



Arkansas Forestry Commission Forest Stewardship Plan



**Prepared for:
Mr. Carroll Weather
Cleveland County, AR**

**Prepared by:
Trey Franks
Arkansas Forestry Commission
Pine Bluff, AR**

**Plan Period:
November 2016 to November 2026**

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Signature Information Page

Trey Franks, RF 1517

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Jefferson and Cleveland County Forester
602 North Hutchinson Street
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Office: (870) 267-0133
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Trey.Franks@arkansas.gov

Date

Bubba Groves

Arkansas Game and Fish Commission (AGFC)
Southeast Private Lands Biologist
771 Jordan Drive
Monticello, AR 71655
Office: (870) 367-3553

Date

Carroll Weather

Landowner
1423 Hwy 199
Pine Bluff, AR 71660
Phone: (870) 830-3255

Date



Joe Fox, R.F.
State Forester

ARKANSAS FORESTRY COMMISSION

3821 West Roosevelt Road Little Rock, Arkansas 72204-6396
(501) 296-1940 fax: (501) 296-1949

Carroll Weather
1423 Hwy 199
Pine Bluff AR 71660
(870) 820-3223

November 14, 2016

Dear Mr. Weather:

I would like to welcome you to the Forest Stewardship Program and the opportunity to be working with you in the management of your forestland. The Stewardship Program is intended to help landowners toward the promotion of multiple-use goals in the management of their forestland.

The Stewardship Program considers such items as timber management, forest health, wildlife management, soil and water conservation, aesthetics, recreation, wetlands, archaeological and cultural sites, historical values, threatened and endangered species, and more.

This Stewardship Plan will attempt to address those items as they are applicable to your property and especially those objectives of interest you have indicated as Wildlife and Timber Management. We look forward to working with you in the accomplishment of your conservation goals.

Thank you for joining the Forest Stewardship Program and I am looking forward to working with you. If you have questions about any of the recommendations, please contact me at the numbers listed within this plan.

Sincerely,

Trey Franks
Jefferson and Cleveland County Forester
Arkansas Forestry Commission

Landowner Contact Information

Owner Information

Address: 1423 Hwy 199
Pine Bluff, AR 71620
Phone: (870) 820-3225

Property Information

Total Acres: 40
Forested Acres: 40
Legal Description: Located in the SE ¼ of the SE ¼ of Section 20; Township 10 South;
Range 11 West located in Cleveland County, Arkansas.
Latitude: 33.69322°
Longitude: -92.12552°

Landowner Objectives

Forest Stewardship Objectives:

1. Timber
2. Wildlife
3. Soil and Water Conservation

The landowner's management objectives are valued upon the stated wildlife and timber objectives, which include:

1. Manage forest to achieve higher timber yields as well as improve overall forest health and vigor.
2. Manage forest to create income for establishment and maintenance of the stands in the future.
3. Manage forest to achieve higher productivity for wildlife forage and habitat, for such wildlife species as white-tailed deer and eastern wild turkey.
4. Establish and maintain wildlife food plots and fire lanes/breaks for increased forage and cover during inactive months.
5. Implement Arkansas' Best Management Practices to effectively protect water quality.

Wildlife Recommendations



WILDLIFE MANAGEMENT PLAN for Carroll Weather

Arkansas Forest Stewardship Program



PREPARED BY

**BUBBA GROVES
PRIVATE LANDS BIOLOGIST**

**ARKANSAS GAME AND FISH COMMISSION
771 Jordan Drive
Monticello, AR 71656**



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FOREST STEWARDSHIP WILDLIFE RECOMENDATIONS

Dear Mr. Weathers:

The property has a variety of habitats that are suitable for deer, turkey, and quail. The property consists primarily of pine timber and the adjacent properties consisting of forest lands and pine plantations. With the addition of proper food plot management and forestry applications that promote natural food sources, abundant food sources can be provided the entire year. There is a minimum amount of winter food sources for wildlife and especially during oak mast crop failures. The property needs sufficient fall food sources to sustain and hold wildlife on the property during these harsh times. The addition of food plots in conjunction with proper forestry management practices will increase the amount of available food source for deer and turkey. This will make the property more attractive to all forms of wildlife.

I have provided some wildlife recommendations for your **40** acres. You have indicated that wildlife is the **Secondary** objective for the property. My recommendation should reflect your objectives. You have also indicated that **deer and turkey** are your main species of concern.

FIREBREAKS

Firelanes are constructed primarily for two purposes: for protection against wildfires and to facilitate prescribed burning. In addition to acting as fire barriers, firebreaks can provide access for wildfire-fighting equipment, as well as wildlife management activities. Firelanes should be developed with either a bulldozer blade or a tractor and disk. The width of the firelane will depend on the fuel level. To reduce the potential for soil erosion, firelanes should follow natural contours of the land.

In a wooded area, use a bulldozer to develop the firelane by removing woody vegetation and debris from the firelane strip. Be sure to remove all the stumps. The firelane should be maintained by disking or by developing a food plot. In open areas, the firelane should be maintained by disking and annual food plots. In highly erodible areas, such as steep terrain, every effort should be made to maintain firelanes in native perennials. Perennial plants require less maintenance and lower site disturbance. If firelanes are maintained in herbaceous vegetation, caution should be used to prevent the growth from becoming too thick.

TIP: Firelanes for protection, should be disked annually. Firelanes maintained only to facilitate prescribed burning, should be disked according to the burn plan.)

Establishing Food Plots

The amount of food plots is critical because if there is not enough it will not sustain the wildlife populations. If there is too much the deer and turkey will not be able to utilize the food plots because they become less palatable as the plant stems become tough. An option for unutilized food plots is to rotate bush hog 25% of the plots every two weeks to six inches high to stimulate new growth that will be better utilized by wildlife. The food plot can be one big plot, but to get better utilization it will be best to create multiple plots that range in size from one to three acres with irregular shapes. Food plots can be incorporated within areas of non-desirable woody growth to meet 10% of the properties acreage. Another place that food plots can be incorporated is in the firelanes if they are constructed. This will also help keep the lanes open from year to year and provided food in various places around the property.

The first step is to choose the proper location for the food plots. The plot must receive adequate sunlight and be well drained. Existing openings on the property, such as newly created loading sites from the logging operation, will require the least amount of work to establish as food plots and would make excellent food plot locations. Of course these areas may need to be cleared or stumps and slash. Placing 10% of the property in food plots is a good base line to start with to determine utilization and if there is a need for an increase. After the sites have been determined, the next step is to choose what to plant. A seed blend with a mixture of white and red clover, chicory, wheat, oats, rape, rye, and Austrian winter peas will produce good forage in the winter and will continue to produce through most of the summer. This will provide a supplemental food source for deer and turkey most of the year.

The next step will be to obtain a soil sample to determine the pH and mineral deficiencies in the soil for the chosen seed blend. With the variety of seeds in most all seed blends, determining the proper fertilizer and lime application is difficult. A rule of thumb is to obtain a pH of 6.0. If lime is needed to adjust the pH it must be applied in early summer for the fall food plots because lime is slow to work. A fertilization rate and blend will be determined and can be purchased at most any fertilizer distributor. There is an option to purchase a slow or fast release fertilizer blend. The best to use is the slow release fertilizer because it will last longer and carryout longer during the growing process. The fertilizer should be applied at the time of planting and plants should be monitored for additional fertilization needs.

