

Bill Hornsby is a forester with the Bureau of Indian Affairs, Branch of Forestry on the Mescalero Apache Reservation. He has worked for the BIA for 15 years both at Mescalero and the Yakama Reservation in Washington. Bill graduated from West Virginia University in 1982 with a Bachelor of Science in Forestry and received his certification as a Silviculturist in 1996. The basic function of his position at Mescalero is to “help the Mescalero Apache Tribe manage its timber resource.”



FOREST MANAGEMENT ON THE MESCALERO APACHE RESERVATION: A POWERPOINT PRESENTATION

Bill Hornsby
Bureau of Indian Affairs
Mescalero Agency
PO Box 189
Mescalero, NM 88340

INTRODUCTION

The 460,000-acre Mescalero Apache Indian Reservation is located in southcentral New Mexico, primarily in Otero County. The reservation is home to approximately 3,900 tribal members from three sub-bands of Apaches—the Mescalero Apache, Chiricahua Apache and the Lipan Apache. The reservation is 85% forested with a commercial forest base of approximately 150,000 acres. Forest management operations are coordinated with the Tribal Government and carried out jointly by the Bureau of Indian Affairs, Branch of Forestry and the Tribe’s Division of Resource Management and Protection.

The commercial forest base is managed on a 20-year cutting cycle with approximately 7,500 acres being harvested each year with an average harvest level of 2,240 board feet per acre. Even-aged and uneven-aged silvicultural systems are used on the

reservation with uneven-aged management being the preferred method. Dwarf mistletoe infection levels are quite high and periodic insect infestations are also common. Post harvest follow-up treatments, timber stand improvement operations, and reforestation efforts are conducted by the Tribe’s Division of Resource Management and Protection.

There is an active woodland management program on the reservation. The focus of the most recent projects have been watershed restoration surrounding the community of Mescalero and pinyon-juniper savannah restoration on the east side of the reservation. Fuels reduction operations and prescribed burning are conducted on over 5,000 acres yearly in joint efforts between the Bureau’s Fire Management Section and the Tribe’s Division of Resource Management and Protection.

First Treaty between Mescalero Apache Tribe and U.S. was signed in 1855. The Mescalero Apache Indian Reservation (MAIR) was established by the Executive Order of 1873. The size of the reservation was subsequently reduced by Executive Orders in 1875, 1882 and 1883. The boundaries of the reservation have remained basically unchanged since 1883.

The Branch of Forestry was created within the Indian Office, (now the Bureau of Indian Affairs), by an Act of Congress on March 3, 1909. This Act enabled the Indian Office to hire professional foresters to help the Agency Superintendents with basic forest protection and utilization practices and the formation of uniform forestry rules and regulations.

The guiding principle of the Bureau of Indian Affairs Forestry program is to assure the productivity of forests for future generations while affording the development of the resource for its current best use as determined by the Tribe. This is accomplished by executing and fulfilling the Bureau's trust responsibility imposed by the United States through treaty, statute, and court orders to protect, manage, and develop trust resources. This obligation must be conducted in recognition of tribal sovereignty wherein the Tribe is considered a sovereign nation and dealings with the Federal Government are conducted on a nation-to-nation basis.

The Bureau must exercise a high degree of vigilance in carrying out its trust responsibility and to promote the conservation, development, and utilization of the Tribe's resources for the maximum benefit of the Indian people, now and in the future. With these principles as the guiding direction for future accomplishments, the Bureau must work cooperatively with the Tribe to provide state-of-the-art management services for the forest resource while recognizing the unique character of the Tribe's land ownership, goals, and values.

Forest Management Planning

It is the policy of the Bureau, in accordance with 25 CFR 163, to require a current Forest Management Plan (FMP) for all Indian forest lands in trust status prior to the commencement of forest management activities and obligation of related funds.

The *Mescalero Apache Indian Reservation Forest Management Plan 2001-2010* was approved on June 6, 2001. This plan provides the management direction by which program activities will be regulated

during the 2001 through 2010 planning period in order to meet long-term resource objectives.

Timber Management

Approximately 85% of the reservation is forested with 150,000 acres considered commercial forest. The commercial forest is managed on a 20-year cutting cycle with about 7,500 acres receiving treatment each year at an average harvest volume of 2,240 bdf/acre.

A document called a Forest Officer's Report is prepared for each timber sale on the reservation. This report contains all the accumulated information about the timber sale including: sale objectives, a description of the sale area and resource considerations, silvicultural prescriptions, transportation plan, volume estimate and stumpage appraisal, environmental assessment and associated NEPA documentation, wildlife and biological assessments, threatened and endangered species clearance and cultural resource survey reports.

Silviculture

Silviculture is defined as "the art and science of controlling the establishment, growth, composition, health and quality of forest and woodlands." This entails the manipulation of forest and woodland vegetation in stands and on landscapes to meet the diverse needs and values of landowners and society on a sustainable basis.

