THE EFFECTS OF GYPSY MOTH INFESTATION ON GRAY SQUIRREL HABITAT AND POPULATIONS

David E. Samuel and Rob Silvester
Division of Forestry, PO Box 6125, West Virginia University, Morgantown, WV 26506

ABSTRACT

The overall objective of this project was to determine the effects of defoliation on gray squirrel habitat. We will evaluate the existing Habitat Suitability Index (HSI) Model for gray squirrels on the University Forest and determine the effects of thinning on HSI values computed for thinned and unthinned stands. Habitat variables used in the U. S. Fish and Wildlife Service gray squirrel model were measured on 8 10-12 ha treatment (to be thinned in spring 1990) and 8 unthinned stands on the University Forest, Morgantown, WV, and 3 other nearby hardwood tracts. Six different habitat variables were measured on 112 0.04-ha plots using standard forest measurement techniques. Squirrel abundance was measured on these same stands from 6:00-9:00 AM from June-October 1989 using time-area counts.

Habitat Suitability Indices for each stand varied from 0.13 to 0.54. Pearson's correlation was used to test the association between habitat variables and HSI values to determine what variables were needed in the regression model. Four of six habitat variables were significant, but all six variables were put into the model. Multiple regression analysis was used to determine if HSI values were dependent on the habitat variables. The analysis showed that HSI values were dependent on hard mast copy, total canopy closure, mean dbh of overstory trees, and hard mast species diversity ($R^2 = 0.97$, $n = 19$, $P<0.0001$).

Fifty-nine squirrels were counted during 154 morning counts. No relationship was found between squirrel counts and HSI values ($R^2 = 0.15$, $P = 0.235$). Causes might be too few squirrel counts, low numbers of squirrels, too few den trees, too few mature mast producing trees, or poor mast production in previous year. In general, good squirrel habitat was clumped within the stands. It was in these areas that higher HSI values were obtained and squirrels were seen. Thus, we had higher squirrel counts, while the overall HSI values were low and few squirrels were counted there.