Entre os fatores causais das variações do nível do mar e influências continentais estariam as glaciações do Gonduana, cpois haveria estabilidade, como verificado nos perfís de sedimentação, sem indicação de atividade fluvial devido a rejuvenescimento de relevo por atividade tectonica.

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PROXIMAL STORM SHELL BEDS OR COQUINAS IN THE CORUMBATAÍ FORMATION (PINZONELLA ILLUSA ASSEMBLAGE; LATE PERMIAN), IN RIO CLARO, SP, PARANÁ BASIN, BRAZIL

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INTRODUCTION

This paper summarizes the taphonomic analysis of the Pinzonella illusa assemblage from the middle part of the Corumbataí Formation (Late Permian), Rio Claro region, SP. Four outcrops were studied (fig. 1) and specimens from three others were also examined (fig. 1). A total of 1,200 specimens were analized. Information on the outcrops can be found in Mendes (1952), Ragonha (1980) and Torello & Simões (1993).

TYPE OF SKELETAL CONCENTRATIONS

Sandy tempestite. The best examples of this type of concentration are found in outcrops 1 and 3. At outcrop 1, for instance, they are characterized by lenticular concentrations, partially silicified, massive incipiently graded, sand supported matrix, about 30-50 cm thick (fig. 2). The lower contact is sharp, sometimes erosive, and marked by concentrations formed by dense accumulation of chaotically disposed, fragmented shells. Closed articulated shells are rare. They are followed up in sharp contact by fine sandstone with disarticulated shells convex side up, nested and stacked, predominantly oriented concordantly with the stratification. At its top the sandstone contains accumulation of disarticulated and closed articulated or butterflied shells, of diverse size classes, predominantly with convex side up (fig. 2). Nested and

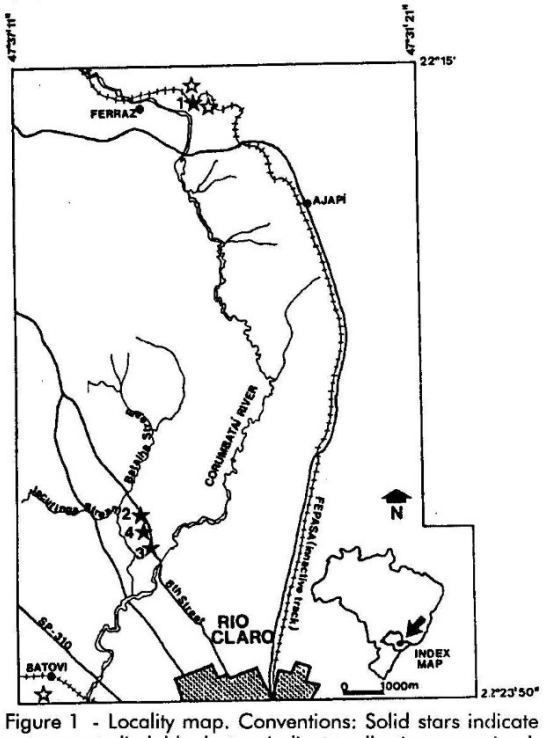

Figure 1 - Locality map. Conventions: Solid stars indicate outcrops studied; blank stars indicate collections examined.

stacked shells are frequent. At outcrop 2, shells are usually abraded, disarticulated or closed articulated, chaotically dispersed and concentrated in small lenses, supported by sandy matrix.

Coquinas. These are found at outcrop 4, they are bioclast supported, dense, 4-6 cm thick shell concentrations, including rare shale and sandstone, discontinuous partings. Their lower and upper contacts are sharp or erosive. Bioclasts are of diverse size (0.5 - up to 3.0 cm), including from predominantly fragmented shells to, more rarely, complete and abraded bigger shells (up to 3.0 cm). Stacking and nesting are frequent and gradation is clearly noticeable.

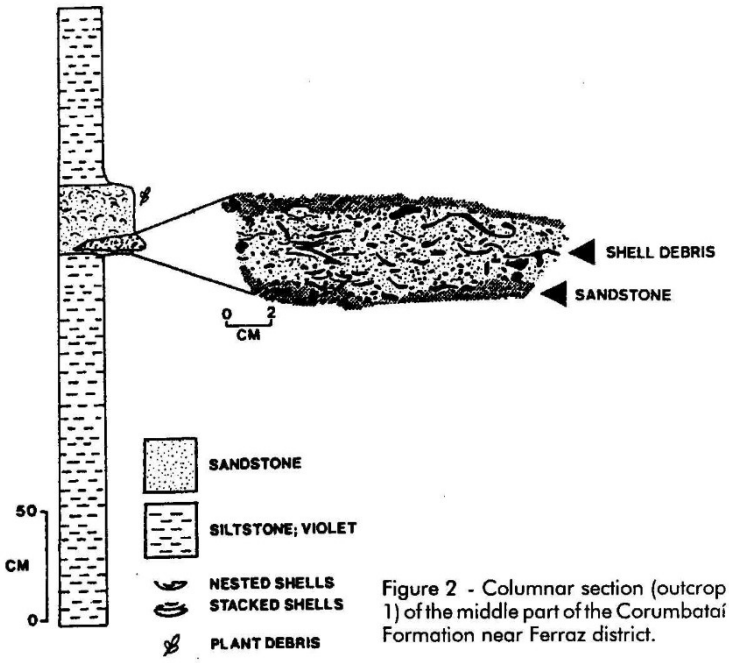

Figure 2 - Columnar section (outcrop 1) of the middle part of the Corumbataí Formation near Ferraz district.

DISCUSSION AND CONCLUSIONS

The features shown by the concentrations indicate their origin through high energy events (storms) in proximal environments. The taphonomic variation observed refer to changes in the intensity of storms and degree of time-averaging. Complete and articulated shells in the sandstones suggest rapid selection and redeposition during a short event and the dense, lenticular, basal concentrations of nested/stacked shells and with intraclasts probably correspond to lag deposits. These sandy concentrations are predominantly made by burrowing filter feeding and rare epifaunal filter feeding shells. The common parautochthonous elements are: **Pinzonella illusa, Casterella gratiosa, Plesiocyprinella carinata, Jacquesia elongata, Ferrazia cardinalis, Pyramus anceps and Terraia aequilateralis**. Accessory species are: Jacquesia arcuata, Roxoa corumbataiensis and Coxesia mezzalirai (allochthonous element?). Sandy tempestites exhibit a high Jaccard index of similarity (0.6-0.9) in different outcrops, evidencing low transport of bioclasts from adjacent areas. This suggests that storms affected areas of similar depth colonized by an uniform and widely distributed benthonic community. The allochthonous species were transported during peaks in storm intensity.

On the other hand, coquinas containing fragmented, disarticulated and abraded filter feeding (**P. illusa, P. carinata**) shells, chaotically arranged in the matrix, suggest exhumation and reworking previously to final burial and also increased degree of time-averaging. Hydraulic reworking, however, may have not been complete as indicated by the shale and sandstone partings. The dense packing was increased by compactation of the sediments as evidenced by the secondarily deformed and fragmented shells.

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