

Lessons from the Woodlot

By Carl Wiedemann

Last year I had an article about unlocking the economic potential of your woodlot in the New York Forest Owner. Woodland owners were urged to use silviculture to develop the commercial value of their forest. I wrote that the annual growth in most woodlots is worth perhaps \$5 per acre per year because of an abundance of low value trees. I also speculated that silviculture could raise the value of annual growth to \$45 per acre per year – a significant increase. To bolster that case I'd like to move from theory to the real world. So here is the story of our woodlot and how management has improved commercial value and productivity.

Forty years ago I worked for the Conservation Department (now DEC) in western New York. I was assigned to assist landowners in all aspects of forestry – a great job for a young forester which I enjoyed for several years. My experiences as a service forester fired my ambition to own and manage a woodlot - profitably.

In 1980 we bought a woodlot. Although every woodlot is unique, the one we bought typifies many in New York State. There are “two rocks for every dirt” – but that dirt can grow some good timber. Two hundred years ago this property was entirely forested. During the 19th century the forest was cleared and the land was used for pasture. Farming ended about 1900 and trees quickly reclaimed the site - including red oak, red maple, sugar maple, and hemlock. About half of the privately owned woodlands in the state have a similar history of conversion from forest to farm and then back to forest.

By the 1960's some of the trees that had grown in were large enough to have timber value. The owner at that time cut these trees and in 1966 sold the logged-out woodlot. The next owner planned to build a camp for recreational use, but he didn't know much about the forest or even the location of the boundary lines. The camp was never built and he sold the 83 acres to us after getting tired of paying property taxes.

Looking Back

We still own the woodlot, and I have collected many statistics over the past thirty years. Here is a brief summary that shows how things have turned out so far.

Wiedemann Tree Farm

	<u>1980</u>	<u>2011</u>
Number of trees over 16" in diameter	420	1,170
Timber volume (board feet) in trees > 16"	73,000	255,000
Stumpage value of trees > 16"	\$8,000	\$69,000
Annual growth per acre in board feet	40	185

Value of annual growth per acre	\$4.38	\$50.06
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Over the past thirty years we have had three timber and firewood sales. These sales generated \$33,000 in income - more than covering the original cost of the land plus thirty years of property taxes. The commercial harvests also removed poorer quality trees and gave better trees more room to grow. The positive impact of forest management is reflected in the dramatic increase in the value of annual growth from 1980 to 2011.

Here are some forestry lessons learned and confirmed from owning and managing a woodlot.

Lesson #1 – Harvesting trees will not destroy your woodlot

When I was a service forester I occasionally met landowners who were uncomfortable with the idea of harvesting trees. They were afraid that cutting trees might damage the fragile forest ecosystem and/or was inconsistent with forest preservation. However, consider the history of most woodlots in New York State. Millions of acres of forest were cut and burned to clear the land for farms during the 19th century. The remaining woodlots were repeatedly cut over and sometimes grazed. As economic conditions changed, millions of acres of fields and pastures were abandoned and reverted back to forest with little or no help from the landowners. The climate, soil, and rainfall in the northeast is conducive to the development of forests. Consequently, in spite of a long history of abuse, forests, along with associated wildlife species, have largely recovered. In this context, the occasional harvest of some trees is not a significant threat to most woodlots.

In the past thirty years more than a thousand trees have been cut in our woods and logging equipment has crossed from one end to the other. But the property is still used by wildlife, has three vernal pools, a small wetland, wildflowers, stone walls, a cellar hole, den trees, snags for woodpeckers, and some trees that have been protected because of their unusual character. The logging operations have added a recreational trail network and paid the tax bills. Our experience shows that harvesting timber can be very compatible with most other owner objectives as well as profitable.

Lesson #2 – Harvest trees to grow timber

Many woodland owners don't cut trees often enough. As a consequence, their woodlots have slow growing trees because the trees are competing for a fixed amount of growing room. As trees grow, they require more space. In a maturing woodlot cutting some trees can be beneficial because it reduces stocking density. This allows the remaining trees to grow much faster. But remember, within a few years after thinning the remaining trees will once again begin to compete for growing space. To keep timber growing it is necessary to remove some trees every 15 to 25 years.

