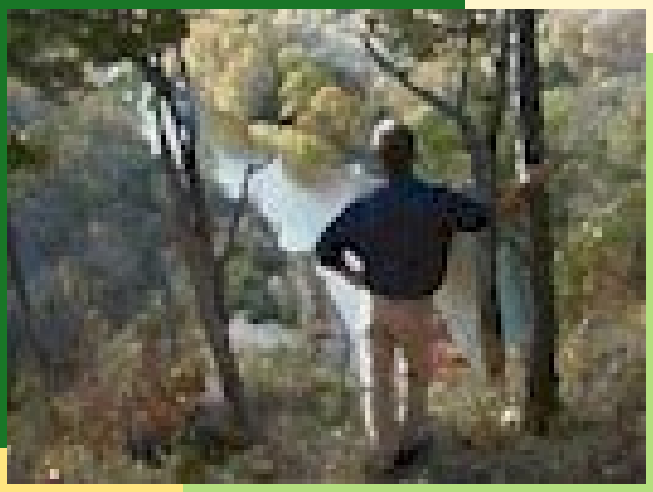
The Pioneer Forest

A Model of Ecologically Sustainable Logging in the Missouri Ozarks



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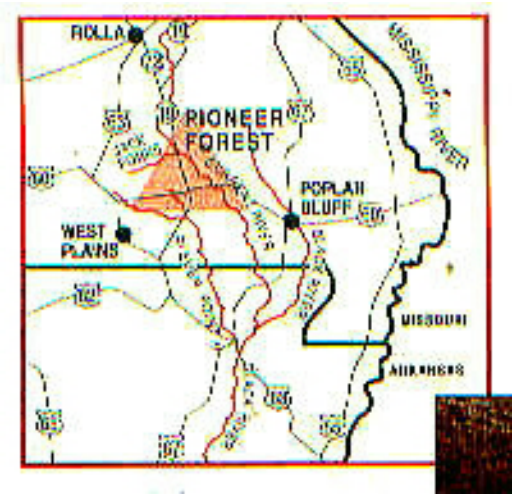
Introduction

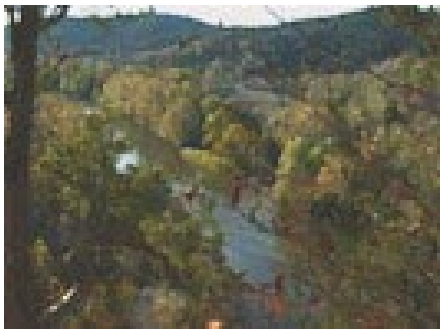
The Pioneer Forest is a private, for-profit, 160,000-acre forest in the Ozark Mountains of Missouri that is a model for ecologically and economically sustainable logging. By practicing uneven-age forestry using the individual tree selection method the Pioneer Forest produces wood products for market while maintaining a natural and biodiverse forest.



Surrounding the Pioneer Forest is the Mark Twain National Forest, which is one of the 155 national forests in our national forest system. In contrast to the ecologically sound management of the Pioneer Forest, the Mark Twain practices a destructive form of logging called even-age management. The primary logging method of even-age management is clearcutting, which is the removal of all trees within a short period of time. Clearcutting, like individual tree selection, also produces wood products for market. But clearcutting and other forms of even-age management leave behind an ecologically devastated landscape rather than a vibrant living natural forest. The comparison between the two types of logging is visually stunning. The Pioneer selection logged forests are biologically rich, with a full range of forest life and mature old trees, even immediately after logging, whereas the nearby clearcuts in the Mark Twain NF remain ecological wastelands even decades after clearcutting of these forests.

Recently Save America's Forests had the opportunity to visit both the Pioneer Forest and the surrounding Mark Twain National Forest. The guide was Pioneer Forest's head forester Clinton Trammel who has over 20 years of professional experience in the Ozarks. This paper explores the differences between the selection management logging used on the Pioneer Forest and the even-aged clearcutting practiced on the Mark Twain National Forest. Also discussed are the reasons why the Mark Twain National Forest persists in the damaging practice of clearcutting when a superior alternative is found on the private lands of its neighbor, the Pioneer Forest.