These recommendations should increase the amount of watchable wildlife on the property while improving the habitat at the same time. If you have any questions, feel free to contact me at the office at 870-367-3553.

Sincerely,

Bubba Groves
Private Lands Biologist, Southeast Arkansas
Wildlife Management Division



Forestry Recommendations



Pine Plantation

Stand 1: Pine

Acreage: 40

Current Stand Conditions:

This stand consists of planted loblolly pine with an average diameter of approximately 7 inches. The current basal area is 143 ft.²/ac, and ranged from 130 to 160 ft.²/ac throughout the stand. The tract has a site index of 86 feet for loblolly pine. Site index is the average height in feet of a given species at age 50 years and is an indicator of site productivity. The higher the site index the better the site. Limitations to the site include: erosion, which is classified as slight and is expected to be minimal when the soil is forested; equipment, classified as moderate and seedling mortality, classified as slight.

Stand History: The stand was planted approximately 13 years ago. Between the rows were bush hogged for most of the life of the stand.

Stand Health:

The overall tree quality is good and are of better quality, with minimal forks, crooks, and ice/tornado damage. It would be beneficial for the stand to maintain a thinning rotation to reduce any concerns in the future. One major concern would be the southern pine beetle as the stand matures. (See attached Forest Insects and Diseases for more information.)

Recommendation:

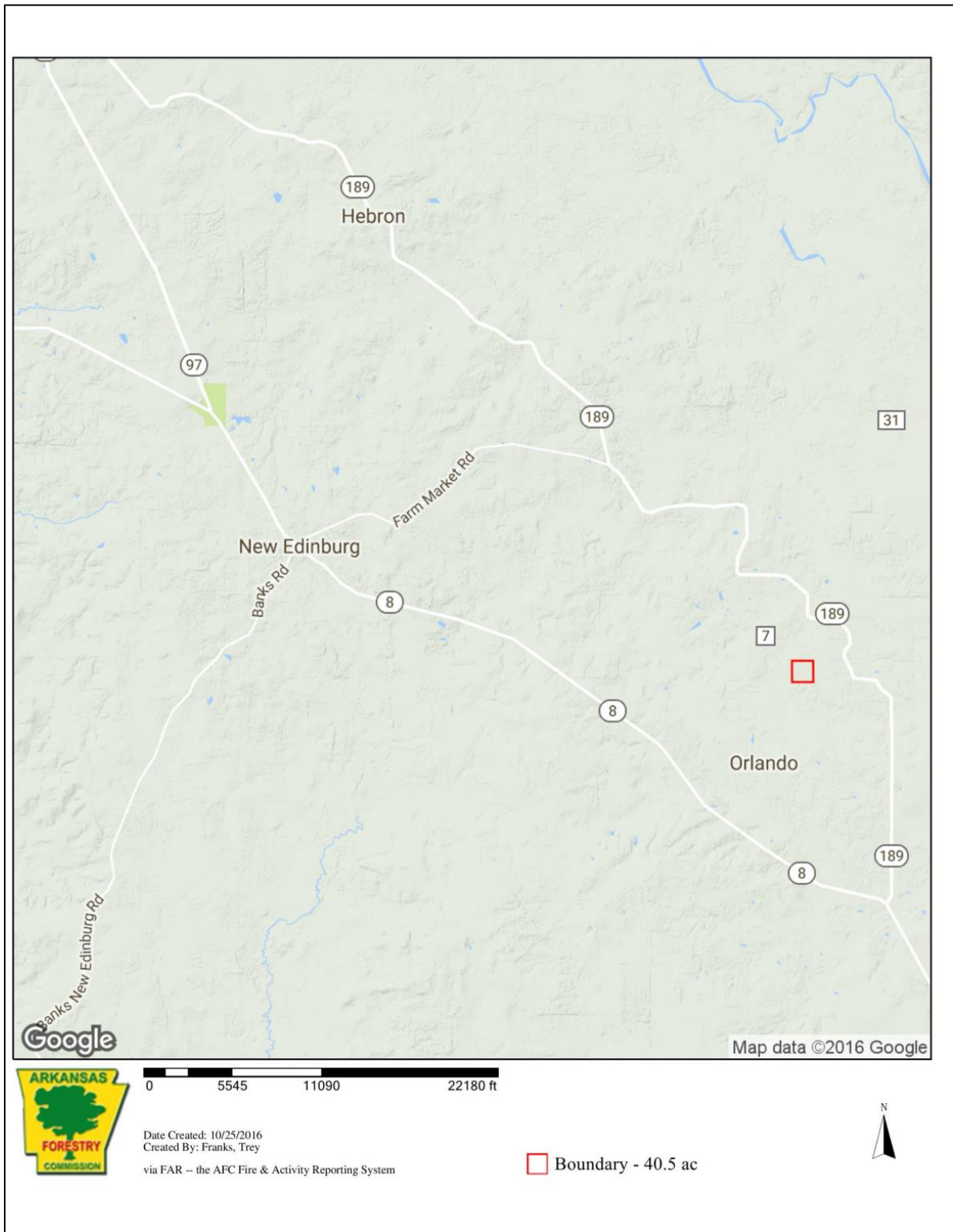
This stand is evenly distributed with an even age structure. The stand has an average diameter of 7 inches and is currently over-stocked. Timber is considered sawtimber size at diameters of 12 inches for pine and 14 inches for hardwoods. A 1st commercial thinning operation is recommended to reduce disease and pest concerns, as well as to improve timber quality and health. A good practice to implement is Forest Stand Improvement (also called Timber Stand Improvement). This can be implemented by a selective thinning to reduce the basal area to a threshold of 60 to 90 ft.²/ac. The stand will need to reach a basal area of 120 ft.²/ac before thinning operations will be recommended. Removing every 3rd row and thinning the remaining rows removing damaged and lesser quality trees would suffice to reduce the basal area. This will remove a 3rd of the timber reducing the basal area to approximately 95 ft.²/ac. Thinning the remaining rows will normally remove another 10% of the timber reducing the final basal area to approximately 85 ft.²/ac. Also, target any undesirable species, such as sweetgum, during the thinning operation. The stand should be inspected for growth, insect or diseases, and other environmental factors on an annual basis. Evaluate the stand in 8 to 10 years for a harvest operation after the initial thinning operation.

After thinning the stand, consider the use of a prescribed burn to control understory vegetation and reduce fuel loading. This should be conducted every 3 to 5 years using a backing fire or “cool” burn. Recommended for this stand is a 5 year rotation a year or 2 after the harvest operation. Firelane construction and maintenance must be implemented before a prescribe burn is performed. Before any prescribed burn is implemented, make sure to have a burn plan prepared. (See attached Prescribed Burning for more information.)

