

**THE ROLE OF TERRESTRIAL HABITAT IN THE POPULATION DYNAMICS
AND CONSERVATION OF POND-BREEDING AMPHIBIANS**

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ABSTRACT

I used both demographic modeling and experimental field research to evaluate the role of terrestrial habitat in the population dynamics and conservation of pond-breeding amphibians. I began by using literature data to develop stochastic, stage-structured demographic models for two pond-breeding amphibian species and used these models to determine the potential effects of a range of core terrestrial habitat areas on population size and persistence. I next carried out field experiments designed to improve model accuracy. First, I manipulated terrestrial densities of juvenile amphibians and followed individual growth and survival of over one year. Results suggest that terrestrial density should be considered in models of amphibian population dynamics. I also carried out field experiments to determine the effects of specific forestry practices on the survival of juvenile wood frogs and American toads. The results of these experiments indicate that forestry practices interact with existing landscape structure to determine microclimate and thereby influence amphibian survival. Returning to the model building process, I used the results of my field experiments to develop a demographic model designed to evaluate the potential effects of forestry practices on wood frog populations in Missouri. The results of my dissertation research indicate that the quantity and quality of terrestrial habitat available to pond-breeding amphibians can have substantial population level consequences including increased extinction probabilities and decreased population sizes.