

Restoration of Farm Woodlots at Gettysburg NMP

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In the first three days of July 1863, the farm fields and woodlots of Gettysburg, Pennsylvania were the scene of one of the bloodiest battles in American history. In all, more than 50,000 men lost their lives in the fight that historians refer to as "the greatest battle of the Civil War."

Accounts of the battle of Gettysburg make it clear that the farm woodlots played an integral role in the fighting, providing cover, cool drinking water, and landmarks for orientation of the troops. Before the battle, the woodlots were an important feature of the landscape from a natural resources point of view, providing building materials, windbreaks, and cover for cattle.

Recognizing the importance of the farm woodlots, a study was begun at Gettysburg National Military Park in the summer of 1989 to develop a set of recommendations for "restoring" the woodlots, i.e. for managing them in such a way that they would appear much as they did prior to the famous battle.

Using a variety of information sources, including land survey records, battle accounts, photography, and our perceptions of the use of the woodlots, we determined that the typical farm woodlot was comprised mainly of oak and hickory species, and was uneven-aged. Each woodlot had to be uneven-aged in order to provide a continuous flow of products for the landowner. Such a woodlot would feature trees in all size classes, from seedlings to saplings to large mature trees. Typically, an uneven-aged woodlot has the "reverse-J" distribution of trees by diameter class (Figure 1), with a very large number of small trees and decreasing numbers of larger trees.

Extensive field work in the summer of 1989 and 1990 in each woodlot confirmed that, indeed, the woodlots were still uneven-aged, but that problems were developing. First, the species composition of the woodlots was slowly changing, such that the oak predominance was being replaced by a mixture of other species, including hickory and ash. Secondly, the numbers of seedlings and trees in the smallest diameter classes were fewer than was needed to sustain the uneven-aged nature of the stands (Figure 1). This probably was due to a combination of factors, most notably a lack of cutting (to create openings and promote regeneration) and a very high density of white-tailed deer. Much of Pennsylvania is experiencing difficulty in regenerating oak, and excessive deer browsing is considered to be a leading cause.

In our final report (Tech. Report NPS/MAR/NRTR 90-049), we recommended a controlled mixture of timber harvesting, tree planting, and forest protection in order to regain and maintain the nature of the 1863 woodlots. Light harvests, on the order of 15 percent of the trees in all size classes ever 10 years, will be needed to perpetuate the uneven-aged structure once it is restored. Removing a number of trees now will allow some sunlight to reach the forest floor and promote seedling growth. Those seedlings must be protected from deer browsing, either through individual shelters, large area fencing, or reduction of deer density. Supplemental planting (in seedling and/or sapling size classes) will be necessary in order to regain the oak species dominance. Spraying to minimize the impact of gypsy moth defoliation also will be important for maintenance of the woodlots.

Finally, regardless of management actions, the woodlots must be closely monitored to track changes

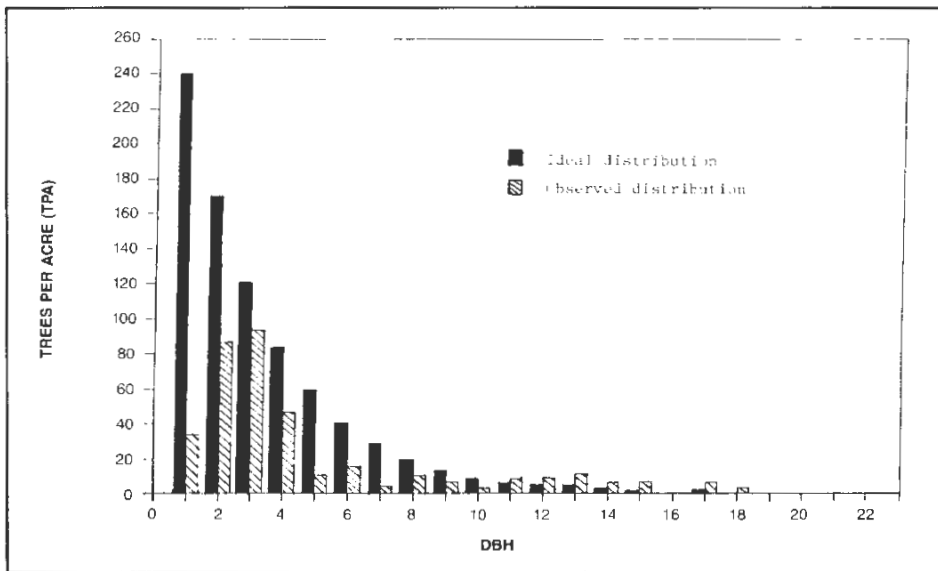


Figure 1. "Inverse-J" uneven-aged diameter distribution and actual distribution in one woodlot at Gettysburg.

in their size distribution and species composition. We recommended establishment of permanent plots for this purpose. Related studies by other Penn State researchers concerning vegetation and deer management also will help to insure the successful restoration

and maintenance of the farm woodlots at Gettysburg.

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