From individual movement decisions to population abundance patterns

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Abstract

Resource selection analysis (RSA) often assumes that population abundance at a particular location is a function of the resource quality at that location. Whilst this assumption is sometimes reasonable, there are also well-known cases where it fails. For example, abundance patterns at edges between habitats can be very different to those observed well within either habitat (so-called "edge effects"). Also, isolated and/or small patches of high-quality habitat are often used less abundantly than larger areas of the same habitat type. This talk will show how mechanistic movement models can help inform RSA in such situations, where local habitat quality is not the sole determinant of population abundance. It turns out that the spatial scale of an animal's movement decision is key to understanding the effect of edges, patch isolation, and patch size on the emergent population abundance patterns. We therefore propose that understanding population abundance in highly heterogeneous environments requires a better understanding of the scale on which animals make their decisions to move.

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