STRATIGRAPHIC SIGNIFICANCE OF *ROSSELIA* AND *OPHIOMORPHA* TRACE FOSSILS IN A PLEISTOCENE COASTAL BARRIER OF RIO GRANDE DO SUL, BRAZIL

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The ichnofossil *Rosselia socialis* is characterized by vertical structures with a narrow central shaft surrounded by concentrically laminated walls, found in shallow sandy marine settings and attributed to infaunal deposit feeders, possibly terebellid polychaetes. Although *Rosselia* is spindle-shaped, funnel-shaped specimens are common, and result from the erosion of the upper portion of the traces. *Ophiomorpha nodosa* is a trace attributed to callianassid crustaceans, and consists of horizontal tunnels with vertical ramifications formed by walls constructed with sand and mud pellets, and is an indicator of shoreface environments. Both traces occur in association in Pleistocene marine deposits of the Barrier System II in the southern coastal plain of Rio Grande do Sul state (CPRS). Despite being at least 15 meters-thick, only the uppermost ~2 meters of these deposits are subaerially exposed, outcropping for some 10 kilometers along Chuí Creek due to erosion of the banks. These deposits consist of well-sorted, mostly fine, unconsolidated quartz sand with some amounts of feldspars and heavy minerals. The primary sedimentary structures (parallel and cross stratifications), fossil shells, foraminifers, and luminescence ages from sediments and electron spin resonance (ESR) ages from the shells indicate that the outcrops encompass an interval of some 20 thousand years (between ~240 and 220 kyrs ago). The marine deposit grades to terrestrial environments, therefore represents the final stage of the marine highstand that formed the Barrier II. The observed specimens of *Ophiomorpha* measure up to ~20 centimeters in length and between ~3 and 5 centimeters in diameter. Their presence from the base to the top of the marine sediment indicates the persistence of shallow environments throughout its deposition. The *Rosselia* specimens measure between ~5 and 15 centimeters in height, and up to ~5 centimeters in diameter. Only funnel-shaped specimens are present, with their upper portion truncated by erosive surfaces (which also eroded some *Ophiomorpha*) within the marine sediments, presumably as the result of storm events. The *Rosselia* have laminated walls formed by muddy sand, and the aspect of stacked cones nested within each other seem to result from the upward migration of the producer organism under slow sedimentation rates. On the other hand, some thick (>10 centimeters) massive sediment layers deposited just above erosive surfaces are devoid of *Rosselia*, which re-appear again several centimeters above, thus indicating high sediment input following the erosion event. The vertical migration and re-colonization would be necessary in order to re-establish the equilibrium between the organism and the seafloor surface where it fed, therefore indicates a net positive sediment input. The presence of *Ophiomorpha* throughout the deposit, and the absence of facies variations that could be related to changes in depth, suggest an equilibrium situation between sediment input and sea-level rise. The features of the ichnofossils described here indicate that the latest stage of this marine transgression (transition from highstand to regressive regime) was characterized by vertical aggradation of the barrier, therefore emphasize their usefulness to recognize depositional processes related to sea-level changes and provide details on the evolution of the Barrier System II.

PALAVRAS-CHAVE: BARREIRA II, ICNOFÓSSEIS, ESTRATIGRAFIA