

AN ABSTRACT OF A THESIS

STATUS AND SPECIES-HABITAT RELATIONSHIPS OF THE GREEN SALAMANDER, *ANEIDES AENEUS*, AT MYATT CREEK IN CATOOSA WILDLIFE MANAGEMENT AREA

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The green salamander, *Aneides aeneus*, has become progressively rare across its range, and it has been identified in the Tennessee State Wildlife Action Plan as a species of Greatest Conservation Need. This study was designed to help determine which habitat variables are most critical for recovery and survival of the species. The Myatt Creek drainage on Catoosa Wildlife Management Area in Cumberland County, TN, was chosen as the study site.

Green salamanders were surveyed at night on 50 different rock outcrops at least three times each to determine if they were present or absent. Seventeen habitat variables were measured at each outcrop to develop models to better understand the influence on their presence. The original set of variables was reduced to six with a step-down procedure based on correlation among variables and performance in one-variable logistic regression model analyses. The final set of habitat variables was analyzed using an information-theoretic approach, in which Akaike's Information Criterion (AIC) values of individual models and biological importance of each variable were considered.

Total length of crevices (mm) on outcrops was the most important predictive variable, and slope (%) from the base of outcrops and total number of saplings within 100-m² plots around outcrops were secondary predictive variables. All three variables were positively correlated to green salamander presence. These results support previous studies, which have shown that green salamanders are crevice specialists that require cool, moist environments. Some variables that were not important in my study, such as total hemlock diameter at breast height (DBH), canopy cover, and distance to nearest forest opening, should be considered in studies at different scales because these variables did not vary much within the Myatt Creek drainage. Additional studies are needed to survey other drainages on Catoosa WMA and other public lands, refine detection approaches, and determine the level of isolation among green salamander populations.