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Turritelline dominated assemblages from the Miocene of Kutch, western India reveal depositional histories and the nursery ground of the species

Halder, K.¹ and Sinha, P.²

¹Associate Professor of Geology, Presidency University, Kolkata, India, e-mail: kalyan.geol@presiuniv.ac.in

²Research fellow, Presidency University, Kolkata, India

Turritelline gastropods (subfamily Turritellinae, family Turritellidae) are globally one of the most common components of benthic marine assemblages since the Lower Cretaceous. They are frequently the most abundant macrofossils in the assemblages where they occur. They often occur in huge numbers to form nearly monotypic shell beds. Allmon and Knight [1] coined the phrase "Turritelline-dominated assemblages" (TDA) to refer to such shell beds. Monotypic shell beds, including TDAs, are generally regarded as biogenic accumulations developed due to gregarious infaunal habit of the concerned animal and involve autochthonous to parautochthonous shells [2,3].

The Lower Miocene marine sedimentary sequence from Kutch, Gujarat, India accommodates several thin TDA beds, characterized by a single species of *Turritella*, *T. narica*. Five such units with abundant to very abundant *T. narica* specimens have been investigated here with respect to the relative abundance of the animal as against other associated fauna, size sorting and shell orientation. This analysis is intended to assess relative influence of biological and abiological factors involved in the accumulation of turritelline shells. Three TDA units show extreme abundance of the turritelline species, normal distribution with respect to size and random orientation of the shells, indicating biogenic derivation. In one of the rest two TDA beds, size distribution is weakly bimodal and orientation prominently bidirectional. Shell breakage is also relatively higher here. These indicate some hydraulic influence and presence of two flows of unequal strengths at different directions. The other bed has a relatively lower concentration of the shells, all of which are small and randomly oriented. This is interpreted to represent nursery ground of the species. This also indicates a niche segregation between the juveniles and grown-ups. Segregation between juvenile and adult habitats is known in recent gastropods (e.g., *Strombus gigas* [4]). The present report appears to be the first documentation of the nursery ground of a fossil gastropod and hence, direct evidence of niche segregation between young and adult in an ancient population.

References:

- [1] Allmon WD and Knight JL (1993) J Paleont 67(3): 355-360
- [2] Kidwell SM et al. (1986) Palaios 1: 228-238
- [3] Bandel K (2006) PSF (14), Freiberg Forschung C511: 59-138
- [4] Stoner AW (2003) Mar Ecol Prog Ser 257: 275-289

