of the processes responsible for preservation of in situ, articulated shells in the pre-event community (Einsele & Seilacher, 1982; Kidwell, 1990, 1991). Since hummocky cross-stratification indicates wave action at a higher level of turbulence, it is probable that the sandy and silty sediments of the Baitaca beds have been transported from proximal settings by return currents. The sediments were immediately occupied by benthonic opportunists that were, subsequently, buried by storm-induced suspension deposits. In the Baitaca assemblage the layer of entombing sediment (burial increment) was sufficient to protect the specimens against the post-mortem damage during seafloor exposure, in distal settings, below the storm-wave base. Post-event colonization of the substrate is indicated only by bioturbators, which penetrate at different levels below the post-event surface. Shells of the background fauna were not utilized by the endo-byssate forms which can penetrate the burial increment and use dead shells for attachment (Kidwell, 1991). Consequently, there is low taphonomic feedback and time-averaging is reduced.

CONCLUSION

Census assemblages represent the highest temporal resolution (days-10yr) records of marine community structure (Kidwell & Bosence, 1991). Therefore, the sedimentological and taphonomical data indicate that differences in the taxonomic composition of the three lithofacies of the Rio do Sul Formation are due not only to paleoecological factors but, to some extent, to different degrees of time-averaging.

REFERENCES

- EINSELE, G. & SEILACHER, A. (1982). Cyclic and event stratification, Springer-Verlag, Berlin, p. 531-536.
KIDWELL, S. (1990) Paleontol. Soc. Spec. Publ., 5:309-317.
KIDWELL, S. (1991) Cycles and events in stratigraphy, Springer-Verlag, Berlin, p. 268- 282.
KIDWELL, S. & BOSENSE, D.W.J. (1991). Taphonomy: realising the data locked in the fossil record, Plenum Press, New York, p. 115-209.
PETERSON, C.H. (1985) Paleobiology, 11(2):139-153.
ROCHA-CAMPOS, A.C. (1968) Ciência e Cultura, 20(2):160.

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BIOCRONOESTRATIGRAFIA DOS NANOFÓSSEIS CALCÁRIOS DA BACIA DE SERGIPE

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O arcabouço bioestratigráfico atualmente utilizado pela PETROBRÁS para o Cretáceo da bacia de Sergipe é aquele compilado por Beurlen et al. (in Beurlen et al., 1992). Posteriormente, com a consecução das investigações bioestratigráficas ao longo de toda a margem continental brasileira, várias análises foram realizadas, contribuindo para o melhor ajuste cronoestratigráfico das biozonas e a proposição de outras. Objetiva-se com o presente trabalho exemplificar algumas das mudanças propostas no arcabouço apresentado por Beurlen et al. (in Beurlen et al., op. cit) à luz das informações mais recentes. O modelo bioestratigráfico seguido neste trabalho, com ligeiras modificações, é o zoneamento hipotético elaborado por Antunes et al. (1994).

Foram selecionados para a análise seis poços (1-US-1-SE, 1-CN-1-SE, 1-CA-1-SE, 1-CRL-1-SE, 1-SES-9 e 1-SES-3), de modo a compor uma seção representativa da parte média / superior do sistema cretáceo da bacia. Os foraminíferos planctônicos destes poços também foram estudados por Koutsoukos (1989). As informações provenientes