Schedule of Activities

Year	Months	Recommendation	Check
2016	Oct to Dec	Boundary Line Painting – 5,280 feet	<input type="checkbox"/>
2017	Jan to Dec	1 st Commercial Thinning Operation on 40 acres – Stand 1	<input type="checkbox"/>
2019	Jan to Dec	Firelane Construction for approximately 1 mile (5,280 feet) – Stand 1	<input type="checkbox"/>
	Nov to May	Prescribed Hazard Reduction Burn on 40 acres – Stand 1	<input type="checkbox"/>
2024	Jan to Dec	Firelane Maintenance for approximately 1 mile (5,280 feet) – Stand 1	<input type="checkbox"/>
	Nov to May	Prescribed Hazard Reduction Burn on 40 acres – Stand 1	<input type="checkbox"/>
2026	Jan to Dec	Boundary Line Painting – 5,280 feet	<input type="checkbox"/>
2027	Jan to Dec	2 nd Commercial Thinning Operation on 40 acres – Stand 1	<input type="checkbox"/>
2029	Jan to Dec	Firelane Maintenance for approximately 1 mile (5,280 feet) – Stand 1	<input type="checkbox"/>
	Nov to May	Prescribed Hazard Reduction Burn on 40 acres – Stand 1	<input type="checkbox"/>
2034	Jan to Dec	Firelane Maintenance for approximately 1 mile (5,280 feet) – Stand 1	<input type="checkbox"/>
	Nov to May	Prescribed Hazard Reduction Burn on 40 acres – Stand 1	<input type="checkbox"/>
2036	Jan to Dec	Boundary Line Painting – 5,280 feet	<input type="checkbox"/>
2037	Jan to Dec	Final Commercial Harvest on 40 acres – Stand 1	<input type="checkbox"/>

Maps Property Location



Aerial Map



Topographic Map



Stand Map



General Property Considerations

Best Management Practices

Arkansas is fortunate to have vast, healthy, diverse, and productive forests. These forests are a tremendous asset to our environment and economy, providing wood products, recreation, and wildlife habitat. Forests processes maintain clean water. Sound management of forests is compatible with these values. Silvicultural practices can cause soil to move into streams.

Best Management Practices (BMPs) are an effective way to protect forest water quality. Forestry BMPs are important practices, which prevent or reduce the amount of erosion generated by silviculture. BMPs include structural and nonstructural controls, operations, and maintenance procedures that can be applied before, during, and after silvicultural activities.

Implementation of Arkansas' forestry BMPs is voluntary and the Arkansas Forestry Commission (AFC) strongly encourages implementation. The AFC adopted these BMPs in response to the Clean Water Act of 1977 and the Water Quality Act of 1987. The goals of these federal laws are to protect and improve the quality of America's water.

Archaeological and Cultural Sites

Arkansas' historic places are a rich heritage of our cultural identity and the human experience. They tell the story of those that lived throughout the state and provide evidence of historical events that reflect people's everyday life and accomplishments. This evidence includes buildings, landscapes, archeological sites, structures, and objects that teach future generations of Arkansas' past to help them understand how we got where we are today. Cultural sites are those directly linked to a community's or groups historical identity like an Indian burial ground. Many of these sites are not easily visible to the untrained eye so careful observation of your property should be done before any major disturbances such as harvesting is done to ensure the preservation of such sites. Old homesteads, unusual rock formations, old cemeteries etc. are all examples of historical, cultural, and archaeological sites that need to be preserved.

There are no specific concerns identified filed with this property. The Arkansas Natural Heritage Commission (ANHC) Number assigned to this review was **S-AFC.-15-011**. Should some significant archaeological, cultural or historical resources be discovered, you should report findings and arrange a file inspection with:

Arkansas Natural Heritage Commission
1500 Tower Building
323 Center Street
Little Rock, AR 72201
Phone: (501) 324-9762
Fax: (501) 324-9618

Threatened and Endangered Species

Proper management decisions should only be made after the landowner is aware of the probability of the presence of any threatened and/or endangered (T&E) species on their property. The ANHC provides information on state at-risk species and habitats of particular conservation concern. ANHC's searchable database can provide county-level information and a site specific review can be requested at www.naturalheritage.com.

If T&E species are identified on the property contact the U.S. Fish and Wildlife Service (FWS), Arkansas Ecological Services Field Office, Endangered Species Program, 110 South Amity Road, Suite 300, Conway, AR 72032, Phone: (501) 513-4470. The FWS provides information on federal T&E plants and wildlife, habitats of particular conservation concern, and stewardship actions designed to benefit these important natural resources. The FWS offers several voluntary programs for landowners whose actions contribute to the recovery of T&E species.

There are no threatened or endangered species present on the property. The ANHC Number assigned to this review was **S-AFC.-15-011**.

Forest Health

Forest Health issues are addressed in all management plans prepared by the Arkansas Forestry Commission. It is not logical to plan for timber production, wildlife habitat improvement, water quality, etc. without including provisions to protect your investment from insect or disease attacks. Incorporation of forest health recommendations in written plans allows you to be aware of potential problems at different stages in the development of your stand.

Management techniques that promote stand vigor and health are often the only practical way to manage most forest pests. Most pests tend to attack stressed or damaged trees. Practices such as thinning to reduce competition for available water and nutrients, reducing competition from undesirable vegetation, removing dead and dying trees and planting the right species on the site are some of the techniques available to the landowner.

Matching the appropriate practice to stands to obtain and maintain tree health is the job of the professional forester. A shotgun approach is neither desirable nor professional. Recommendations should be based on site factors, species and landowner objectives.

Some stands will not require as much attention as others and most pests are fairly species specific. Stands established on poor sites or off site are more susceptible to insect and or disease attacks. Insects and diseases often work together to devastate stands. Application of the appropriate management techniques may protect your stands from pest attacks or reduce the impact of attacks. Healthy trees have an amazing ability to sustain injury and recover with little long-term damage.

Cost Share Programs

Cost-share programs are available from the federal government to help you implement forest stewardship practices. Landowners can receive financial reimbursements, in the form of a flat rate fee, varied by practice, for their conservation efforts. There are many programs available that are targeted at specific goals depending on what your primary landowner objectives are. Practices such as 1) site preparation, 2) tree planting, 3) forest stand improvement, 4) control burning, 5) firebreaks, 6) wildlife habitat improvement, and 7) Best Management Practices are eligible for cost-sharing. For most programs funds are short and demand is high. Some programs will rank landowners before awarding the funds.

The programs listed below may be able to assist you with conservation work on your lands. To determine which program may best suit your needs, contact your County Forester, County FSA, or County NRCS office. Landowners may sign up for the programs at the appropriate agency offices. Cost-share programs change from year to year as policy changes are made. Please check with your local agency office for up-to-date program guidelines.

Cost shares available are subject to the County NRCS, FSA or the County Forester's approval. Please do not start any practice before approval is received. Most practices shall be maintained for a minimum of ten (10) years after the calendar year of installation. Practices must be carried out according to program guidelines. Cost shares must be refunded if the landowner destroys this practice during this period.

Before you can receive cost share payments for completing the forestry and/or stewardship practices, the work will be inspected by personnel of the Arkansas Forestry Commission, or other appropriate representative and payment will be made only on acres or practices satisfactorily treated. Therefore, we recommend when contracting with a vendor to carry out your forestry and/or stewardship practice(s), you make arrangements with a vendor as to how payment will be handled according to vendor's performance.

