

Urbanization impacts short- but not long-distance natal dispersal in a common orb web spider

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Abstract

Urban environments represent a theatre for life history evolution. Species able to survive in cities can adapt to the local and often divergent environmental conditions compared to rural or natural environments. Dispersal determines establishment, gene flow, and thus the potential for local adaptation. Since habitats in urban environments are highly fragmented, and showing substantial turnover, contrasting adaptive effects on dispersal are expected. Fragmentation selects against dispersal while patch turn-over is expected to promote the evolution of dispersal. We here show both processes to act in concert when different scales are considered. Dispersal behaviour of juvenile, lab-reared garden spiders from two mid-sized European cities were tested under standardized conditions. While long-distance dispersal showed to be overall rare, short-distance dispersal strategies increased with urbanization at small scales, but declined when urbanization was quantified at large scales. We discuss the putative drivers behind these differences in natal dispersal and highlight its importance for urban evolution and ecology.

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