

SHELL GROWTH PARAMETERS, PHYLOGENETIC PATTERNS,
AND THE EVOLUTION OF THE PALEOZOIC GASTROPOD
FAMILY EUOMPHALIDAE.

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Shell growth parameters offer a wealth of knowledge regarding the form and development of shelled organisms including allometry, heterochrony, and general logarithmic growth. Approximately 100 specimens from 10 genera within the gastropod Family Euomphalidae were measured directly and from photographs in order to calculate these coiling parameters. The Paleozoic Euomphalidae are believed to have been epifaunal, filter-feeding snails with generally discoidal shells characterized by a wide umbilicus, marked growth lines, rugose ornamentation, and shoulder angulations. Representative genera are documented from the Ordovician (Arg) to the late Permian (Kaz). Parameters in this study were derived from those procedures reported by Raup and Schindel to describe ornamentation, growth rate, apertural shape, whorl shape, and expansion of the suture, aperture, and umbilicus. Cluster analysis, factor analysis, principal components analysis, and discriminant analysis were used to document parametric trends. Using these results in comparison with their stratigraphic occurrence allows documentation of phylogenetic relationships which preliminarily support the hypotheses of Morris and Cleavelly, and extend their "trees" with further genera. These analyses also illustrate a generalized morphospace for the family containing localized regions of generic diversity. These characteristics can be used for further investigations into the history and functional constraint of these gastropods.