Completed forestry and/or stewardship practices are evaluated according to standards established by the agency administering the program. As a program participant, it is your responsibility to make sure your forestry and/or stewardship practice(s) meet stated requirements. Appropriate agency personnel will gladly answer any questions you may have regarding proper application procedures.

The programs listed in the recommendation section may be able to assist you with your conservation work on your lands. To determine which program best suits your needs, contact your County Forester, County FSA, or County NRCS office. Landowners may sign up for the programs at the appropriate agency offices. Cost-share programs change from year to year as policy changes are made. Please check with your local agency office for up-to-date program guidelines.

Soil Report

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity. This soil report was created from the USDA Natural Resource Conservation Service. (See attached Soil Map for soil unit delineation.)

Symbol	Map Unit Name	Acres	Percent
ANA	Angie silt loam, 0-1% slopes	25.0	63%
CaA	Caddo silt loam, 0-1% slopes	15.0	37%

Soil Map



Soil Unit Descriptions

Angie Silt Loam soil (0 to 1 percent slope) are soils with poorly drained soils on stream terraces. This soil is suited to be used as woodland, with adapted trees such as mixed pines and hardwoods. This soil is suited for commonly grown pasture plants if properly fertilized and drained. This soil has a site index of 86 for loblolly pine. Limitations to the site include: erosion, which is classified as slight and is expected to be minimal when the soil is forested; equipment, classified as slight and seedling mortality, classified as slight.

Caddo Silt Loam soil (0 to 1 percent slope) are soils with poorly drained mostly level soils on uplands. This soil is suited to be used as woodland, with adapted trees such as mixed pines and hardwoods. This soil is suited for commonly grown pasture plants if properly fertilized. This soil has a site index of 86 feet for loblolly pine. Limitations to the site include: erosion, which is classified as slight and is expected to be minimal when the soil is forested; equipment, classified as moderate and seedling mortality, classified as severe.

Forestry Terms

Acre (Ac) – An acre is an area of land containing 43,560 square feet. A square acre would be 208.71 feet by 208.71 feet on each side. A circular acre would have a radius of 117.75 feet.

Aesthetics -- The pleasurable sensations, mental and physical, which humans may experience because of certain environmental resources.

Afforest-- To establish trees on a previously un-forested area by planting trees, setting tree seeds, or seeding-in from adjacent trees. Also see “Reforestation.”

Arkansas Forestry Association (AFA) -- The Arkansas Forestry Association is a nonprofit organization that represents and promotes the special interests of its membership, which includes private non-industrial forest landowners. The mission of the AFA is to advance the cause of forestry, develop a public appreciation for the environment and economic value of Arkansas’ forests, encourage the wise use and management of the forest resources, and serve a watchful guardian of private property rights. The AFA administers the Tree Farm Program.

Arkansas Forestry Commission (AFC) -- The mission of the Arkansas Forestry Commission is “to protect and develop forestry resources of the state.” As well, the Forestry Commission offers a variety of technical assistance and technical service programs to promote sound forest management on private non-industrial forestlands. The AFC administers the FLEP and SPBPRP cost-share programs.

Arkansas Game & Fish Commission -- The Arkansas Game & Fish Commission is responsible for managing the state’s fish and wildlife resources to provide sustainable public hunting and fishing opportunity. Their mission is “to preserve, protect, and enhance Arkansas wildlife populations and their habitat for public benefit.”

Arkansas Natural Heritage Commission (ANHC) -- are responsible for conducting inventories and protecting habitat of rare species and identifying and protecting the most natural biological communities in the state.

Artificial Regeneration -- Establishing a new forest by planting or direct seeding.

Aspect -- This is the direction that the land faces. A north aspect means that the ground is tilted to the north. This is an important indicator of moisture regimen, suitable forest type, and site productivity.

Basal Area (BA) -- (A) Of a tree: the cross- sectional area (in square feet) of the tree stem including bark at breast height (4 1/2 feet above the ground). For example, the basal area of a tree 14 inches in diameter at breast height is about 1 square foot. Basal area 0.005454 times diameter squared. (B) On an acre of forest: the sum of basal areas of the individual trees on the area. For example, a well-stocked pine stand might contain 80 to 120 square feet of basal area per acre.

Board Foot -- The amount of timber or lumber equivalent to a board 1 " thick by 12" wide by 1' long totaling 144 cubic inches, or 1/12th of a cubic foot. It is used to express the amount of wood in trees, sawlogs, veneer logs, and lumber.

Buffer -- A designated zone or strip of land of varying size and shape along a road, trail, stream or lake. Buffer strips of standing trees may be used to shield an area from view or protect a stream or lake from sedimentation.

Browse -- Leaves, buds, and twigs of shrubs and trees that are eaten by wildlife (especially deer).

Chip-n-saw -- Standing or harvested trees of an appropriate size (for example 10 to 12 inches DBH) and species to be processed using a chipping headrig, which simultaneously produces small sizes of dimension lumber and pulp chips.

Clear-cut Harvest -- A harvesting method that removes all the merchantable standing trees on the area at the same time. Clear-cutting is most used with species like pine that require full sunlight to reproduce and grow well. Clear-cutting produces an even-aged forest stand. Stands that are over mature, insect or disease affected, or have been high graded can be considered for clear cutting.

Co-dominant -- One of four-crown classes is co-dominant. Trees with medium-sized crowns forming the general level of the crown cover. They receive full light from above but are crowded on the sides and thus receive comparatively little light from the sides.

Competition -- The struggle among adjacent trees for growth requirements such as sunlight, nutrients, water, and growing space is competition. Competition goes on among both the roots and crowns of trees in the same stand.

Conservation Reserve Program (CRP) -- The CRP program was first introduced in the Food Security Act of 1985 to encourage farmers to enroll highly erodible cropland and/or land contributing to a serious water quality problem into the reserve for 10 -15 years. It aids farmers with converting cost-share dollars in highly erodible cropland and eligible pastureland to vegetative cover such as grasses, wildlife plantings, bottomland hardwood, pine trees or riparian buffers. Farmers receive an annual rental payment for the term of the contract. The CRP program is administered by the FSA.

Consulting Forester -- A forester available for hire on a contract basis is called a Consultant Forester. Consulting foresters typically charge a daily fee plus expenses for certain types of service and provide other services on a fixed contract basis. Some charge a fixed percentage of sale price of timber to provide services in connection with a timber sale. Landowners usually receive higher net returns in timber sales when using a consultant forester than selling themselves.

Contract -- A written, legally binding document used to accomplish the sale of standing timber. The contract specifies various provisions covering the expectations and desires of both the buyer and seller.

Coppice Forest -- A forest originating primarily from stump sprouts and/or root suckers. The coppice method refers to the means by which these forests are regenerated.

Cord -- A unit of measurement for stacked round or split wood containing 128 cubic feet including wood, bark, and air space. A standard cord measures 4 feet by 4 feet by 8 feet. A cord contains about 85 cubic feet of solid wood. It is used in conjunction with trees of suitable size to be converted into pulpwood, chip-n-saw, firewood, or other products not measured in terms of board feet.

