

Public Abstract

First Name:William

Middle Name:Earl

Last Name:Peterman

Adviser's First Name:Raymond

Adviser's Last Name:Semlitsch

Co-Adviser's First Name:

Co-Adviser's Last Name:

Graduation Term:SP 2008

Department:Biological Sciences

Degree:MA

Title:Effects of Riparian Buffer Width on Stream Salamander Populations in the Southern Appalachian Mountains

Salamanders in the Appalachian region have been extensively studied, but the majority of research assessing logging effects on salamanders has focused on terrestrial species that are not dependent on stream habitats for egg deposition or larval development. As integral components to headwater Appalachian ecosystems, it is important that the response of stream salamanders to riparian habitat alteration is understood. I have collected data on both larval and adult salamanders in headwater streams in western North Carolina to determine the impacts of even-aged timber harvest on salamander populations and to assess the efficacy of riparian buffers in ameliorating these effects.

My data show that larval two-lined salamanders are negatively impacted by increased stream sedimentation following riparian logging and that increasing the riparian buffer around the stream reduces sedimentation effects; larval black-bellied salamanders were not significantly affected by riparian alteration. Adult and juvenile salamanders dependent on terrestrial habitat were also affected; seal salamander densities were significantly higher in streams with little to no riparian buffer while Ocoee salamanders were significantly less abundant. Increases in seal salamander density suggest that salamanders will evacuate altered habitat following logging, reducing immediate mortality. Further, it is unlikely that salamanders will persist or thrive for more than a season or two in logged forests due to a significant deterioration in body condition of Ocoee salamanders in logged riparian areas. My results indicate that current riparian forest conservation measures are inadequate to preserve either larval or adult salamander populations.