

## RUDISTS AS SUCCESSFUL SEDIMENT-DWELLERS, NOT REEF-BUILDERS, ON CRETACEOUS CARBONATE PLATFORMS

SKELTON\*, Peter, W., Dept. of Earth Sciences, The Open University, Milton Keynes, MK7 6AA, U.K.; GILI, Eulàlia, Dep. de Geologia, Universitat Autònoma de Barcelona, 08193 Bellaterra, Spain; MASSE, Jean-Pierre, Centre de Sédimentologie-Paléontologie, URA 1208 du CNRS, Université de Provence, 13331 Marseille Cédex 03, France.

The claim that rudist bivalves competitively displaced corals from reef frameworks in the Cretaceous combines two assertions: (1) that rudist formations commonly developed as reefs; and (2) that the autecology of rudists was convergent with that of hermatypic corals. We dispute both assertions, and thus reject the hypothesis of competitive displacement. We argue instead that mobile sediments, rather than frameworks, dominated the margins of most of the extensive carbonate platforms of the period, and that it was on these non-reefal biotopes that the rudists flourished.

Definitions of reefs tend to combine two major elements: (1) a robust biogenic framework (with accompanying sedimentary and diagenetic components); and (2) topographical relief. Such definitions are clearly rooted in Recent coral reefs, in which endosymbiotic zooxanthellae permit the extensive growth of colonial coral frameworks in shallow but relatively nutrient-poor waters and topography is largely the legacy of Pleistocene changes in sea-level. In rudist formations, in contrast, individual rudist aggregations are volumetrically limited, relative to sediment, often loosely constructed, and evidently showed little relief. Tabular and small lenticular units predominate.

Differences in structure and palaeoenvironmental situation between rudist and corallgal associations are the effect of the different autecologies of the constituent organisms. While the clonal growth of corals predisposed them to framework development, the aclonal development of rudists was better suited to the opportunistic occupation of a variety of temporarily available substrata. Moreover, the tolerances and growth responses of rudists to such factors as water turbidity, nutrients and current regime were quite different from those of hermatypic corals. Despite repeated assertions in the literature that rudists possessed zooxanthellae, only a few species show any evidence for such a symbiosis and other evidence suggests that most lacked them.

Rudist/coral competition is therefore doubtful, even though members of both groups co-occur in many areas. The relative demise and migration into deeper water of coral frameworks in the Cretaceous was thus probably independently caused.