A silvicultural prescription is a descriptive narrative of the selected silvicultural treatment including slash treatment, reforestation needs, site preparation, harvesting restrictions, and recommended harvesting methods and any other multiple resource concerns or directives. It also includes a schedule for future treatments. A prescription is required for all treatments that will affect the present and/or long-term character of a forest stand.

Silvicultural prescriptions are based on the best utilization of the existing stand conditions given the core objectives of the Mescalero Apache Tribe. Core objectives include:

- Minimize insect and disease damage.
- Where possible, manage stands to achieve desirable uneven-aged structure.
- Improve the stocking, composition, and growth of young stands.
- Reserve some old growth trees throughout the forest.
- Maintain an aesthetically pleasing forest that will

yield the desired level of forest products and produce/retain wildlife, recreation, visual, range and water qualities.

- Use harvest techniques that will achieve maximum utilization of forest products.
- Develop or maintain specific forested areas for traditional, religious and cultural forest values.

Silvicultural Systems

A silvicultural system is a planned process whereby a stand is tended, harvested, and re-established. The system name is based on the number of age classes (Even-aged, or Uneven-aged), and/or the regeneration method used (Shelterwood, Single Tree Selection, etc). A silvicultural system includes all treatments on a given stand over a long period of time.

There are two types of silvicultural systems:

- Uneven-aged System - A planned sequence of treatments designed to maintain and regenerate a stand with three or more age classes.
- Even-aged System - A planned sequence of treatments designed to maintain and regenerate a stand with one age class. The range of tree ages is usually less than 20% of the age of the tree at harvest.



Figure 1. Illustration of an Uneven-aged forest structure.



Figure 2. Uneven-aged forest structure.



Figure 3. Illustration of an even-aged forest structure.



Figure 4. Even-aged forest structure.

All silvicultural treatments or cutting methods, fit into two categories-Regeneration or Intermediate. The Regeneration Method is a cutting method by which a new age class is created. The establishment of regeneration is one of the main objectives for all regeneration cutting methods. The Intermediate Method is a cutting method designed to enhance growth, quality, vigor and composition of a stand after establishment of regeneration and prior to final harvest.

Regeneration Method

There are two types of Regeneration Methods— Uneven-aged and Even-aged. Uneven-aged regeneration methods are described as “a method of regenerating a forest stand and maintaining an uneven-aged structure by removing some trees in all size classes either singly, in small groups, or in strips.” Even-aged regeneration methods are defined as “a method of regenerating a forest stand where the new stand contains only one age class.”

Uneven-Aged Regeneration Methods

There are two types of uneven-aged regeneration methods, single tree selection, and group selection. On the reservation, single tree selection is used much more frequently than group selection at this time. Single tree selection is described as “a cutting

method where individual trees of all size classes are removed more-or-less uniformly throughout the stand to achieve desired stand structural characteristics.” Establishment of a new cohort is an objective of this cutting method.



Figure 5. A stand treated with a single tree selection, an Uneven-aged regeneration method.

Even-aged Regeneration Methods

There are basically three Even-aged regeneration methods, the clearcut cutting method, the shelterwood cutting method and the seed tree cutting method. While each of these three cutting methods are different, they all are intended to be a way of regenerating a forest where the new stand contains only one age class.

Clearcut Cutting Method

This Even-aged regeneration method is defined as “A method of regenerating an Even-aged stand in which the new age class develops in a fully-exposed microclimate after removal, in a single cutting of all trees in the previous stand.” On the reservation, clearcuts are most often implemented in areas where dwarf mistletoe infection levels are so severe that use of an Uneven-aged regeneration method is not feasible. The clearcut with reserves variation of the traditional clearcut cutting method is commonly used on the reservation. With this method, varying numbers of reserve trees are not harvested in order to attain goals other than regeneration.



Figure 6. Illustration of the Clearcut Cutting method.



Figure 7. Clearcut with reserves.

Shelterwood Cutting Method

This Even-aged regeneration method is defined as “a method of regenerating a stand in which a new age class develops beneath the partially-shaded micro-environment provided by the residual trees.” The treatment sequence includes three distinct types of cuttings or phases.

Preparatory Phase: An optional harvest designed to enhance conditions for seed production.

Establishment Phase: A harvest designed to prepare the seedbed and to create a new age class.

Removal Phase: A harvest designed to release established regeneration from competition with the overwood.



Figure 8. Illustration of the Establishment Phase of a Shelterwood.