Cost Basis -- The cost element of basis in a capital asset that naturally increases in volume or size over time. Timber is an example of this type of asset.

Cost-Share Program -- Government programs provide financial assistance (usually 50 %–75%) to landowners to do conservative practices. See CRP, EQIP, FLEP, PFW, SPBPRP, WHIP and WRP Programs.

Crop Tree -- A tree identified to be grown to maturity and for the final harvest cut. It is usually selected based on its location with respect to other trees and its species, quality and vigor.

Crown -- The upper part of a tree carrying the main branch system and foliage.

Cubic Foot -- A wood volume measurement containing 1,728 cubic inches, such as a block of wood measuring 1 foot on a side. A cubic foot of wood contains about 6 to 10 usable board feet of lumber rather than 12 board feet because some wood is lost as sawdust and shavings during processing.

Cull -- A tree of merchantable size made useless for all but firewood or wildlife benefits because of shape, disease, insect infestation, or injury.

Cutting Cycle -- The planned timber interval between major harvesting operations in the same stand. Cutting cycles occur in even-aged and in uneven-aged stands. For example, a cutting cycle of 8 years means a harvest every 8 years.

DBH -- Abbreviation (Diameter Breast Height) for tree diameter including bark at breast height (4 1/2 feet above the ground). DBH is usually measured in inches. For example 6, 8, 10, 12, etc. inches.

Deciduous Tree -- A tree that loses all its leaves at some time during the year. These are primarily hardwoods such as oak, hickory, ash, sweet gum, but southern magnolia and American holly are evergreen hardwoods.

Deductible Item -- An expense for which a taxpayer can take a deduction when calculating his or her federal income tax. Deductible items include the cost of tools of short life or small costs, salaries or other compensation for services rendered by others (except the cost of services related to the purchase of timber or forest land or reforestation or afforestation, which must be capitalized, or services related to a timber sale, which are deducted from sale proceeds), taxes, interest, and insurance premiums.

Defect -- The portion of a tree or log unusable for the intended product and, therefore, not measured. Defects include decay, crookedness, cavities, excessive number of limbs, etc.

Delivered Price -- Price per cord, per thousand board feet, or per ton at the first point of concentration or the wood yard. Delivered price is meant to cover the cost of standing trees, labor, plus equipment expenses to log and transport them.

Depletion -- The using up or wasting away of a natural resource. In the case of timber, depletion is the recovery of reforestation investment tax credit on up to \$10,000 per year of establishment costs; additional amounts must be recovered through depletion.

Depletion Unit -- A measure of cost basis per unit of volume in a timber account at a particular point in time. Depletion unit = Adjusted Cost Basis divided by Total Timber Volume.

Diameter Limit Cutting -- A selective method of harvesting whereby all merchantable trees above a specified, minimum diameter size are harvested. This method of harvesting is not recommended.

Dibble bar -- Also called a planting bar. A tool for hand planting bare root seedlings. It is about 4 1/2 feet in length with a 10-inch blade.

Diversion Ditch -- A shallow channel that has been cut across the top of a slope, or the side of a hill for the purpose of diverting surface runoff.

Dominant Tree -- One of four-crown classes. Having a crown in the upper most layers of the canopy and recovering full light from above and partly from the side. Dominant trees are generally larger than the average trees in the stand, and have well-developed crowns but possibly somewhat crowded on the sides.

Environmental Quality Incentives Program (EQIP) -- A United States Department of Agriculture conservation program for landowners to treat identified soil, water, forest and related natural resource concerns on eligible land. It provides cost share assistance to eligible landowners. EQIP is administered by the NRCS.

Ephemeral Stream -- Ephemeral streams have a defined channel but no banks so water flows only during or immediately after rain. SMZ's are not required.

Establishment Cost -- The cost required to afforest or reforest an area with trees of desired species and capable of surviving. Included are the costs of site preparation, seedlings or tree seeds, and hired labor, including supervision. The IRS takes the position that establishment cost also includes the cost of brush and weed control essential to the survival of a natural stand. Establishment cost is capital cost and cannot be deducted.

Even-aged -- A stand or forest in which all or nearly all of the growing stock of trees are approximately the same age.

Even-aged Forest Management -- Forest management with periodic harvesting of all trees on part of the forest at one time or in several cuttings over a short time to produce stands with trees of the same or nearly the same age.

Farm Service Agency (FSA) -- The Farm Service Agency is part of the United States Department of Agriculture tasked with enhancing the environment through development and implementation of programs to ensure adequate protection of agricultural producers and landowners' natural resources. The Farm Service Agency administers CRP.

Forest Land Enhancement Program (FLEP) -- A federal cost-sharing program that provides payments to landowners, who complete certain approved conservation practices such as tree site preparation, planting, and establishing wildlife food plots. The Arkansas Forestry Commission administers FLEP.

Firebreak -- A natural or man-made barrier, between 12' and 20' wide, created by removing brush, trees, leaves, and other vegetation. Firebreaks are used to control fire spread.

Forest Type -- A category of forest based on its composition (species makeup). Arkansas examples are: loblolly-shortleaf pine, oak-pine, oak-hickory, oak-gum-cypress, and elm-ash-cottonwood.

Growing Stock -- All live trees (except rough and rotten trees) in a forest or stand, including sawtimber, pole timber, saplings, and seedlings that can be sold for or grow into commercial timber products.

Habitat -- The natural environment of a specific plant or animal. An area containing all the necessary resources for the plant or animal to live, grow and reproduce.

Hardwood -- (A) Broad-leaved trees belonging to the botanical group, "Angiosperm." Examples are oaks, hickories, maples, ashes, elms, etc.. Usually deciduous (shedding all leaves each fall) holly, live oak, and southern Magnolias are the exceptions. (B) The wood of such trees, regardless of hardness. Major uses are for materials handling pallets, furniture, flooring, decorative paneling, flakeboard, strandboard and, increasingly, pulp and paper.

Herbicides -- Chemicals that kill specific species of plants.

High Grading -- The practice of removing only the biggest and best trees from a stand during harvest operation and leaving the poorest, lowest quality trees. "Diameter limit cutting" can be a form of high grading and is not recommended.

Improvement Cut -- A type of intermediate cut with primary objective of eliminating less valuable trees in favor of more valuable ones.

Increment Borer -- A hollow, auger-like instrument and extractor used to bore into the tree trunk to remove radial wood core that shows the tree's growth rings.

Intermediate Trees -- One of four crown classes. Trees shorter than dominant and co-dominant trees but with crowns extending into the canopy formed by the dominant and co-dominant trees. These trees receive little light from above and none from the sides. They usually have small crowns considerably crowded on the sides.

Log Rule -- A table that gives the board foot contents for logs of various diameters and lengths. It is assumed that the entire log is sawn into 1-inch boards. Several rules have been developed, based on varying assumptions about thickness of the saw and sawing practice used, including Doyle, International Inch, and Scribner Decimal C.

