EFFECTS OF GYPSY MOTH-ORIENTED SILVICULTURAL TREATMENTS ON VERTEBRATE PREDATOR COMMUNITIES

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ABSTRACT

The impact of forest thinning, as an alternative gypsy moth management technique, on insectivorous birds and small mammals is being investigated in the West Virginia University Forest. The effects of thinning on predation of gypsy moth larvae and pupae by vertebrates are also being examined. Pre-thinning studies were conducted during the spring, summer, and fall of 1989 in 8 control stands and in 8 stands scheduled to be thinned during the winter of 1989-1990. Insectivorous birds were spot-mapped, and small mammals were pitfall and snap trapped to estimate abundance per stand. Mast traps were erected to estimate seed production per stand.

Cage exclosures of gypsy moth larvae and pupae were distributed to determine sources and magnitudes of predation. The three exclosure types were a control allowing all sources of predation, 1 inch screen excluding predation by birds, and 1/2 inch screen excluding predation by birds and small mammals. Exclosures were located at ground, trunk, and foliage levels. Results for the larvae trial showed that small mammals and invertebrates were important ground predators, invertebrates were important trunk predators, and predation was low from all sources in the foliage. For the pupae trial, small mammals were the dominant predators on the ground, and predation was low at trunk and foliage locations.

A tracking technique was developed to examine differential predation of larvae and pupae by small mammals. The circumferences of styrofoam plates were painted with a mixture of fluorescent powder and petroleum jelly. The plates were baited with either a larva or pupa and collected after 1 week exposure periods. The tracks on plates with a preyed larva or pupa are currently being examined under ultraviolet light to discriminate predation by mice and shrews.