

VEGETATION CHANGE IN OAK AND OAK-PINE STANDS

AS

A RESULT OF REPEATED GYPSY MOTH

DEFOLIATIONS

BY

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ABSTRACT

Tree, shrub, and herbaceous species composition were studied in oak and oak-pine stands sustaining high oak mortality and in stands sustaining low oak mortality following gypsy moth larvae defoliations in Rhode Island and eastern Connecticut. Oak mortality averaged 75, 46, 11, 16 percent in high mortality oak, high mortality oak-pine, low mortality oak, and low mortality oak-pine stand types respectively. Species composition of the overstory (stems ≥ 1.5 in. dbh) in high mortality stands was similar to species composition in low mortality stands for both oak and oak-pine stand types. Oaks comprised 68 and 80 percent of stand basal area in high mortality and low mortality oak stands, and 86 and 70 percent in high mortality and low mortality oak-pine stands respectively. White pine made up 12 and 23 percent of overstory basal area in high mortality and low mortality oak-pine stands respectively. Herbaceous and low shrub layers (stems < 4.5 ft. in height) in high mortality stands generally had higher species richness values and higher total densities than in low mortality stands of the same type. Red maple dominated the tree sapling (stems ≥ 4.5 ft. in height and < 1.5 in. dbh) stratum in all stand types, while oak saplings were relatively scarce. Oak regeneration (stems < 4.5 ft. in height) was abundant in all stand types and ranged from 2305 to 5108 stems/acre. Red maple regeneration (stems < 4.5 ft. in height) was also abundant in all stand types. Seedlings and seedling sprouts (stems < 4.5 ft. in

height) dominated oak regeneration in all stand types except high mortality oak stands which were dominated by stump sprouts (stems <4.5 ft. in height). Oak seedlings and seedling sprouts in high mortality stands were generally younger, taller and greater in diameter at the base than those in respective low mortality stands. A combination of oak saplings, stump sprouts, and seedling sprouts in high mortality stands seem to be more than adequate to maintain oak dominance. Repeated defoliations by gypsy moth larvae do not appear to have affected the ability of oaks to maintain dominance in these stands.