Lump Sum Sale -- A specified volume of standing trees sold for a cash price before harvest that can include all trees or only those of certain diameter or species.

Mature Tree -- A tree that has reached the desired size or age for its intended use. Size or age will vary considerably depending on the species involved.

MBF -- Thousand board feet, a unit of measure for tree volume or sawed timber.

Merchandising -- The practice of selling and using timber for the highest value product possible.

Marking -- The process of designating trees in an area to be cut and sold. A common marking practice is to spray indelible paint on the tree at eye level and at ground level. This allows the buyer to identify the trees to be sold and the seller to determine that only marked trees were cut.

Merchantable Height -- The height (length) of the usable portion of a tree trunk. It is measured up to a point on the trunk where the diameter just becomes too small to obtain the desired product. For example, four inches in diameter outside bark is a widely used minimum size for pulpwood.

Merchantable Timber -- A stand in which trees are of sufficient size and volume per acre to provide a commercial cut.

Mortality -- The number of or volume of growing stock trees dying from natural causes during a certain period.

Multiple Use -- Forestland management for more than one purpose, such as wood production, water, wildlife, recreation, forage, aesthetics, or clean air.

Natural Resource Conservation Service (NRCS) -- The NRCS of the U.S. Department of Agriculture helps individuals, groups, organizations, cities and towns, and county and state governments reduce the costly waste of land and water resources and put these natural assets to good use. NRCS administers the EQIP and WHIP cost-share programs.

Natural Regeneration -- Reforestation accomplished by seeding-in from adjacent trees or sprouts from the stumps or roots of harvested trees. The process may include site preparation to provide a suitable seedbed.

Natural Stand -- A stand of trees resulting from natural seeding or sprouting.

Non-Ephemeral Streams (perennial or intermediate) -- A defined channel and often banks. Water flows more than immediately after rain. SMZ's are recommended.

Non-point Source Pollution -- Pollution which is (1) materials such as chemicals, nutrients and soil carried into water bodies by precipitation, sewage, percolation and runoff; (2) not traceable to any discrete or identifiable point source; and (3) controllable through the implementation of BMP's.

Overtopped Trees -- Suppressed trees. One of four-crown classes. These trees have crowns entirely below the general level of the canopy and receive no direct light either from above or from the sides.

Partners For Fish and Wildlife Program -- Offers financial and technical assistance to landowners for habitat restoration, especially prior-converted or farmed wetlands. The U.S. Fish and Wildlife Service administers this program.

Pesticides -- A collective term meaning chemicals including herbicides, insecticides, and silvicides which are used to kill pests such as weeds, insects, unwanted trees, etc. This involves removing all trees from the harvest area except for a small number of seed bearers left singly or in small groups.

Plantation -- Forested areas established artificially by planting or direct seeding. It is usually made up of a single species.

Prescribed Burn Fire (PB) -- The planned application of burning natural fuels and logging slash to achieve forest management objectives on a predetermined area. Prescribed fire can be used to reduce hazardous fuel levels, control unwanted vegetation, improve wildlife habitat, improve grazing, and improve visibility.

Release Cutting -- Cutting made to free trees of desired species and quality from overtopping competition.

Reproduction -- Young trees which will grow to become the older trees of the future forest.

Rotation -- The number of years required to establish and grow trees to a specified size, product, or condition of maturity.

Sale Area -- The area that will be affected by the harvesting operations. Sale areas are normally marked with flagging or paint.

Salvage Cut -- Harvesting dead trees or those in danger of being killed (by insect, disease, flooding, ice, etc.) before the timber becomes worthless.

Sapling -- A small tree, usually between 1 and 5 inches DBH.

Sawlog -- A log large enough to saw into lumber; usually pine greater than 9.1 inches in diameter, and for hardwood greater than 11.1 inches in diameter.

Seed Tree Method -- An even-aged system that removes most of the trees in an area leaving a few for seed production to allow for natural regeneration.

Seedling -- (A) A tree, usually less than 2 inches in DBH, which has grown from a seed (in contrast to a sprout). (B) A nursery grown tree which is lifted and replanted. Planting spacings vary with the species and objectives of the landowner. Usually, plantings range from 303 - 436 seedlings /acre for hardwoods and 436 - 622 seedlings/acre for pines.

Selection Method -- An uneven-aged system in which individual trees or small groups of trees are selected for harvesting. Trees are harvested at periodic intervals (usually 5 to 15 years) based on their size, age, physical condition or degree of maturity. Trees selected for harvest are usually marked and tallied.

Shade Tolerance -- A tree's ability to develop and grow satisfactorily in the shade of, and in competition with, other trees.

Shelterwood Harvest -- An even-aged system that involves removing trees on the harvest area in a series of two or more harvesting operations. Sale areas are normally marked with flagging or paint.

Shrub -- A woody, low growing, perennial plant, usually less than 3" in diameter that ordinarily lacks a well-defined main stem.

Site Index -- A measure of productive capacity of a forest site based on the height (in feet) of the dominant trees at a specified age (usually 50 years).

Site Preparation -- Preparing an area of land for planting, direct seeding, or natural regeneration by clearing, chemical vegetation control, burning, disking, bedding, windrowing, or raking, or combinations of these practices.

Skidding -- Pulling logs (by machine or animal) from the stump to the skidway, landing, or mill.

Slash -- Tree tops, branches, bark, or other residue left on the ground after logging, pruning, or other forest operations.

Southern Pine Beetle Prevention and Restoration Program (SPBPRP) -- A cost-share assistance program (40% - 75%) for landowners in south Arkansas to help reduce the outbreaks and/or spread of Southern Pine Beetle.

Stand Prescription -- A document prescribing present and future treatments for a forest stand, the smallest unit of management.

Stewardship Program -- The Forest Stewardship Program is a means by which a landowner has access to resource professionals to assist them in obtaining a written forest management plan addressing multiple use management. The AFC administers the Forest Stewardship Program.

Stocking -- The number of trees in a forestland. Often, stocking level is compared to the desirable number of trees for best growth and management, such as partially stocked, well stocked, or over stocked.

Stumpage Value -- The economic value of standing trees.

Streamside Management Zone (SMZ) -- A strip of land immediately adjacent to water bodies where timber management activities are particularly designed to protect water quality.

Thinning -- Generally, a cutting in an overstocked immature stand to reduce the number of trees per acre, favor the best quality trees, and maintain or increase their growth rate.

Timber Cruise -- The process by which the volume, type, and quality of timber within a designated area is determined.

Timber Sale -- Activities dealing with the exchange of timber for money. At least three or more bids are recommended. A Timber Sales Contract should be used when selling timber.

Tree -- A woody perennial plant with a single well-defined stem, a more or less definitely formed crown, and usually reaching a height of at least 13 feet.

Timber Stand Improvement (TSI) -- Improving composition and growth rate of a forest stand by removing cull or deadening trees.

Uneven-aged -- A stand or forest in which the ages of the growing stock trees are distributed over a broad range.

Uneven-aged Forest Management -- Managing by periodically removing oldest or largest individual trees, or groups of trees, from a stand while preserving a natural appearance. See also "Selection Method".

