

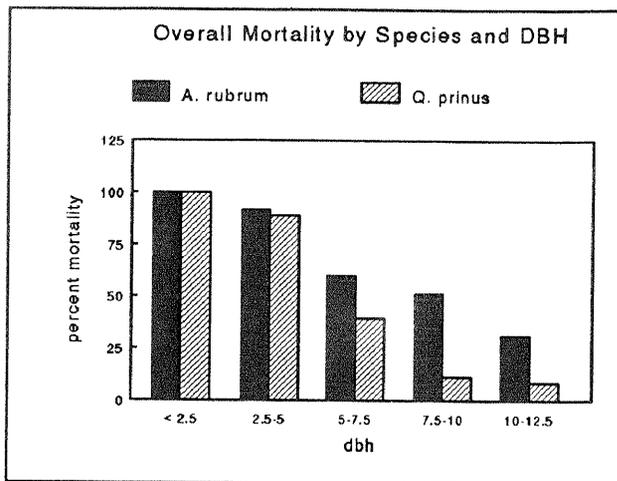
Groundfire Effects in a Sapling-sized Oak-maple

Jeffrey W. Stringer¹

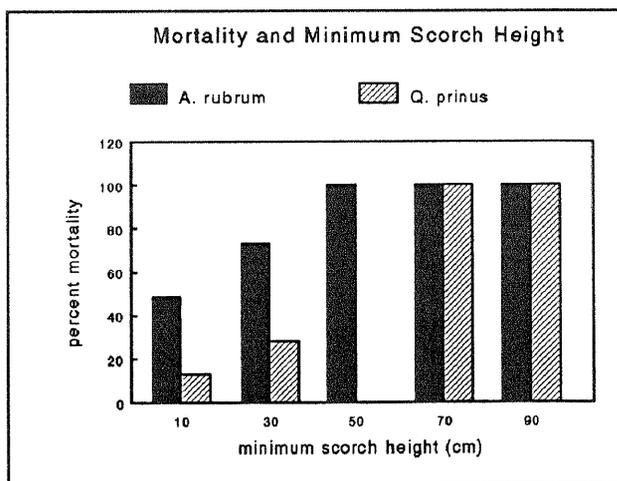
Abstract: Prescribed fire has often been suggested as a treatment for reducing maple competition in sapling- and pole-sized mixed oak-maple stands. The relatively thin outer bark of young *Acer* spp. makes them more susceptible to fire damage than many co-occurring *Quercus* spp. However, specific fire regimes to produce adequate maple control while providing limited degradation of the oak component have not been developed. Fire parameters, such as time of burn, intensity, duration, etc., coupled with vegetative responses are needed to accomplish this. This type of detailed information can generally only be obtained from experimental prescribed burns. However, useful information can be obtained from monitoring the effects of wildfires. In the latter instance, detailed intensity and duration information are generally lacking, however indicators of fire damage such as scorch and char have been used to predict mortality from wildfires and can provide useful information about inter-specific mortality from fires.

This poster abstract describes the first-year effects of a fall groundfire which passed through a sapling-sized (mean dbh = 7.8 cm) stand dominated by *Acer rubrum* and *Quercus prinus* trees (n=344). The stand was on an upland site at Robinson Experimental Forest on the Cumberland Plateau in eastern Kentucky. One year prior to the burn, trees in one-half of the stand were released using a crown-touching technique. Post fire inventory included individual tree measures of dbh, minimum and maximum scorch height, percent circumference scorched, and percent bole surface area scorched. Mortality data was collected at the end of the growing season. Data was collected for all trees in the stand and trees were classed into 2.5 cm dbh classes, providing 5 dbh classes ranging from < 2.5 cm to 10-12.5 cm. Correlations between fire indicators and species mortality were made within dbh classes to provide information which could be used to predict species mortality for oak-maple stands of varying mean diameters. Overall mortality averaged 62% for *A. rubrum* and 26% for *Q. prinus*.

¹ Research Specialist in Silviculture, Department of Forestry, University of Kentucky, Lexington, KY, 40546-0073



Mortality was negatively correlated with dbh (Figure 1). Approximately 90% of stems < 5 cm dbh of both species died. However, mortality decreased with increasing diameter to 42% for *A. rubrum* trees between 10-12.5 cm dbh and 0% for *Q. prinus* trees of the same diameter. No differences in mortality were found between released and unreleased *Q. prinus* trees averaging 25.3 and 26.9 percent, respectively. However, the mortality percent of released and unreleased *A. rubrum* tree was significantly different ($P \leq 0.05$), averaging 76.5 and 47.8 percent, respectively. This difference was correlated with a greater amount of fuel under the released portion of the stand. Mortality was positively correlated with scorch heights. When minimum scorch heights were ≥ 60 cm, mortality was 100% regardless of diameter class and species (Figure 2).



Q. prinus mortality dropped to 17% with minimum scorch heights of 10 cm while *A. rubrum* mortality was 50% at this minimum scorch height.