THE EFFECTS OF THINNING INTENSITY ON SNAG AND CAVITY TREE ABUNDANCE IN AN APPALACHIAN HARDWOOD STAND

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Abstract—Historically, silvicultural practices have focused on manipulating forest vegetation structure for commodity production. Impacts of silvicultural treatments on characteristics important to nongame species, such as feeding substrate, potential nesting sites, or the rate at which these habitat features form are often not considered. In this study, features such as snags, cavity trees, and defective/decayed trees, which are important to five local woodpecker species, will be compared among even-aged stands. In 1983, a 50-year-old Appalachian mixed hardwood stand was divided into twenty, 1.2 ha blocks, each of which contained a central 0.2 ha plot. All live trees ≥2.54 cm dbh in the central 0.2 ha plot were permanently tagged. Five plots each were thinned to either 75 percent, 60 percent, or 45 percent relative density, and five plots were uncut controls. Plots have been remeasured for fifteen years at five year intervals and data from these remeasurements will be used to quantify tree mortality and snag dynamics over time. Trees were classified as snags if they were ≥10 cm dbh and 1.5 m tall, and were self supporting. A total of 319 snags were sampled in plots encompassing 4 ha.

Mean snag densities show an inverse relationship to thinning intensity (Figure 1), with individual plots ranging from 9.9 snags/ha (45 percent) to 192.7 snags/ha (Control). Large diameter snags (≥30 cm) were uncommon in all treatments. Sassafras (*Sassafras albidum*) and black cherry (*Prunus serotina*) were the most common snag species, comprising 59 percent of snag density.

Similar to other studies, the percentage of snags standing decreased dramatically as time since death increased. After 0-5 years, 85 percent of mortality trees remained standing, which decreased to 59 percent at 5-10 yrs and 25 percent at 10-15 yrs. The longevity of snags in this study is greater than reported for other eastern hardwood species, which is likely due to the large component of decay resistant sassafras and black cherry.

Future efforts will focus on quantifying defects and decay in live overstory trees, and quantifying characteristics of trees containing bird excavated cavities.

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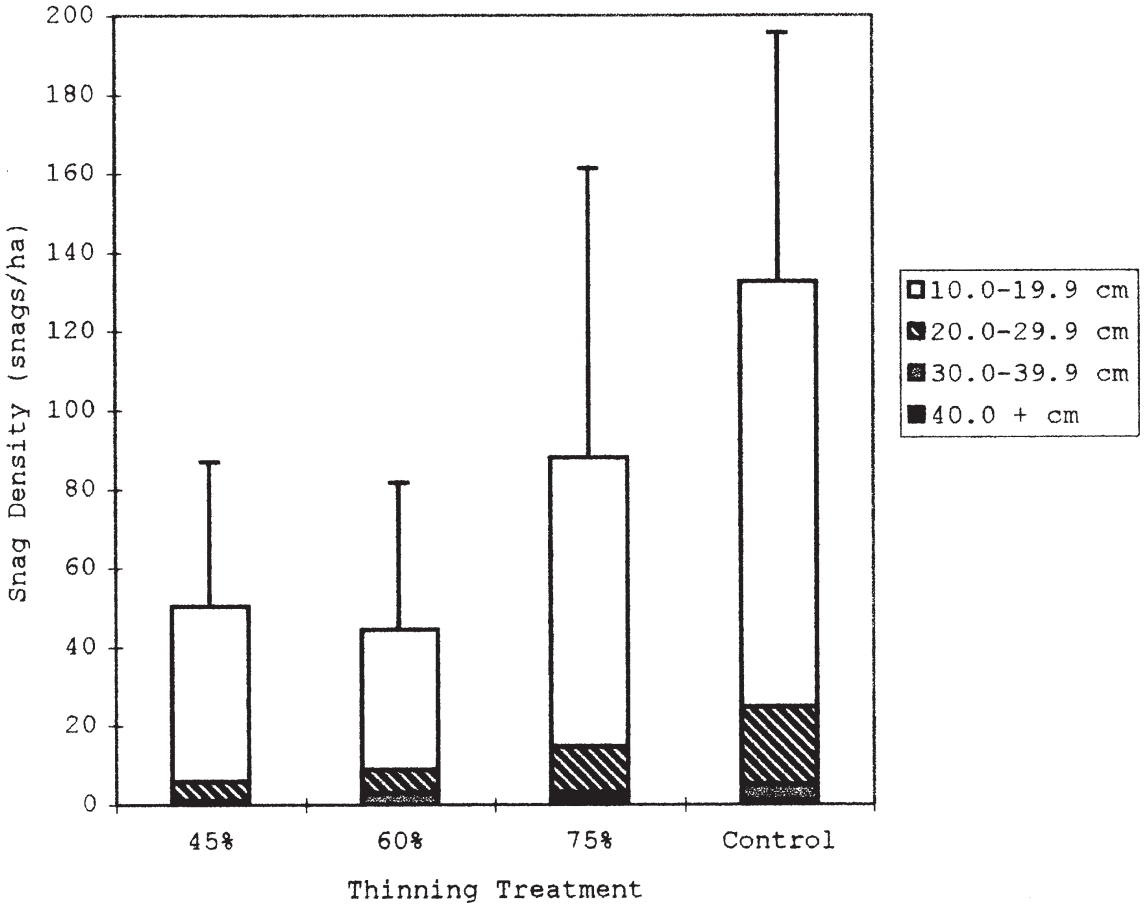

Figure 1—Snag density (snags/ha) by thinning treatment and size class. Bars = 1 SD.