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Cephalopod embryonic shells as a tool to reconstruct reproductive strategies in extinct taxa

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Abstract

© 2017 Cambridge Philosophical Society. An exhaustive study of existing data on the relationship between egg size and maximum size of embryonic shells in 42 species of extant cephalopods demonstrated that these values are approximately equal regardless of taxonomy and shell morphology. Egg size is also approximately equal to mantle length of hatchlings in 45 cephalopod species with rudimentary shells. Paired data on the size of the initial chamber versus embryonic shell in 235 species of Ammonoidea, 46 Bactritida, 13 Nautilida, 22 Orthocerida, 8 Tarphycerida, 4 Oncocerida, 1 Belemnoidea, 4 Sepiida and 1 Spirulida demonstrated that, although there is a positive relationship between these parameters in some taxa, initial chamber size cannot be used to predict egg size in extinct cephalopods; the size of the embryonic shell may be more appropriate for this task. The evolution of reproductive strategies in cephalopods in the geological past was marked by an increasing significance of small-egged taxa, as is also seen in simultaneously evolving fish taxa.

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Keywords

Ammonoidea, Cephalopoda, Coleoidea, Egg size, Embryonic shell, Hatchling, Initial chamber, Nautilida, Reproductive strategy