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Evolutionary trends in the epithecate scleractinian corals

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Adult stages of wall ontogeny of fossil and Recent scleractinians show that epitheca was the prevailing type of wall in Triassic and Jurassic corals. Since the Late Cretaceous the frequency of epithecal walls during adult stages has decreased. In the ontogeny of Recent epithecate corals, epitheca either persists from the protocorallite to the adult stage, or is replaced in post-initial stages by trabecular walls that are often accompanied by extra-calicular skeletal elements. The former condition means that the polyp initially lacks the edge zone, the latter condition means that the edge zone develops later in coral ontogeny. Five principal patterns in wall ontogeny of fossil and Recent Scleractinia are distinguished and provide the framework for discrimination of the four main stages (grades) of evolutionary development of the edge-zone. The trend of increasing the edge-zone and reduction of the epitheca is particularly well represented in the history of caryophylliine corals. We suggest that development of the edge-zone is an evolutionary response to changing environment, mainly to increasing bioerosion in the Mesozoic shallow-water environments. A glossary is given of microstructural and skeletal terms used in this paper.

Key words: Scleractinia, microstructure, thecal structures, epitheca, phylogeny.

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