UNDERSTORY COMPOSITION OF HARDWOOD STANDS IN NORTH CENTRAL WEST VIRGINIA

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Abstract: Understory composition was measured on 960 10.5 m^2 plots in 16 stands on the West Virginia University Forest in north-central West Virginia. The overstory composition was dominated by oaks (*Quercus* spp.) on 50% of the stands and by a mixture of oaks and yellow-poplar (*Liriodendron tulipifera* L.) on 50%. All stands were without recent disturbance and ranged in age from 60 to 100 years. All woody stems under 7 cm dbh were counted by size class and percent cover was estimated for woody and herbaceous vegetation.

Ferns dominated the understory on 32% of the plots and tree species dominated on 30% of the plots. Dominance by ferns was correlated with more mature stands in both forest types. Woody vines such as greenbrier (*Smilax* spp.) were the dominant form on most of the remaining plots (26% of tthe total) in the mixed stands, while only 9% of the understory plots were dominated by shrub species such as blueberry (*Vaccinium* spp.). Total number of species on the 10.5 m^2 plots ranged from 1 to 25, while stand averages ranged from 7 to 14 species per plot (Figure 1).

A total of 38 different woody species were found on the study plots. The most common woody understory species (Figure 2) included red maple (*Acer rubrum* L.) (43% of total stems), black cherry (*Prunus serotina* L.) (17% of total stems), and sassafras (*Sassafras albidum* (Nutt.) Nees) (14% of total stems). Red maple was present on 94% of sample plots, black cherry on 79%, and yellow-poplar on 69%. Red oak (*Quercus rubra* L.), although not as abundant, was also well distributed, as shown by its presence on 54% of the study plots.

Significant differences were not found in Shannon's Diversity Index (H') for woody species between cover types, although the mixed oak-yellow poplar stands tended to have slightly higher diversity. Conversely, Hill's Evenness Index showed somewhat greater values for the oak stands.

Species abundances of the larger stems differed from the overall total, indicating differential abilities of woody species to survive early seedling stages. The dominance of cherry among the stems over 30 cm tall implies the possibility that it may well dominate the next stand. All areas are well-stocked with advance regeneration of commercial tree species and should respond well to future disturbances.

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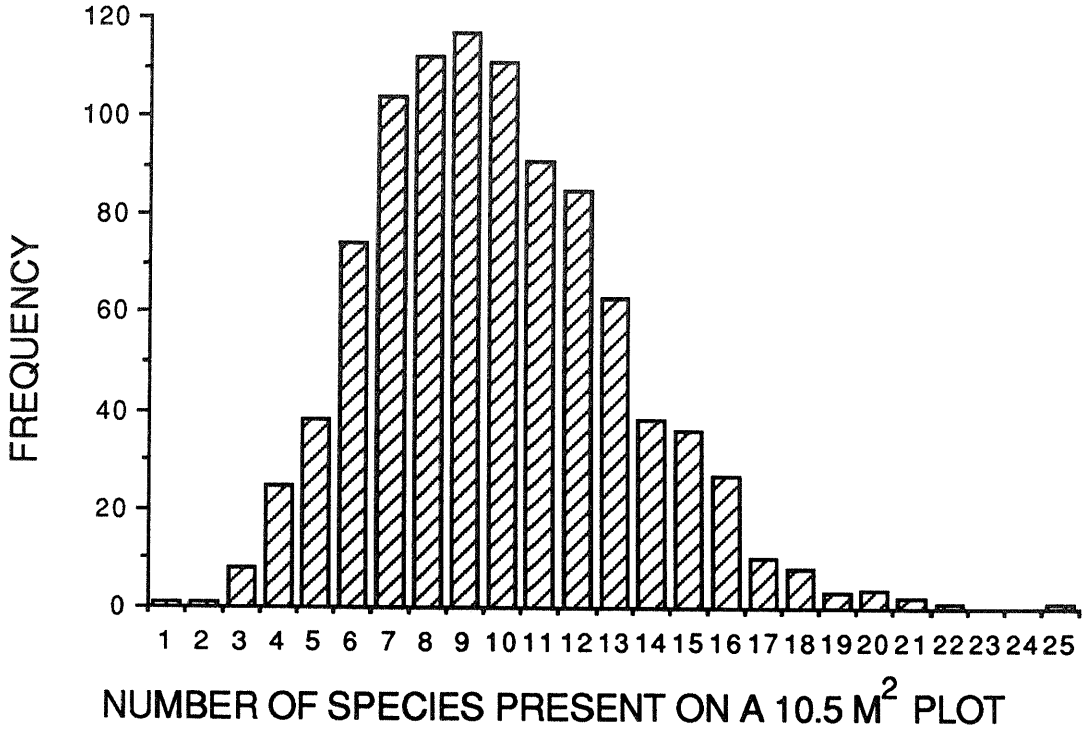

Figure 1. Species richness distribution on 960 understory plots in oak and mixed hardwood stands on the West Virginia University Forest.

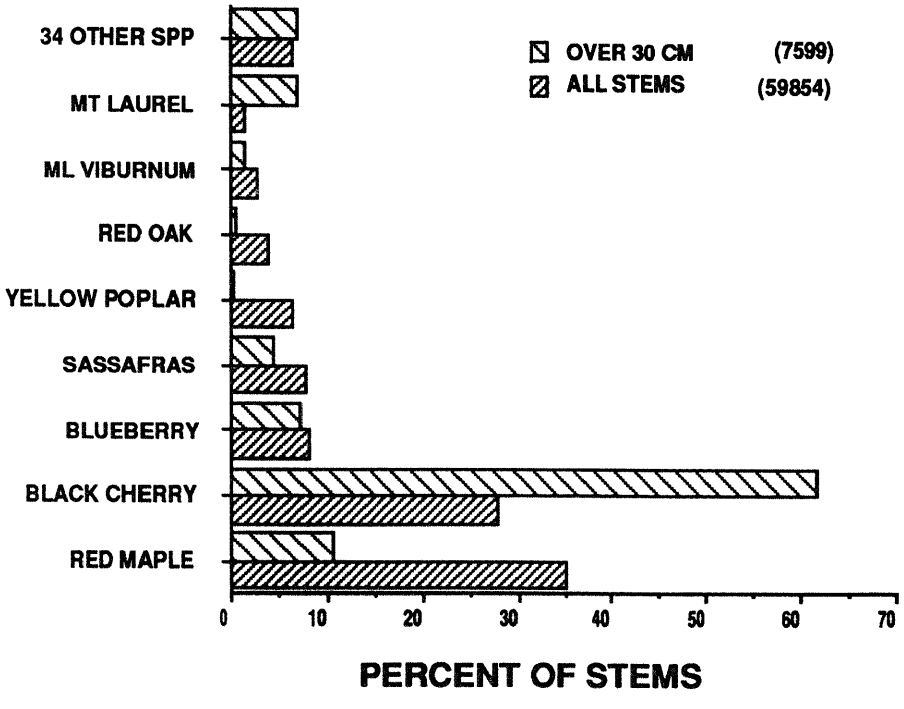

Figure 2. Abundances of common woody species on 960 understory plots in oak and mixed hardwood stands on the West Virginia University Forest.