

BEYOND THE EDGE: RIPARIAN HABITAT USE AND FOREST MANAGEMENT EFFECTS ON STREAM SALAMANDERS IN THE SOUTHERN APPALACHIAN MOUNTAINS

John A. Crawford

Dr. Raymond Semlitsch, Dissertation Supervisor

ABSTRACT

While there are many types of habitat loss and degradation (e.g., agriculture, land development), many studies have focused on the impacts of logging on wildlife populations and on ecosystem processes. Little information, however, exists on the effects of logging on amphibians that require streams for reproduction. In order to mitigate the impacts of habitat alteration on stream amphibians, it is necessary to have a clear understanding of the role abiotic and biotic factors play in determining habitat use and abundance. Additionally, we must determine the effects of forest management practices, such as timber harvesting, have on amphibian populations in order to develop alternative management strategies.

My data show that core terrestrial habitat use, microhabitat use, and overall stream salamander abundance are dependent on leaf litter depth and soil moisture. Furthermore, as leaf litter depth and soil moisture are reduced as a result of even-aged timber harvesting, the core terrestrial habitat use and abundance of salamanders decrease as a result of fewer microhabitats being available. The decrease in suitable microhabitats available is accompanied by a resulting increase in competition between stream salamander species. Lastly, I found that current USFS regulations for riparian buffer widths are vastly inadequate to protect stream salamander populations from activities such as timber harvesting.