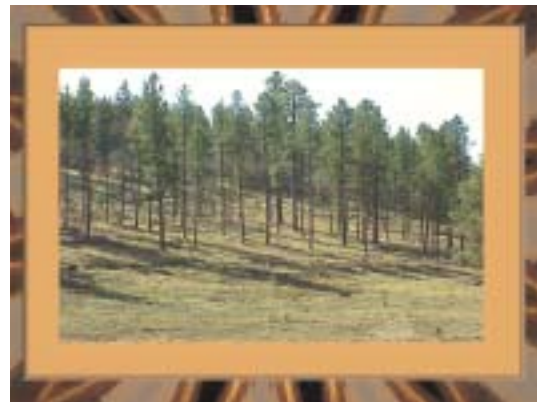


Figure 9. Establishment Phase of a Shelterwood.



Figure 10. Illustration of the Establishment Phase of a Shelterwood after regeneration has become established.

Seed Tree Cutting Method

This Even-aged regeneration method is very similar to a clearcut with the exception being that trees are left uncut for the specific purpose of providing seed to regenerate the stand. The official definition of a seed tree is “a cutting method in which the new age class develops from seedlings that germinate in a fully-exposed micro-environment after removal of all the previous stand except for a small number of trees left to provide seed.



Figure 11. Illustration of a Seed Tree Cut prior to the establishment of regeneration.

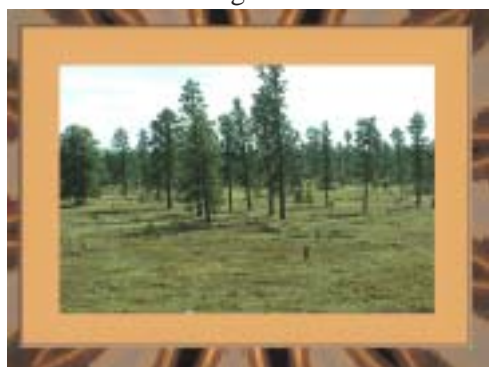


Figure 12. Seed Tree Cut.

Intermediate Treatments

Intermediate treatment is a collective term for any treatment designed to enhance growth, quality, vigor, and composition of the stand after establishment of regeneration and prior to final harvest. An intermediate treatment is not a regeneration method because there is no intention of establishing regeneration through its application.

There are many types of intermediate treatments including: improvement cutting, thinning, sanitation cutting, salvage cutting, weeding, cleaning and liberation. Weeding, cleaning, and liberation are not currently used to any great extent on the reservation. The following sections describe the more commonly used intermediate treatments.

Improvement Cut

An Improvement Cut is an intermediate treatment designed to improve the composition, form, quality and growth of the stand that is past the sapling stage. On the reservation, this treatment is a commercial harvest with the removed trees being of commercial size and is commonly used in open grassy canyon bottoms or in visually sensitive areas.

Thinning

Thinning is a type of intermediate treatment that is made to reduce a stand of trees primarily for the purposes of improving growth, enhancing forest health or to recover potential mortality. The objective is to redistribute the site’s growth potential onto fewer more vigorous stems. This type of treatment is used quite extensively on the reservation.



Figure 14. Improvement Cut.



Figure 15. Illustration of a young stand before thinning (top) and after thinning (bottom) where less desirable trees are removed to provide better growing conditions for the favored crop trees.



Figure 16. Thinning.

Sanitation Cutting

This intermediate treatment is defined as “harvest designed to remove trees to prevent/reduce the spread of insects or disease to healthy trees in the stand.” On the reservation, this treatment is commonly used in conjunction with thinning to “clean-up” small dwarf mistletoe infection centers within a predominately uninfested stand or to remove small pockets of bark beetle brood trees to prevent the spread of the insects to uninfested trees.

Salvage Cutting

This intermediate treatment involves the removal of dead trees being damaged or killed by injurious agents, other than competition, to recover the value that would otherwise be lost. Salvage cutting is commonly used to harvest timber killed by fire, insects, or disease. Unlike sanitation cutting, which is designed

to prevent the spread of insects or disease within the stand, salvage cutting is designed to capture the mortality that often results from insects or disease. Salvage cutting is often done in conjunction with sanitation cutting.



Figure 17. A stand that is suitable for Sanitation Cutting due to bark beetle infestation.



Figure 18. Potential area for Salvage Cutting due to fire induced mortality.

Non Timber-Related Natural Resource Management Activities

The Tribe’s Division of Resource Management and Protection and the BIA’s Branches of Natural Resources and Fire Management work collectively on several resource management projects. A large pinyon-juniper savannah restoration project has been completed on the east side of the reservation. A watershed restoration project around Mescalero and several fuel management and prescribed fire projects are underway around several housing areas.

Forest Management on the Mescalero Apache Reservation



Figure 19. Pinyon-Juniper Savannah restoration.



Figure 22. More prescribed burning.



Figure 20. Watershed restoration around the community of Mescalero.



Figure 23. Completed Wildland Urban Interface Fuel Treatment Project.



Figure 21. Prescribed burning.