Veneer Log -- Logs of appropriate size, species, and quality to be peeled sawn, or sliced into veneer. Veneer is used in the production of a wide variety of products, including plywood, paneling, boxes, baskets, and furniture.

Water Bar -- A cross drainage diversion structure for inactive roads, firelanes, and trails. Acts to divert surface water runoff into side vegetation, ditch, or dispersion area to reduce water volume and velocity.

Wetlands -- The U.S. Army Corps of Engineers and the U.S. Environmental Protection Agency jointly define wetlands as "Those areas that are inundated or saturated with surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas."

Wetlands Resource Program (WRP) -- WRP is a voluntary program offering landowners a chance to receive payments for restoring and protecting wetlands on their property. Under WRP, landowners are provided with cost-share funds and/or land payments to restore wetlands. WRP is administered by the NRCS.

Wildlife Habitat Incentives Program (WHIP) -- WHIP provides both technical assistance and cost-share payments to help establish and improve fish and wildlife habitat. WHIP is administered by the NRCS.

Windrow -- Slash, residue, and debris raked together into piles or rows normally by use of bulldozers.

Wing Ditch -- A water turnout or diversion ditch constructed to move and dispense water away from the road and side ditches into adjacent undisturbed areas.



Best Management Practices

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SMZ'S

Streamside Management Zones (SMZ) -- Streamside Management Zones (SMZs) are defined as strips of land immediately adjacent to water bodies where timber management activities are particularly designed to protect water quality. SMZs provide travel corridors for wildlife, wildlife food and cover, and result in soil and water protection. SMZs are the primary “line of defense” for water quality protection.

For the purpose of establishing SMZ guidelines, the AFC recognizes two types of streams:

- 1.) Ephemeral streams have a defined channel but no banks. Water flows only during or immediately after a rain. SMZs are not required.
- 2.) Non-ephemeral streams (perennial or intermittent) have a defined channel and often have banks. Water flows more than immediately after a rain. SMZs are recommended. SMZ recommendations for lakes and ponds are the same as those for non-ephemeral streams.



SMZ's:

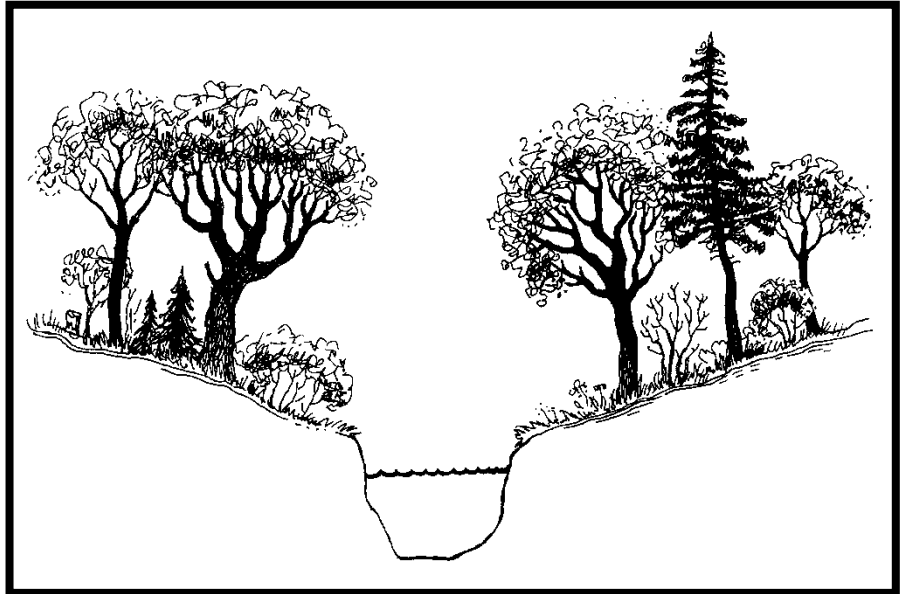
- prevents debris from reaching the stream;
- slows and spreads runoff flow and catches sediment before it washes into streams;
- serves as a trap and sink that holds subsurface water flow and overland runoff;
- stabilizes stream banks, thereby reducing bank erosion;
 - increases diversity of ecosystems for plants and wildlife;
 - makes streams suitable for diverse fish and aquatic populations by shading (water temperatures are lower in summer and warmer in winter); and
- produces timber products. Proper harvesting increases the riparian area's versatility.

The width of the SMZ is determined by the slope of the land adjacent to the waterbody. The following guidelines are recommended:

- For slopes less than 7% the minimum SMZ width should be 35 feet.
- For slopes between 7% and 20%, the minimum SMZ width should be 50 feet.
- For slopes greater than 20%, the minimum SMZ width should be 80 feet.

Remember, SMZs are marked on both sides of non-ephemeral streams, but width is determined by the adjacent slope, which may not be equal on both sides. A SMZ may be 50 feet on one side of stream and 80 feet on the other. On occasion, a non-ephemeral stream may be braided, in which case, the stream is considered as one stream from outside channel to outside channel. The SMZ includes all the land between the channels as well as the prescribed SMZ width adjacent to the most exterior channels.

Careful timber harvest is encouraged in the SMZ. Some of the best soils and timber growth occurs in this area. A minimum of 35 feet on each side of the stream less than 20 feet wide, 45 feet wide on each side of a stream 20 to 40 feet wide and 60 feet



wide for streams wider than 40 feet should be maintained in the SMZ. If less than 50 square feet of basal area exists prior to harvest, then no additional trees should be removed. All activities in the SMZ should be done in such a way as to minimize the soil disturbance and not breach the SMZ.

Guidelines for all BMPs can be found in the Arkansas Forestry Commission Best Management Practices For Water Quality Protection.

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Photo Credit: Arkansas Forestry Commission



Forest Disease

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Annosus Root Rot

IMPORTANCE: Annosus root rot (ARR) is a commercially important disease of all conifers. Loblolly pine is most severely affected. It typically enters the tree through a wound, grows through the heartwood into the roots, and causes decay in the root system. Diseased trees are subject to windthrow and breakage.

IDENTIFICATION: The fungus *Heterobasidion annosum* causes ARR, formerly called *Fomes annosus*. A fungus growth extending from the trunk of the tree is a “conk.” Conks are positive ARR identification. When fresh, conks are tan to brownish on the upper surface and white with tiny pores on the lower surface. Colors darken once the conk passes through winter. They are rubbery and difficult to tear. Conks are often at the base of dead or dying trees, stumps, or under root masses of windthrown trees. In trees with deep litter, conks may appear on the north side where humidity is higher. In Arkansas, most conks develop from December through March. Insects may destroy them before summer or fall.



Not every infected tree will have a conk and in some infected stands, there are none. This is common in stands that have been burned. If no conks are found, growing fungus from suspect trees in the laboratory can identify the disease.

Annosus root rot is commonly found on deep well drained sandy soils. Bark Beetles are often associated with ARR.

