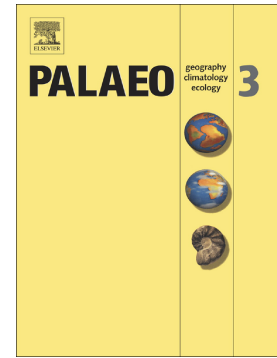


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Bioerosion in shells from the Early Permian Rio Bonito Formation, Brazil: taphonomic, paleobiological, and paleoecological implications

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Abstract

We report the occurrence of sponge borings in composite molds of heteropectinid shells from Early Permian marine siliciclastic deposits of the Paraná Basin of southern Brazil. Sponge borings are preserved mainly as chambers (*Entobia*) and channels (*Entobia* and *Clionolithes*). Three preservational variations of *Entobia* are present, morphologically equivalent to the alpha, beta, and gamma ontogenetic stages of clionid sponges. This equivalence suggests that the ontogenetic behavior in clionid sponges remains the same since Early Permian times and points to a conservative evolutionary trend for this group. The pattern of bioerosion and other taphonomic signatures indicate rapid shell burial due to frequent and energetic storm events that might have limited the time available for bioerosion activity. The new findings improve the Paleozoic record of *Entobia* and *Clionolithes* and indicate that sponge borings have potential to be preserved in ancient siliciclastic rocks.

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