

The effect of space-dependent movement on critical patch size

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1. Abstract

Ecologists have long investigated how the demographic and movement parameters of a population determine its spatial spread and the critical habitat size that can sustain it. Yet, most existing models make oversimplifying assumptions about individual movement behavior, neglecting interindividual variability in movement behavior and how landscape heterogeneity influences dispersal. In this presentation I will discuss how to relax these assumptions and introduce a reaction-advection-diffusion model that describes the spatial density distribution of a population with space-dependent movement bias toward preferred regions and interindividual variability in space use preferences. In this scenario, the critical habitat size depends on the spatial location of the habitat edges with respect to the preferred regions and on the intensity of the different movement bias components. I will finalize discussing the importance of species and individual specific movement behavior as drivers of population dynamics in fragmented landscapes.