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Scaling of Organic Weight and Energy Content of Arthropod Eggs

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Poster Presentation 27

SCALING OF ORGANIC WEIGHT AND ENERGY CONTENT OF ARTHROPOD EGGS

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Among echinoderm species the average energy content (EC) and organic weight (OW) of eggs scale in direct proportion with average egg volume (Jaeckle, 1995). The scaling of OW and EC was evaluated for decapod crustacean and arachnid arthropods (26 species) using average values taken from the literature. This data set includes taxa that exhibit a variety of life history strategies and are found in aquatic, marine, and terrestrial habitats. Egg OW (exponent = 1.06, r^2 = 0.96, 11 species) and egg EC (exponent = 1.07, r^2 = 0.94, 7 species) of crustacean species scale in direct proportion with egg volume. The EC of eggs of crustacean (8 species) and arachnid (12 species) arthropods scales directly proportional to egg OW (crustacean exponent = 1.03, r^2 = 1.00; arachnid exponent = 1.01, r^2 = 0.99); the Y-intercepts are not significantly different. The weight-specific energy content of eggs are not different between groups (combined average = 0.027 ± 0.0028 mJ/μg, range = 0.017-0.031, 20 species). Thus, eggs of these species are energetically equivalent suggesting that for any given egg volume the weight-specific energy content is optimized.