The Ozark Forests



Pioneer Forest

Both the Mark Twain National Forest and the Pioneer Forest are located in the Ozark Mountains of southern Missouri. The Ozarks are the only mountain range between the Appalachians and the Rockies. They consist of rolling hills under 2,000 feet in elevation with isolated hollows and deeply dissected river valleys. Although ownership and management programs differ, ecologically the forest found in the Mark Twain and Pioneer Forest is identical.

Ozark forests are near the western edge of the eastern deciduous forest type where broad-leafed hardwood trees that lose their foliage seasonally dominate, and evergreen needle-leafed trees are less abundant. The specific forest type association found within the Ozarks is called oak-hickory, reflecting the dominant tree species found there. Northern Red Oak, Southern Red Oak, Black Oak, Scarlet Oak and White Oak are predominant species in the canopy along with other oak species. Hickory is less abundant with Pignut and Bitternut the leading species. There is also an important component of short-leaf pine.

In comparison to other regions of the east, trees in Ozark forests are diminutive in size and height. This is due to relatively reduced rainfall and poor soils. In Missouri, rainfall can average less than 30 inches per year. To the east, rainfall is much greater, ranging from 40 inches to as much as 60 inches per year. Poor soils are the result of the

underlying limestone bedrock. Limestone forms extremely well drained soils and topography marked by sinkholes called karst. In the Ozarks, moisture does not linger close to the surface and nutrients are quickly drained away, further limiting tree growth.

Establishment of the Pioneer Forest and the Mark Twain National Forest

St. Louis businessman Leo Drey established Pioneer Forest in 1954. Mr. Drey took an interest in preserving the natural heritage of his home state of Missouri and was particularly attracted to the forests, springs, sinkholes rivers and wildlife of the Ozarks. Mr. Drey realized that this natural heritage was dwindling, due in part to the rapid depletion of forests by the timber industry.

The Mark Twain and Clark National Forests were created in 1939 under a law called the Weeks Act. Congress passed the law in 1911 in response to widespread clearcutting by timber companies that left millions of acres denuded and suffering from erosion. It allowed expansion of the national forest system through purchase of privately held lands for the purpose of protecting watersheds and forests. The Mark Twain and Clark National Forests were later combined, and today the Mark Twain NF encompasses 1,489,178 acres.

Pioneer Forest Selection Management

From the very beginning, one of Mr. Drey's objectives for the Pioneer Forest was to demonstrate that commercial logging and preservation of the forest could be compatible. He was inspired by the results of selection management as practiced by progressive foresters. The Pioneer Forest management plan reflects these goals.

Touring Pioneer Forest

The three objectives of the plan are to

1. generate income from timber sales,
2. maintain a continuous forest cover and
3. prohibit the use of clearcutting (even-age management).

Selection management is a method of uneven-age logging that preserves the forest canopy by removing just a few individual trees from the forest on a given entry into the forest. It is an ecologically sustainable practice of logging because it maintains the natural balance of tree species and ages of trees found within the forest. Selection preserves the forest habitat and allows for natural regeneration of the forest without the use of pesticides or chemicals. It provides for a steady flow of wood products to the mill, improving community economic sustainability.

On the Pioneer Forest, a given area of the forest is entered about every 20 years for logging. Areas are considered for entry by several different measures and examinations. Pioneer Forest keeps a careful scientific inventory that measures the growth of trees in the forest. If there is insufficient forest growth and numbers of large trees called sawlogs, then that area would be disqualified. When a forested area is ready to be re-entered for logging, the foresters at the Pioneer Forest first examine it. The foresters look for areas where merchantable sawlog size trees have matured. The forest is also examined for signs of stress or mortality. Trees that are about to die or are near death are more likely to be selected for logging. By removing the weak trees that nature already singled-out, the practice of selection management actually improves the genetic strength and vitality of the forest, in the same way that nature does.

A skidder at work on Private Forestland in Florida.

Once trees are selected individually for removal they are marked. A timber sale contract is put together and sent out for bid to logging contractors. The timber sale contract makes very specific the overall board foot or volume that a contractor can expect to cut. It also outlines the high standards of care that must be adhered to while logging in the Pioneer Forest, in order to insure the preservation of the surrounding forest.

