Rapid evolution and an evolving metacommunity perspective on responses to global change and the distribution of species, traits and genes in landscapes

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Rapid evolutionary change is receiving increasing attention because it may feedback on ecological dynamics. If evolutionary tracking of environmental change is sufficiently effective, this may strongly influence how communities respond to environmental gradients and change, and thus alter the distribution of species, traits and genes in landscapes.

In this lecture I will focus on this evolving metacommunity aspect of eco-evolutionary dynamics. Drawing on our own data using the water flea *Daphnia magna* and ponds in heterogeneous landscapes as models I will first provide example of rapid evolution and then develop its feedback on the structure of communities and metacommunities. I will provide an empirical example of how rapid evolution impacts community assembly, develop the concept of evolution-mediated priority effects and discuss its implications, and point to some avenues for future research on evolving metacommunities, making a plea for a more ecological perspective on eco-evolutionary dynamics, embracing complexity and focusing on how evolutionary dynamics in multiple species might interfere with each other’s effect.