The success of Cambrian hyoliths in the "arms race" and their ecological significance

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Abstract

Hyoliths were among the earliest biomineralized animals to emerge during the Cambrian Explosion, rapidly diversifying and radiating by the early–middle Cambrian. As vulnerable primary consumers, their high abundance and diversity made them significant members of the marine ecosystem. Knowledge of their ecology and survival strategies during the intensely competitive Cambrian "arms race" is increasing with more and more evidence accumulating from exceptionally well-preserved fossils. Hyoliths reached the epitome of their success in the Cambrian ecosystem, followed by a long progressive decline throughout the Palaeozoic until their Permian extinction. Cambrian hyoliths used a variety of life strategies, including their differing feeding habits, improvements in motility, and occupation of a wide range of habitats. They also had high rates of reproduction and other aspects of their palaeobiology. Calcareous hyoliths were particle-based energy transformers that played significant roles in the energy flow within a community, biological interactions, biogeochemical cycles, and ecological complexity of the Cambrian marine ecosystem.

Keywords: hyoliths, living strategies, ecology, ecosystem, Cambrian

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