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Individual dispersal, fluxes of nutrients and the stability of ecosystems

ABSTRACT:
Some forty years after R. May's initial predictions concerning the impossibility of stable, large complex systems, I will revisit this question based on recent theoretical and empirical work. First, I will present a modelling approach based on existing datasets on the dynamics of natural food webs. This study highlights observed constraints among the parameters that summarize complexity and the strength of interactions among organisms. Second, I will present a theoretical model that tackles the extension of R. May's model in a spatialised ecosystem. Increasing fluxes among spatially separated compartments of this model tends to stabilize the dynamics, thus potentially resolving May's paradox.