1983

One View of Clearcutting

Assessment of an Oak Forest 25 Years After Cutting the Overstory

by Jack J. Karnig

In 1958, Benjamin B. Stout, then forest silviculturist at the Harvard Black Rock Forest, clearcut a seven-acre patch of oak woods. The entire overstory was felled, skidded out and sold as cordwood. He justified this drastic action because it served as an experiment to rid this particular area of trees of inferior quality, since most were of sprout origin.

The following statement is quoted from the official Forest records by Stout: "Most of the overstory trees were oak, predominantly red and chestnut. None are of particularly good form, and it is suspected that a considerable amount of heart rot exists. The dominants are up to 65 feet tall. The understory is of medium density, predominantly dogwood with some black gum and red maple. There is a heavy establishment of oak seedlings that during the summer of 1957 were two years old, apparently, and were 6 to 8 inches tall. The reason for this cutting is to find out what will happen to these seedlings if the overstory is removed and the understory is left as intact as possible. After the cutting, the present understory will be, in effect, the overstory."

The forest looked similar to this prior to the 1958 harvest.

Twenty-five years have elapsed and it is time to take stock of the success or lack of it in this case study.

There is reason to believe that few of the oak seedlings observed by Stout ever survived. Periodic checks of the area after the logging showed that the high deer population couldn't resist those succulent morsels. Sprout growth of oaks and maples was wonderful to behold; they grew rapidly and in wild profusion. Also invading the area were the birches and aspen. The dogwoods noted by Stout seem to have suffered from over exposure; they now represent only a small fraction of the tree population.

Northern Red Oak is still the most prominent species in the new forest. Sugar Maple is in second place followed by Black Birch. Most of the above dominant trees appear to be healthy, are of good form and are growing quite rapidly. Based upon present stumpage prices being paid for locally grown timber, oak, maple and birch make up an ideal mix in terms of future income potential. We would expect to thin this stand once or twice in the next thirty years and hope to grow high quality veneer and sawtimber for a final crop.

Multiple stems are still the dominant tree form in the 25 year old "new forest." One third of the trees counted are single stems. Two thirds are of sprout origin having two or more stems from one root system. From this standpoint, the present forest is not greatly altered from

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The 1958 clearcut as seen in 1983 at age 25.

the one Stout cut down.

Table 1 reflects the present status of tree growth on the 25 year old clearcut. Classified on the basis of desirable and undesirable, the largest stems are heavily weighted in favor of Northern Red Oak, Sugar Maple, and Black Birch. These three species are the fastest growing, most thrifty occupants of the forest. The undesirable species are being relegated to the roles of understory where they will be shaded out and most will die because of severe competition.

Let me pause for a moment and give the reader some background on the locale of this experiment. The Black Rock Forest is one of two experimental forests owned by Harvard University. It is located in southeastern New York State on mountainous terrain near the Hudson River 50 miles north of New York City. Harvard has owned this 3,600-acre tract since 1950 but the property has been used for forestry research since the early 1930's under the direction of Henry H. Tryon.

This clearcut experiment took place on a hillside at an elevation of nine hundred feet above sea level. The soil is a glacial till of varying thickness having a northeast aspect. Site quality can be summed up as average for these mountains. We estimate site index at 50 for oak. Age of the forest when cleared was between 60 and 70 years.

The records show that 224 cords of wood resulted from this clearcutting. That volume in terms of cords per acre came to 30.7 cords. That production fig-

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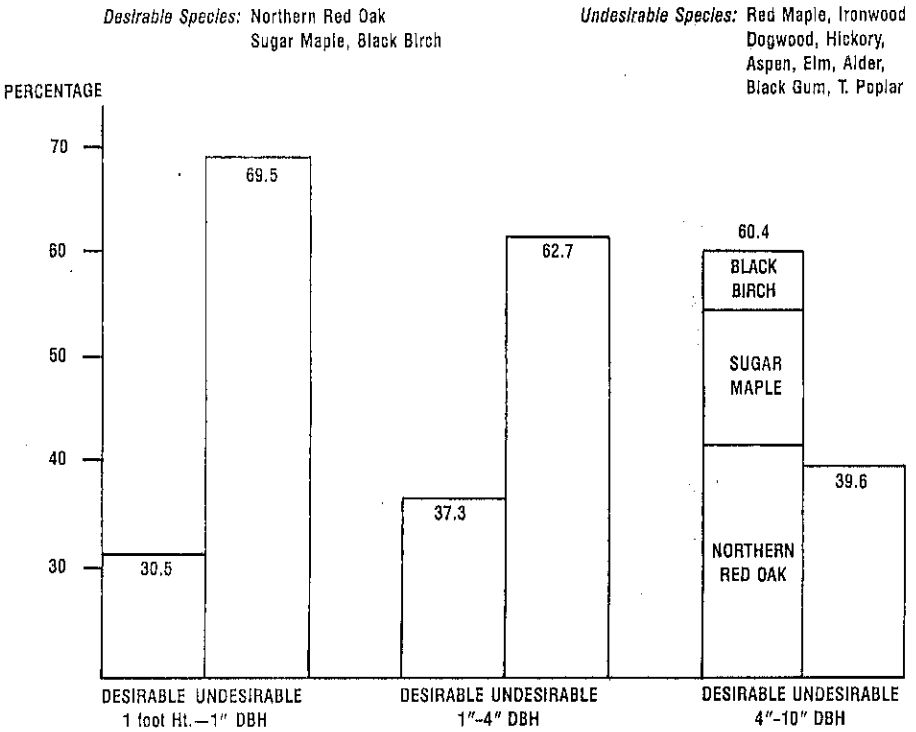
TREE STOCKING PROFILE—YEAR 1983



CLEARCUTTING

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ure over a sixty year period shows an average production of about one half cord per acre per year. This amount approximates a rule of thumb figure generally agreed upon as normal for the Northeast.

Over the past twenty years, we have clearcut several small patches of woods here at Black Rock. Some of them have failed to regenerate to tree species due to heavy deer browsing. One such area one half acre in size is still devoid of trees after 11 growing seasons. Even the planting of pine and spruce could not survive the onslaught of hungry deer.

By contrast, a clearcut strip created in 1962 is fully stocked with saplings and pole sized trees of oak and maple. This instance of success can be attributed to exceptionally low population of deer we observed during the early 1960's.

Oaks in this region produce crops of acorns roughly every two to five years. Some years (as in 1982) they are totally barren. Establishing a clearcut in the fall of a good seed year often results in a good catch of seedlings the following spring. To accomplish this, logging activity should stir up the soil thus exposing mineral soil which in turn serves as a natural nursery for acorns and other seeds. Taking advantage of good seed years in conjunction with a heavy harvest makes good biological and economic sense.

CONCLUSIONS

1. Clearcutting a 60–70 year old mixed oak stand of timber has not caused a noticeable change in species compositon after twenty-five years.

2. The relative abundance of sprouts versus seedlings before clearcutting and at the present time appears to be unaltered.

3. Some increase in light demanding species such as birch and aspen has been observed.

4. Full stocking is presently evident throughout the clearcut. Northern Red Oak, Sugar Maple and Black Birch, in that order, dominate the "new" forest.

5. The largest dominant trees have good form and exhibit rapid growth. There is good reason to expect this tract to produce as good or superior timber at age sixty as compared to the trees cleared by Stout in 1958.