

Maintaining oak and hickory dominance in the central hardwoods region of the eastern USA using shelterwood harvests and prescribed burning

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Oak (*Quercus*) and hickory (*Carya*) species are valuable for wildlife as well as humans. More than 60 species of wildlife depend on the acorns and nuts for sustenance. Oak timber demands high prices in the USA and is a staple of the economy. Oaks and hickories have dominated eastern forests of the United States for 5,000 years. Prior to European settlement, the Native Americans modified the landscape with fire to improve their habitat. European settlers then increased the frequency of fire. Frequent, low intensity fires and grazing created open woodlands providing the proper light environment for oak and hickory regeneration while controlling competing tree species.

In the early 20th century, government programs were initiated to suppress wildland fires. With fire largely eliminated, maples (*Acer* spp.) and yellow-poplar (*Liriodendron tulipifera*) have out-competed oak seedlings and are gaining importance in the region.

Oak and hickory have characteristics which are not present in other tree species, enabling them to survive low-intensity fires and grazing. These include root and bud structures, wound compartmentalization, and thick bark. The characteristics of oak leaf litter also promote fire.

Studies are being conducted to investigate different combinations of shelterwood harvests, herbicides, and prescribed fires to promote oak and hickory regeneration and the effects on other ecosystem components. These treatments improve habitat for several wildlife species and plant biodiversity is increased. Several avenues of research have not been investigated due to the short time-frame in which these studies have been implemented, and lack of funding. Different combinations of management practices may be needed to attain various ecological or timber management objectives.

Close to 80 percent of the forestland in the region is owned by non-industrial private landowners. It is unlikely that these owners will use the practices offered here to manage their forest lands. It is probable that only a portion of the industrial and government forests will be managed to maintain oak and hickory dominated forests.

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