

## **INTRA-SPECIFIC MORPHOMETRIC TRENDS IN LATE PALEOZOIC BIVALVE SHELLS: A CASE STUDY IN PERMIAN SHELLBEDS FROM PARANÁ BASIN, BRAZIL**

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One of main consequences of the time-averaging phenomena is the increase of intra-specific morphometric variation of a single species in the same horizon by mixing successive biological populations into a single sampling population. Fossiliferous sediments of the Permian Corumbataí Formation (Pinzonella neotropica Biozone), dominated by shells of *Pinzonella neotropica* (99%), offer us a unique opportunity to test this question in Paleozoic accumulations. Among 34 examined concentrations, four different bivalve-rich concentrations (storm beds), were selected for study, including internally complex, high time-averaged coquinas (concentrations 1, 2 and 4), and shell pavements, with high proportion of articulated specimens (less time-averaged, concentration 3). In these concentrations 3 morphotypes can be recognized (elongated  $L/H = 1.51$ ,  $H/W = 1.62$ ; intermediated  $L/H = 1.34$ ,  $H/W = 1.65$ ; rounded  $L/H = 1.28$ ,  $H/W = 1.69$ ). Cladistic analysis of the genus *Pinzonella*, considering the 3 morphotypes as distinct taxa, confirmed their assignment to the same species. The occurrence of the 3 morphotypes seems to vary according the taphonomic signatures, internal complexity and degree of temporal and spatial mixture of the concentrations. In the concentration 3 (rapidly accumulated), for example, only the elongated (81.8%) and rounded (18.2%) morphotypes are present. On the other hand, in the concentrations 1 and 2 the presence of all morphotypes is more evident and their proportion equivalent (e.g., concentration 2;  $E=35.19\%$ ;  $I=31.48\%$ ;  $R=33.33\%$ ). These results support the idea that morphometric changes are not only associated to biological and physical factors, but to the temporal and spatial mixing, as well, during the period of hardpart accumulation, and fossil concentration genesis.