

Unraveling the drivers of dispersal behavior in response to climate change: Insights from laboratory experiments on Alpine Newts

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Climate change can induce species to shift their ranges toward more suitable climatic conditions. However, less mobile species encounter challenges when dispersing to distant, cooler habitats. Their survival often relies on successful short-distance movements within a heterogeneous microclimate landscape. In a laboratory experiment, we investigated how climate change, specifically higher temperatures or reduced hydroperiod, influences the dispersal behavior of alpine newts (*Ichthyosaura alpestris*) during their mating period. We also examined how individual phenotypes, encompassing behavioral, physiological, and morphological aspects, interacted with climatic factors to shape dispersal responses. Our findings indicate that higher temperatures increased the emigration rate toward cooler habitats, while reduced hydroperiod did not trigger such responses. Furthermore, individual phenotypes influenced these movement responses, revealing dispersal syndromes that can vary between sexes. These results have implications in biological conservation by emphasizing the importance of accessible microclimate refuges in mitigating the effects of climate change.