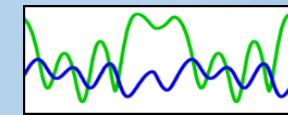


Accounting for activity respiration results in realistic trophic transfer efficiencies in allometric trophic network (ATN) models

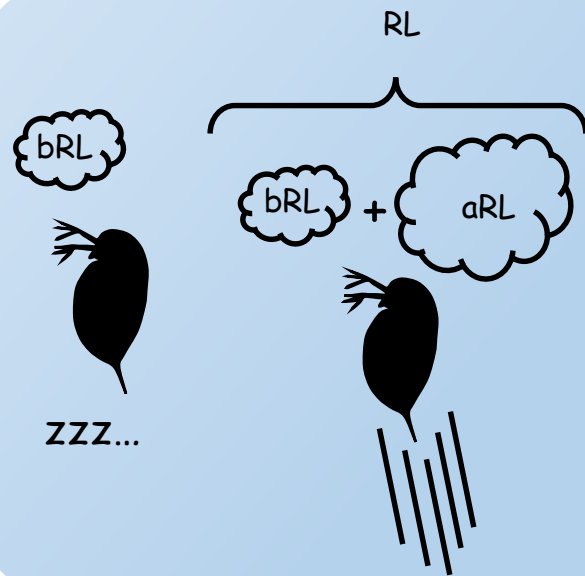


Dynatrait



Nadja J. Kath*, Alice Boit, Christian Guill, Ursula Gaedke

* nkath@uni-potsdam.de

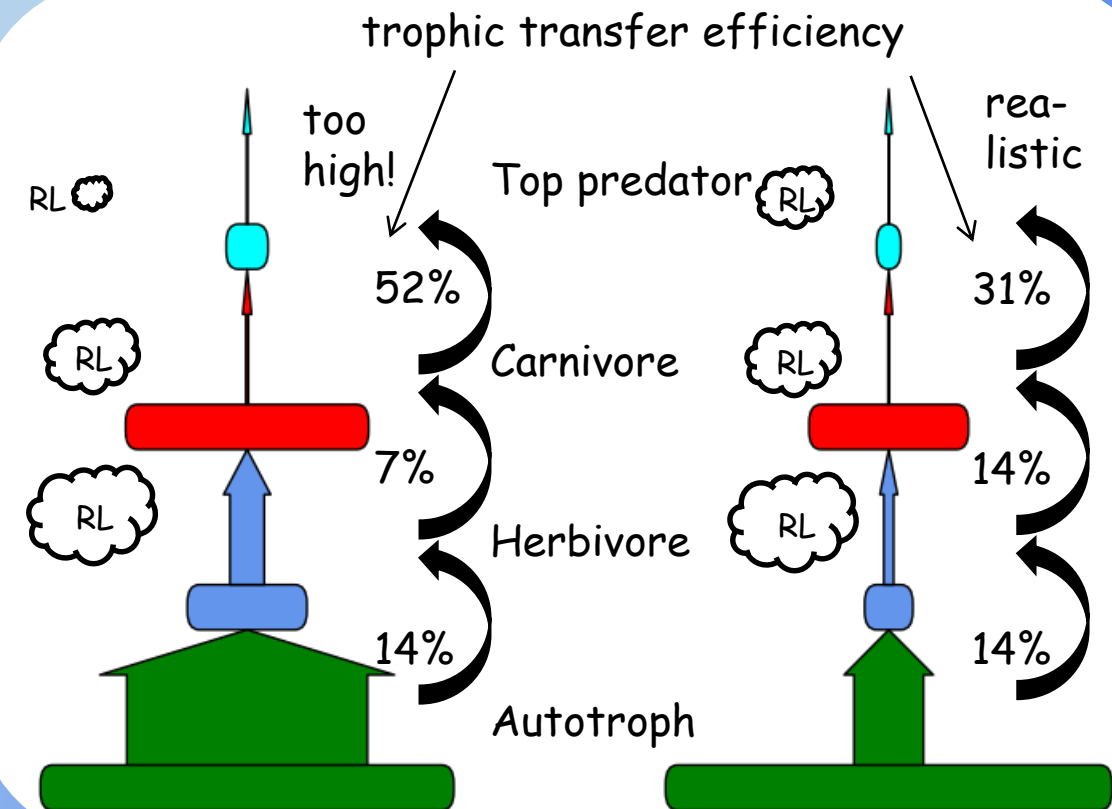


We compared the energetics of the established original ATN model (considering only biomass-dependent basal respiration losses bRL) to an revised ATN model version (considering both basal and assimilation-dependent activity respiration losses, $bRL + aRL = RL$).

Our revised ATN model yields realistic trophic transfer efficiencies below 33% across all adjacent trophic levels, determined by the production ratio between them. In contrast, the original ATN model exceeds these realistic values by far. Accounting for activity respiration is essential for consistently implementing the metabolic theory of ecology in ATN models.

Original ATN model

Revised ATN model



Theoretical Ecology (2018)

DOI 10.1007/s12080-018-0378-z