

## Persistence in aquatic food-web models on universal vs. taxon-specific allometric relationships.

Bastien Boschung

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Allometric relationships encompass all ecological or physiological traits that scale with body weight. Ninety years after its publication about the Metabolic rate – Body weight relationship, Kleiber's scaling exponent  $b = 3/4$  is still debated for the relevance of its use over all organisms. As this theorists vs empiricists debate still continues, we investigate the effect of two levels of allometric parameters (universal vs taxon-specific) on the persistence of complex aquatic food-web models. Using species inventories containing taxonomic information and body-length, we estimate Body weight and Metabolic rate through two allometric relationships (Length-Weight and Weight-Metabolic rate). With a limited food-web due to availability of literature for some trophic levels, we found the Length-Weight allometric relationship to be taxon-specific.

Contrarily to our expectation, species body weight estimated with a unique set of "universal" allometric parameters for all species correlated with the more persistent model after simulations of a population dynamic model. If both "Taxon-specific" and "Universal" models showed more persistence than models with metabolic rate independent from body weight, the reasons for the "Universal" model superiority in persistence remain to be found. This increased persistence may promote careful use of universal allometric parameters in population dynamic models as it is easier and faster to use, for slightly better results. Nonetheless, beware of the over-estimations.

Supervisor: Rudolf P. Rohr