

DISTURBANCE-RELATED CHANGES IN GROUND FLORA OF WEST VIRGINIA OAK FORESTS

R.M. Muzika, D.L. Feicht and S.L. Fosbroke¹

While the effects of disturbance such as insect defoliation have been well documented in terms of overstory mortality and woody species regeneration, little is known about such disturbance effects on herbaceous flora, or non-commercial woody species. Since ground vegetation is often more sensitive to site and environmental conditions, such information may be valuable in understanding successional development in these forests and can be used as an indication of forest resilience and forest change. Furthermore, there exists some controversy about the effect of thinning on understory vegetation. We have studied vegetation in the lower structural layer for several years on oak/mixed hardwood stands that had been defoliated by gypsy moth (*Lymantria dispar* L.) in 1990 and 1991. Some of these stands were thinned in 1990 and also there were also control stands with neither thinning nor defoliation. We sampled herbaceous vegetation in 1992, 1993, and 1995. Estimates of other ground cover species such as *Rubus*, ferns, and grasses were determined in 1989, 1990, 1991, 1992, 1994, and 1996. Increases in species richness were evident in thinned stands. Using detrended correspondence to examine herbaceous vegetation patterns, we found that defoliation has a greater influence than thinning in separation of stands. However, the separation was greatest on DCA axis 2, suggesting that factors other than disturbance more strongly control the herbaceous vegetation. Site factors and original overstory composition tend to determine the composition of the ground vegetation. Coverage of competing vegetation (e.g., grasses and ferns) was greater than in stands that were only defoliated, suggesting that some caution is advisable when using silviculture as a management tool for gypsy moth.

¹Research Ecologist, Forester, and Forester, respectively, Northeastern Forest Experiment Station, USDA Forest Service, 180 Canfield St., Morgantown, WV 26505.