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Comparison of Two Methods Used to Calculate Water Vapor Conductance in Modern and Fossilized Eggshell

Comparison of water vapor conductance (GH₂₀) values in eggs of extinct taxa to those of extant birds and reptiles to those of extinct taxa provides a useful tool for interpreting nesting environment in the fossil record. However, measuring water vapor conductance rates in fossil eggs requires different methods than those used for studying extant eggs. In extant species, GH₂₀ is obtained by placing a fresh egg in a desiccator and calculating the weight loss of the egg, divided by the difference in water vapor pressure across the eggshell. In fossil eggs, analysis of pore area from eggshell thin sections allows calculations of GH₂₀. This method, however, has not been compared to the gravimetric methods used in studies of modern eggs, and their comparability remains unknown. In this study, I will apply the thin section method typically used for fossil eggshell to calculate GH₂₀ for eggs of five extant taxa. I will then compare these results to values reported in the literature for the same eggs, using the gravimetric method. This study will determine comparability of methods, thus allowing for more accurate interpretations of nesting behavior in extinct species.