Three years after we bought the woodlot I sold hundreds of cords of wood to a local firewood producer. This harvest generated about three thousand dollars in income, but more important, it shifted the annual growth to better quality timber. The strategy was to cut the worst trees and retain the best. Note that this is the direct opposite of selling the most valuable trees and leaving everything

else – aka high-grading. Periodic harvests of low value timber and firewood can significantly improve the growth rates of higher value residual trees.

Lesson #3 - Keep timber to grow timber

Another mistake landowners make is to sell all of their marketable timber when they have an opportunity. Most of us are tempted to “cash in” if we are contacted by a timber buyer. But unless you need the money, or are about to sell the land, selling all of the timber is probably a mistake. In banking terms, selling every marketable tree is like liquidating the principal as well as the accumulated interest from your account. Liquidating all the timber in a single harvest will not destroy the woodlot, but it diminishes future income opportunities and it sacrifices trees that would earn high rates of return if left for the future.

Keeping an adequately stocked residual stand of good trees is necessary for a highly productive woodlot, and larger trees grow more board feet than smaller trees. Therefore, when you sell timber, keep some large trees in reserve - as long as they are healthy. Most loggers and sawmills will work with landowners who want to leave some trees that would otherwise be harvested. The forest products industry is strengthened when the quality and productivity of the timber resource is improved. Of course, landowners will not maximize short term income when timber is reserved. Some landowners would rather have the money, and they have the right to make that choice. But they should also make an informed choice, and many don't recognize that there is a trade-off.

You can see the benefit of leaving residual timber in the statistics from our woodlot. Compare the standing volume of timber in 1980 (73 MBF) and annual growth (40 bf/ac/yr) with the standing volume in 2011 (255 MBF) and annual growth (185 bf/ac/yr). The amount of growth, measured in board feet per acre, is directly correlated with the volume of timber per acre. Selling all of the timber back in the 1980's would have generated additional income, but it would have significantly reduced the amount of annual growth as well as the opportunity for future harvests.

Lesson #4 – Silviculture matters

Silviculture is to woodlot management what agriculture is to farming. Imagine how farm productivity would suffer without the application of agricultural science. Yet most woodlots are not managed using silvicultural science. Foresters have silvicultural training. But surveys have shown that only 20-26% of the landowners who harvest timber in NYS use a forester. Most timber harvests maximize short term profit and the woodlot is typically left with a low volume in the residual stand along with a high percentage of slow growing, poor quality trees. The commercial potential of New York's forest resource is unrealized because, with some exceptions, timberland is not managed for long term production of high quality, high value timber.

A silviculturally sound timber harvest can ensure that growing space is fully utilized and that the most valuable trees grow quickly. Silviculture can also enhance non commercial values such as biodiversity, wildlife habitat, and forest health. Our timber harvests over the past thirty years have removed some of the poorest trees in the woods. The timber volume has tripled and the value of the

timber has increased eight fold since we bought the property. About one third of the increase in value is due to stumpage price increases since 1980. Clearly, silviculture can make a positive difference in value and productivity. Here is a summary of the silvicultural strategy I have tried to follow:

- Cut the worst trees first to improve quality - the opposite of “cut the best and leave the rest”.
- Increase the average diameter by leaving some large healthy trees when trees are harvested.
- Shift the composition toward more valuable species.
- Maintain full stocking - i.e. avoid either understocked or overstocked stands.

Conclusion

The dramatic improvements in the timber value and productivity of our woodlot may sound like a special case, but there is nothing special about it. Most woodlot owners have the same opportunity. Woodland ownership can be financially rewarding if the timber resource is wisely managed. We started with a very average woodlot which had been cut off about seventeen years earlier. Most woodlots have a similar history. We used commercial sales of firewood and timber to give the remaining trees adequate growing space by selling poor quality, low value trees. Most landowners can do the same. This common sense approach has significantly increased the value of annual growth, as well as the total volume and value of the standing timber. Some basic silviculture, good loggers, and markets for the sawlogs and firewood were all that we needed. Many other woodland owners have had similar financial success stories, but landowners who actively manage their timber resource are in the minority. Most family forest owners do not fully appreciate how timber harvests can be used to improve the value and productivity of their woodlots. Most allow all of their best trees to be selectively cut without realizing that there are other options. Our woodlot experience shows that there is a better way.