

HERBACEOUS VEGETATION IN THINNED AND DEFOLIATED FOREST STANDS
IN NORTH CENTRAL WEST VIRGINIA

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Abstract: Herbaceous vegetation was inventoried in 1992 and 1993 in eight Appalachian mixed hardwood stands (< 50% basal area/acre in oak species) and eight oak stands (> 50% basal area/acre in oak species) in north central West Virginia. Vegetation was sampled on 20 6-foot radius plots per stand twice each growing season (once during late spring to sample spring ephemeral species, and later in mid summer). Stand disturbance prior to herbaceous sampling included 1) a silvicultural thinning (8 stands) in the winter/spring of 1990, and/or 2) moderate to heavy gypsy moth defoliation (6 stands) in 1990 and 1991. Most overstory mortality occurred within three years of the first defoliation. By the fall of 1993, residual overstory basal area ranged from 30 - 74 ft² / acre for (3) thinned, defoliated stands; from 38 - 66 ft² / acre for (3) unthinned, defoliated stands; from 78 - 104 ft² / acre for (5) thinned, undefoliated stands; and from 117 - 132 ft² / acre for (5) unthinned, undefoliated stands.

In 1992, species richness ranged from 22 - 65 in mixed hardwood stands and from 19 - 38 in oak stands. In 1993, species richness ranged from 24 - 70 in mixed hardwood stands and from 23 - 42 in oak stands. Regardless of thinning or defoliation disturbance, the dominant herbaceous species (i.e. the species that had the highest average percent cover) consisted of common greenbrier (*Smilax rotundifolia*), Hayscented Fern (*Dennstaedtia punctilobula*), or New York Fern (*Thelypteris noveboracensis*); the one exception was stand #6, a mixed hardwood stand with the highest species richness values recorded in the study. From 1992 to 1993, 9 of the 11 disturbed stands showed an increase in average percent cover of the dominant herbaceous species; stand #6 (a thinned, undefoliated stand) switched its dominant cover species, and stand #8 (an unthinned, defoliated stand) had its dominant species' coverage drop 0.4% between 1992 and 1993. Four of the five undisturbed stands had no change or a decrease in the average percent cover of the dominant herbaceous species from 1992 to 1993. Stand #12 was the only exception; its dominant herbaceous species increased 1.4% from 1992 to 1993. Detrended Correspondence Analysis (DCA) was used to further examine relationships among herbaceous species and stand/site characteristics.

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