

# TAPHOFACIES OF THE “TAIÓ SANDSTONES”: A PRELIMINARY APPROACH

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Fossil accumulations are well known in sandstone beds cropping out in Taió region (Santa Catarina State, southern Brazil). The “Taió Fauna” represents a mollusk-dominated fossil fauna preserved in the transgressive deposits that characterizes the Paraguaçu Member of the Rio Bonito Formation. Sedimentological, taphonomic and paleoecological studies carried out in this assemblage allowed recognizing three distinct taphofacies preserved in fine-grained heterolithic and sandstones deposits, which are discussed herein. The taphofacies linked to the heterolithic deposits occur at the base and at the top of the sedimentary succession and represent two distinct contexts. The basal heterolithic deposits are mud-dominated and contain an assemblage of infaunal and epifaunal mollusks preserved as full and disarticulated valves. Abrasion, corrosion and bioerosion are lacking, and the size of shells is small ( $\leq 3$  mm). The bioclasts form loose packed pavements and are randomly oriented. This taphofacies indicates deposition under low-energy regime and short residence time of bioclasts on the substrate. The small size of the shells and the low diversity of the assemblage suggest predominance of stressing conditions. The top heterolithic deposits are sandy-dominated and contain exclusively trace fossils, represented by *Rosselia*, *Cylindrichnus*, *Skolithos*, *Diplocraterion* and other indistinct vertical and inclined burrows. The degree of bioturbation is moderate, locally high. The ichnofabric composition indicates shallow marine conditions and relatively stable soft substrates. The absence of body fossils is possibly due to bioturbation in the taphonomic active zone (TAZ) and reworking of bioclasts by erosional processes. The taphofacies linked to the sandstones is composed of a crowded *Rosselia* ichnofabric and a more diverse mollusk-dominated assemblage containing bivalve (predominant) and univalve mollusks, brachiopods and echinoderms. Mollusks occur as full or fragmented shells while brachiopods and echinoderms are found full. Some infaunal specimens were preserved as close and butterflyed articulate shells. All echinoderms were preserved articulated. Shells are found disposed in concordant, oblique and vertical positions in amalgamated sandstone beds showing hummocky cross-stratification. Abrasion and bioerosion occur. Size varies according with the taxa but sizes ranging from 4 to 7 cm predominate. The bioclasts form loose to densely packed pavements. This taphofacies indicates deposition under moderate to high-energy regime and short to medium time of residence in the substrate/water interface. The selective size of the population and the low degree of fragmentation of the bioclasts indicate short transportation and few reworking by storm waves and bottom currents. The taphonomy of echinoderms indicates *in situ* preservation (autochthony pattern). The analyzed data allow inferring that the taphofacies linked to the heterolithic deposits from basal beds represent deposition in marginal-marine settings while that linked to the heterolithic upper beds represents deposition in shoreface settings during fair-weather conditions. The taphofacies linked to sandstone beds represents storm deposits accumulated from lower shoreface to offshore-transition settings.

Key words: Taphofacies, marine transgressive deposits, Rio Bonito Formation.