



Hoosier National Forest Highlights

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Shelterwood System: Three Step Process for Growing Oak and Hickory



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Have you ever wondered why certain trees grow in certain areas? There are many factors that influence the species composition on specific sites, including soils, shade tolerance, and past land use. The majority of the forests found in Indiana today are heavily influenced by what happened in the past.

Native Americans and early European settlers routinely burned land to open the understory and clear land for agricultural needs. Allowing livestock to graze the woods was also common in the past. These practices favored the resilient oak and hickory, which thrive on disturbance and fire, and allowed it to become the dominant forest type we see today.

With the advent of the Smokey Bear campaign, burning was reduced. This, coupled with the reduction of grazing in forestlands, has caused a shift in tree seedlings from oak-hickory to trees which are tolerant of shade such as sugar maple, red maple, and American beech on many sites.

Forest managers today are faced with a dilemma. What do they want tomorrow's forest to look like? Dale Weigel, a former forester on the Hoosier had a saying that to regenerate oak-hickory managers had to consider "the 3 P's"; planning, patience, and persistence. The shelterwood system is a good example of Dale's thoughts.

There are many ways to manage forest land in this region. The majority of harvests are selection harvests. These harvests strive to create a balance of ages. Older trees are removed, creating small holes in the forest which allow new tree seedlings to take their

place. This harvest method creates light conditions that favor species other than oak-hickory.

Another method is called the shelterwood system. It manages the light reaching the forest floor and creates light conditions where oak and hickory seedlings can develop and compete into the future. A shelterwood is commonly done in three phases.

The first phase is called a midstory removal or prep cut. Trees that are in the understory and midstory are cut. Herbicide may be used to prevent sprouting. Oak and hickory thrive on disturbance, and the removal of these trees without breaking the forest overhead leaf cover creates light conditions that mimics disturbance. This step removes smaller trees that are generally not able to be sold for timber.

Advanced oak and hickory seedlings will develop over time. To be able to compete with other regeneration, the oak seedlings should be three to four feet tall.

The next phase is called an establishment cut which removes half the overstory trees. This releases the oak and hickory seedlings and opens the canopy enough to allow other species to regenerate. This step is a commercial harvest where the trees can be sold for timber.

When the oak and hickory seedlings reach a height of four to five feet, the remaining trees in the overstory are removed in the final step. This three step method will give oak and hickory the best chance to remain a dominant part of the forest ecosystem.

Contact Chris Thornton for information on management for oak and hickory on the Hoosier National Forest at 812-547-9235 or cdthornton@fs.fed.us.



Young white oak seedling resulting from the shelterwood harvest.



A white oak stand that has had both the prep cut and the establishment cut completed. Once the new stand is established, the remaining trees will be removed.