Because selection management involves preserving the surrounding forest while taking out some trees, a great deal of care must be exercised during the logging process. Minimizing harm to the smaller trees is critical because they are the future sawlogs and canopy trees of the Pioneer Forest. The heavy machines called skidders that are used to remove logs from the forest must be operated in a way that they do not scrape the surrounding trees and damage them. These scars can be an entryway for disease or cause the tree to deform, reducing the value of the lumber. Trees also have to be cut or felled in a way that does not damage the surrounding forest. Carelessly felled trees can become tangled with surrounding trees damaging them or even causing them to be knocked over.

A selection managed forest near Davis Lake, Deschutes National Forest, Oregon

Logging contractors that operate in the Pioneer Forest are monitored regularly during the logging operation for compliance to the necessary standards of the Pioneer Forest. These standards are written into the logging contracts. If they are not complied with, a logger's contract can be terminated immediately during an inspection and they will not be allowed to bid on Pioneer Forest contracts again.

There is a forest before, during, and after logging on the Pioneer Forest. Selection logging retains the forest, taking only a few trees at a time, dispersed throughout the forest. This leaves the forest habitat intact, with most of the trees standing. I visited areas on the Pioneer Forest shortly after logging had occurred and was not able to detect evidence of the operation. Treetops that are left after logging to enhance the nutrients of the soil take only a few seasons to break down and assimilate into the soil. Skid trails where machinery was driven to haul out logs quickly recover and are reclaimed by vegetation. Stumps rot and decay quickly. Saplings grow quickly, responding to the additional light opened up by canopy gaps from trees that have been removed.

Wildlife also returns to areas that have been recently selection logged. Studies in similar forests show that migratory songbirds that require closed canopy interior forests to breed will utilize lightly logged selection management forests but will not nest in forests that have been more heavily logged or clearcut. Clinton Trammel reports that bears that prefer isolated forest areas are more likely to be found on the Pioneer Forest than in surrounding Forest Service lands.

Some areas of the Pioneer Forest are set aside from logging entirely. This is done for the purpose of understanding natural forest dynamics. About 3,000 acres of mature forested areas that are recovering old-growth characteristics are being allowed to continue that process and again reach a true old growth stage. These areas act as a kind of scientific control. By studying and monitoring areas that are natural and comparing them to the areas that have been selection managed it is possible to understand better how natural processes such as disease are operating in the forest. These areas also serve as guides to achieving a mature forest state using selection management. Other areas are set aside to protect sensitive plants or historic sites. Selection logging on the Pioneer Forest is profitable over the long term, with continuous supply of high quality wood from the forest. Additionally, there are no costs of replanting, fertilizing, herbicides and pesticides that are required with clearcutting and other even-age management. Selection logging provides steady profits with little capital input.

In selection management, only individual trees or small groups of trees are removed at any one time. This creates small openings, allowing sun to reach the forest floor. Thus a new generation of trees can sprout and grow, just as they would after a natural disturbance such as a wind blow-down or a forest fire.

The Forest Service also incorrectly claims that clearcutting is necessary to re-grow species of trees that require full sunlight in order to reproduce, such as certain kinds of oak. This argument is a corollary to the concerns about selection causing changes in the canopy tree species and is used to justify even-age management and clearcutting. Proponents of clearcutting claim that is necessary to remove (clearcut) the entire forest canopy to allow sufficient sunlight to reach the forest floor and stimulates the growth of tree seedlings. They falsely claim that clearcutting is the only way to allow enough sunlight to reach the forest floor. They incorrectly claim that if selection logging is employed, instead of clearcutting, only certain species of shade tolerant trees will grow in the forest, and those few shade tolerant species will soon crowd out other native tree species.

The Pioneer Forest has demonstrated that this central claim of clearcutting advocates is false. In the Pioneer Forest, small gaps or openings in the forest can be created using selection management that allow sufficient sunlight for regeneration of even the tree species that require full sunlight in order to grow, such as some species of oaks and pines.

