

VERMONT MANAGEMENT IN FOCAL AREAS

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ABSTRACT

Following the 1979 outbreak of gypsy moths *Lymantria dispar* L. in Vermont, state personnel began monitoring a number of focal areas for signs of increase in gypsy moth populations. In 1986 data from this early warning system indicated an incipient outbreak. We took advantage of this increase to test an experimental management technique. Would disruption of increasing gypsy moth populations at focal sites forestall further expansion of those populations? Four foci were selected, and at each one four one kilometer transect lines were established; one in each cardinal direction, with a 7.5 m radius plot every 100 meters. To better understand and delineate population distribution we set up over 150 additional plots. *Bacillus thuringiensis* was applied to approximately 500 acres on two of the four sites in the spring of 1988. Egg mass and larval density surveys have been conducted at all sites since September, 1987.

Egg mass counts from the fall of 1988 showed that eradication of egg laying females from within the spray block at Brigham Hill was completely successful. Egg masses that remained in the site the year of treatment did not appear to serve as reservoirs for the 1989 population, though there was a unilateral increase in population density. No defoliation occurred at Brigham Hill, in contrast to Arrowhead Mtn., the accompanying check, which was 100% defoliated. Rocky Pond, the check in the central region, was also 100% defoliated, while Perch Pond, the treated area, only had spots of heavy defoliation. The egg mass density in the largest spray block at Perch Pond, which was most effectively contained by treatment in 1988, is now as high as the population at Rocky Pond. It remains to be seen whether the populations at both sites will collapse this coming year.

NPV and *Entomophaga maimaiga* have been positively identified from three of the focal areas used in this study. Incidence of disease was highest at Rocky Pond. Comparison of control and treated sites is continuing to determine the following; whether treatment prolongs the outbreak phase by temporally impeding epizootics, and whether increasing populations outside of a treated area will re-invade the original focal area. The research reported will clarify the significance of the focal area concept for management use, and will determine the value of disrupting gypsy moth outbreaks in susceptible forests before widespread outbreaks occur.

Data collected in the fall of 1988 indicated that two of the three spray blocks at Perch Pond had continued to increase in egg mass density, but the largest one was held to pre-spray population levels. This trend was reversed by the fall of 1989; the population in the largest spray block doubled, but declined in the other two.