

Public Abstract

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Title:Movement Ecology of Juvenile Pond-breeding Salamanders: Implications for the Management and Conservation of Amphibian Populations

Human-induced habitat change is widely regarded as a primary factor threatening the persistence of species. One major consequence of habitat alteration is its effect on the movement behavior of individuals. Habitat alteration impacts the spatial patterning of resources and the risks associated with searching for resources. Spotted salamanders (*Ambystoma maculatum*) are forest-dependent, pond-breeding amphibians with complex life cycles. I used a combination of observational field studies of and computer modeling to investigate the influence of habitat amount and arrangement on juvenile salamander survival.

I quantified the fine-scale movement behavior of recently-metamorphosed spotted salamanders in three different habitat types (field, early successional forest, and forest) and at varying distances from both hard (field and forest) and soft (early successional forest and forest) edges. Salamanders moved straighter and with fewer turns through field habitat compared to both forest and early successional habitat. I found significant orientation toward forest of individuals released 5 and 10 meters from the forest, and random orientation at 20 and 35 meters, indicating either a small perceptual range or decreasing motivation to move towards forest with distance. My empirical work found that juvenile pond-breeding salamanders exhibit considerable variation in natal dispersal behaviors. Habitat alteration and landscape change may alter the benefits associated with different movement strategies.

I investigated the consequences of behavioral decisions in differing habitat modification scenarios using computer models. I found that different movement strategies were optimal under different habitat modification scenarios. The degree to which movement bias affected the probability of locating habitat differed based on assumptions of habitat clumping. My results indicate that habitat arrangement affects optimal movement behavior, and habitat managers should consider the configuration of habitat surrounding wetlands when designing conservation measures.