

Public Abstract

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Title:BEHAVIORAL CHOICE AND DEMOGRAPHIC CONSEQUENCES OF WOOD FROG HABITAT SELECTION IN RESPONSE TO LAND USE

The purpose of my dissertation research was to define adult wood frog non-breeding habitat in continuous oak-hickory forest and in response to timber harvest. I asked research questions that address the two components of habitat selection: 1) behavioral choice, and 2) demographic consequences of that choice. To document behavioral choice, I allowed adults to move freely throughout circular experimental timber harvest arrays (164 m radius) using standard radio-telemetry techniques. Prior to timber harvest, adults used drainages as non-breeding habitat and the number of frogs that migrated to a specific drainage correlated with the distance between the pond and the drainage. Following timber harvest, wood frogs avoided clearcuts and increased movement rates. I used experimental displacements to demonstrate that adults exhibit site fidelity to non-breeding habitat. To determine demographic consequences, I estimated survival of frogs constrained within microhabitats. Desiccation risks were severe on forested ridgetops and in exposed areas within clearcuts. Brushpiles within clearcuts provided microhabitats with similar desiccation risks as forested drainages. I also determined survival of 117 frogs with radio-transmitters that moved freely among microhabitats. I documented 29 predation events, 13 desiccation events, and 8 mortalities of unknown cause. Using Cox-proportional hazard models, I found that survival within the timber harvest array was 1.7 times lower than survival within continuous forest. Survival was lowest during the drought year of 2005. My results indicated that predation and desiccation risks near the breeding ponds are ecological pressures that explain why adult amphibians migrate away from breeding habitat during the non-breeding season.