# Warming food webs: response of marine intertidal communities to temperature increases across a global gradient

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**Abstract**

Global warming is a major threat for ecosystems, but how it will affect species coexistence in complex food webs, and how this response is modified by preadaptation of communities to local temperature conditions is still unknown. Using 124 marine rocky pool food webs sampled across a global gradient spanning four continents and representing different local temperature conditions, we explored with a dynamical model how warming affects species persistence depending on local temperature conditions. Surprisingly, we found similar empirical food-web structures and body-mass distributions across the gradient, leading to a general humped-shaped relationship between simulated species persistence and temperature. In consequence, our results show that communities from warmer regions, close to the hump, might be more sensitive to warming. Our findings do not match predictions of generic network simulations, which stresses the importance of considering the specificities of natural food webs for predicting community response to environmental changes.

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