The Forest Service falsely claims that selection management damages the surrounding forest by scraping up surrounding trees. The Forest Service's answer to the possible damage of trees is to clearcut and kill them all, which is the worst possible damage. The logging contractors on the Pioneer Forest successfully protect the surrounding forest by carrying out the selection logging very carefully.

The Forest Service claims that selection is high grading

High grading is an abusive logging practice where only the most valuable trees, generally larger trees of commercial species, are taken from the forest leaving only the poorer trees. The practice damages the long -term sustainability of the forest. When all the best trees are removed, then those trees are unable to reproduce and pass on desirable qualities to their offspring resulting in the genetic depletion of forest quality.

High grading is erroneously associated with selection management because high grading like selection management involves a partial rather than complete cutting of the forest. Unethical foresters who claimed to be performing selection management when in fact they were just high grading have damaged the reputation of selection management.

Pioneer Forest does not high grade. In choosing trees to cut the foresters do the opposite of high grading by leaving higher quality trees to reproduce and taking out mostly the weak, diseased or suppressed trees. The most commercially desirable species are not logged to the exclusion of other species.

In fact, Pioneer Forest improves the forest naturally through selection management. At the time of purchase by Mr. Drey, the prior logging practices of the previous owners who high graded the forest significantly damaged Pioneer Forest. Clinton Trammel and the other foresters at Pioneer Forest have been working for many years to reverse the effects of the high grading that occurred. After 30 years, Clinton Trammel demonstrates that the forest is recovering strongly from damage caused by prior high grading. Selection management is not hurting the Pioneer Forest but repairing the damage from high grading and creating a functioning, natural forest, that is on its way to recovery to a mature, productive old growth forest.

The Forest Service claims that selection is too difficult

It is obvious clearcutting requires very little understanding of the forest. Cutting all the trees within a given area only requires knowledge of the operation of a chainsaw and the heavy equipment needed to remove those trees from the forest. Selection management on the other hand requires knowledge of the forest ecology, and the knowledge to select trees for logging that will leave behind an ecologically functioning forest.

Clinton Trammel, chief forester at the Pioneer Forest explained that it does not take a lifetime of training to acquire the skills necessary to practice selection. Technicians can be trained to make the appropriate choices in the woods. Selection is more complicated, but Pioneer Forest has proven the benefits of this technique.

A forester explaining selection management in Pioneer Forest.

Existing laws promote clearcutting

The National Forest Management Act legalized clearcutting on the national forests in 1976. Ironically, this law was passed as a direct result of a lawsuit that successfully challenged and halted clearcutting on some of national forests.

On private lands there are pressures to clearcut because of the structure of property tax laws. In order to pay the property taxes, private landowners often opt for clearcutting because it brings in a large influx of money at one time. Also, the land is taxed on the value of the trees. As the trees become more valuable taxes rise creating an incentive to cut the trees to pay the taxes. Tax laws should be restructured to reward landowners for carrying out ecologically sound selection management and maintaining their forests.

Selection Management for the National Forests

By comparing the practices of the Pioneer Forest and the Mark Twain National Forest, selection management has been shown to be superior to clearcutting both ecologically and from the perspective of long term community economic sustainability. The Pioneer Forest is one of the best examples of the practice of selection management in the nation but there are other examples of the use of this practice in many forests throughout the country, in almost every forest type.

The practice of clearcutting on national forests is also widespread. From Alaska to Florida, clearcutting and even-aged management is the primary method of logging on the national forests It is destroying our federally owned lands. Our last ancient forests, roadless forests, riparian forests, and ecologically important recovering forests are being lost to this practice.

Clearcutting has been the favored method of logging on the Mark Twain and other national forests throughout the country for more than fifty years. This policy has caused significant and, in many cases, possibly irreversible destruction of our native forest habitats. Pioneer Forest demonstrates that there are viable alternatives to clearcutting in the form of selection management.

If clearcutting continues at its current pace on our national forests, many forest species and unique forest habitats will soon become extinct. The national forests would be vastly improved by adopting the ecologically sustainable selection logging techniques practiced on the Pioneer Forest.