

Pennsylvanian Heteroconchia (Mollusca, Bivalvia) from the Piauí Formation, Parnaíba Basin, Brazil

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Dolostones of the upper Piauí Formation, Parnaíba Basin, Northern Brazil, record a rich and diversified invertebrate fauna of Middle Pennsylvanian (Morrowan to Desmoinesian) age. Until 2000, previous authors had described and illustrated only two macroinvertebrate species of the Piauí Formation fauna, including (a) the trilobite *Phillipsia (Ameura) plummeri*, and (b) the bivalve *Heteropecten trichotomus*. More recently, Anelli and collaborators have provided the description of 30 bivalve species. In this contribution the taxonomic description of members of the Heteroconchia Hertwig, 1895, is presented and discussed. In fact, among the bivalve molluscs, Heteroconchia is the most diversified group (seventeen species) followed by Pteriomorpha (eleven species) and Palaeotaxodonta (three species). For this study, a total of two hundred and fifty specimens of heteroconch bivalves were examined. The specimens come from the walls of abandoned or in operation dolostone quarries of the Piauí Formation around the village of José de Freitas, Piauí. In the study area, several dolomitic facies each varying in thickness from 1 to 2 meters characterize the upper part of the formation (15 meters thick). The beds were deposited during transgressive conditions, when a large carbonate and evaporite platform developed. The Heteroconchia of the Piauí Formation are represented by semi-infaunal and infaunal suspension feeding bivalves. Heteroconchia, plus the associated macrofauna (including brachiopods, cephalopods, and trilobites) and microfauna are all indicative of fully marine conditions. Among the species described [*Pleurophorella?* sp.; *Schizodus alpinus*]; *S. acuminatus*, *S. ulrichi*, *S. cf. wyomingensis*, *Astartella subquadrata*, *Astartella cf. concentric*, *Wilkingia terminalis*, *Sanguinolites* sp. 1; *Sanguinolites* sp. 2; *Exochorhynchus* sp.; cf. *Anomalodesmata* indet. 1 and *Anomalodesmata* indet. 2] three are new (*Pleurophorella parnaibaensis* n. sp.; *Chaenomya caatingaensis* n. sp.; *Exochorhynchus buriti* n. sp.). In addition, the new genus *Carnauba* (Megadesmidae) is also proposed and represented by the unique species *C. oiticica* n. gen. and n. sp. All the above mentioned heteroconch bivalves are found in parautochthonous to autochthonous fossil concentrations, some in storm (obrution) beds (Mucambo dolostones), showing disharmonious time-averaging. It is worth to mention that in some of those event beds Heteroconchia bivalves (deep burrowing) are preserved *in situ*. Members of the deep burrowing guild such as *Chaenomya caatingaensis* and *Wilkingia terminalis* are commonly preserved with closed articulated valves, some in life position, with the long axis nearly perpendicular to bedding. The recurrent occurrence of these deep infaunal bivalves within pods of small bivalve-dominated shell debris indicates that the original muddy substrate was locally stabilized by minute bioclastic grains, determining the preference for settlement of those species. Subsequently they were smothered in life by clouds of muddy sediment probably during storm events. Hence, these are autochthonous elements of the Mucambo dolostones. The studied bivalves show affinities with species of the Amazon Basin (Itaituba Formation), and the Carboniferous of North America reinforcing a Middle Pennsylvanian age for the fauna. Apoio: CNPq e FAPESP.

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