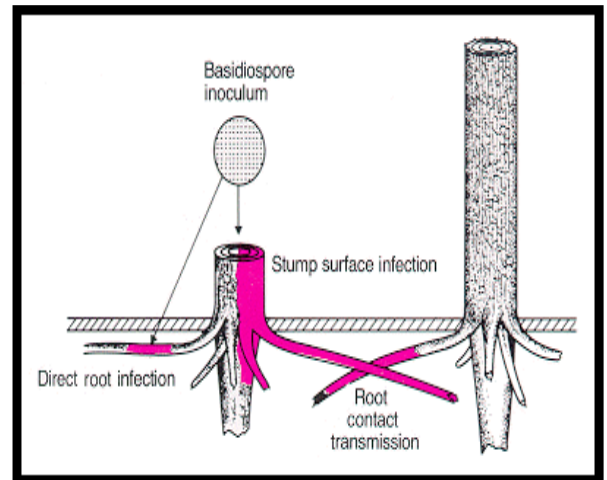
After identifying ARR in a few stands, strongly suspect the disease in other stands if there is some combination of the following:

- Pine stands with dead and dying trees often in clusters or rows.
- Trees leaning or blown over from lack of supporting roots.
- Stringy white rot of wood in roots and/or butt.
- Sparse crowns with off-color needles, often with abundant cones.
- Resin-soaked root areas with discolored, dead, or rotted end sections.
- Mortality in second or third year following thinning and continuing for several years.
- Pine stands infested with southern pine beetles or Ips bark beetles.

ARR SOIL HAZARD RATING: In Arkansas, any pine or pine stand may have ARR, although vigorous stands on suitable sites may suffer less damage. A high hazard site is one on which ARR can be reasonably expected to cause mortality and growth loss of a value greater than the cost of prevention.

The most consistent indicator of high hazard sites is well-drained, sandy soil to a depth of at least 12". These soils consist of 70% or more sand. Organic soils and soils with indicators of poor internal or external drainage are a low hazard. A high ARR hazard site will always remain so and will always require careful consideration. Every soil type in Arkansas has an ARR hazard rating. County foresters can provide this information. A STEWARDSHIP Forest plan will also contain this information along with recommended prescriptions.

PREVENTION: To prevent ARR, maintain healthy stands and recognize high hazard sites. Trees planted out of their natural range on high hazard sites are more susceptible. Longleaf pine is slightly less susceptible on high hazard sites. Planting on wider spacing and thinning should help avoid widespread infection. ARR typically enters the stand when fungal spores land on freshly cut stump surfaces. The fungus grows into nearby live trees via root grafts or contacts. To prevent ARR, treat stumps with borax whenever thinning in a high hazard area.



CONTROL: Once ARR is established and substantial mortality is occurring, control is necessary. Thinning is very risky because root damage promotes infection and the residual stand will be expected to deteriorate rapidly. The stand should probably be clearcut, unless losses can be absorbed until remaining trees reach sawtimber size. The higher sale price may make up for the loss. The site may be regenerated in pine with a small mortality percentage. The problem usually becomes apparent a few years after a thinning cut, often when trees are close to sawtimber size.

If the stand has a localized group of infected trees, salvage the trees including a buffer strip of green trees as wide as the average height of the dominant trees, and treat the stumps with borax. If southern pine beetles or Ips bark beetles are present or are a potential hazard on high ARR hazard sites, their prevention or control must be reconciled with recommendations for ARR.

THINNING ON HIGH ARR HAZARD SOILS: Always cover freshly cut stumps with at least 1/8" of borax within 24 hours of harvest. Borax (Sodium Tetraborate Decahydrate) is sold under several names: Borax, Sporax, Twenty Mule Team Borax, etc. The best method is to sprinkle material "salt-shaker" style. These applicators are available in one or two pound sizes. At proper rates of application, one pound of product will cover 50 square feet of stump surfaces: 260 six-inch stumps, 158 eight-inch stumps, 80 ten-inch stumps, or 60 twelve-inch stumps.



Revised 1/10/06
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Forest Disease

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Fusiform Rust

IMPORTANCE: Fusiform rust (*Cronartium quorum* f. sp. *fusiforme*) is a problem in certain areas of Arkansas. While this rust was an obscure and unimportant problem sixty years ago, it is now increasing to economic levels. The information now available can be applied on a site specifically to minimize problems and allow profitable pine management.

Loblolly is the most commonly infected pine in Arkansas. Shortleaf is highly resistant.

Economic damage caused by fusiform rust is from mortality, lost product value and disruption of management plans. Branch cankers within 12-18" of the stem may grow into stem cankers. Main stem cankers can girdle and kill the tree. This is likely on smaller trees and almost assured on nursery trees infected with fusiform rust. Infections within the first 5 years normally cause tree death.

Stems with cankers are weak and susceptible to wind and ice breakage. Cankered stems have greatly reduced sawtimber value. Heavily infected stands may need to be thinned earlier and more often with greater logging expenses. Residual sawtimber volume may be low, commanding a lower price.

IDENTIFICATION: Spindle-shaped swellings or galls develop on branches or main stems. On older trees, infections are somewhat depressed on one side. The fungus produces orange spores on galls from late March to mid-April.

RUST HAZARD RATING: A stand with less than 25% infected trees has a low hazard rating. A moderate stand has 25 – 50% infected and a stand with over 50% infected has a high hazard rating. A potential stem gall is a limb gall within 12 – 18 inches of the main stem.

On sites of moderate to high or potentially high rust hazard, conduct site preparation as needed for planting and survival of pine, and to help suppress oak. Although enhanced pine growth results in increased incidence of rust, it is counterproductive to recommend against site preparation, except for practices that might favor invasion of oak, e.g., windrows that are not completely burned.

Fertilization practices which set up young pines for infection should be delayed until trees are eight to ten years of age and less likely to develop lethal stem galls.



Do not increase planting density to compensate for rust-infected trees unless coupled with sanitation thinnings to remove infected trees. Just as important, planting densities exceeding maximum carrying capacity often leads to additional problems (including insect problems) later in rotation.

MANAGEMENT OF OAK HOSTS: When practical and not in serious conflict with other important uses of the forest, susceptible oaks (water, laurel, and willow oaks) in and immediately adjacent to pine plantations should be suppressed. Although spores that infect pine can be transported long distances by wind, infected oaks account for most of the infection of surrounding pine.

Inoculum should be reduced in young plantations (two to ten years of age) by sanitation thinnings to remove trees with stem galls and trees with many branch galls. Pruning of branch galls also reduces inoculum, but there is evidence that wounds may be colonized by the pathogen. For this reason, avoid pruning between February and June.

Manage rust-free stands in high hazard areas on long rotations.

Burning infected stands to remove limb galls is not recommended because of damage to residual trees with stem infections.

Adequately stocked stands located in high hazard areas that have escaped significant rust infection for at least eight years should be managed for poles or sawtimber. This will increase growth of healthy trees, increase uneven age distribution among stands and avoid potential losses to young seedlings.

Stands with less than 25% of the trees with lethal stem cankers (greater than or equal to 50% of stem circumference girdled) may be grown to pulpwood rotation without sanitation cutting. Longer rotations may require a sanitation thinning.

Stands with more than 25% of the trees with lethal stem cankers should be sanitation thinned. If this would result in inadequate stocking, the stand should be clear-cut and regenerated with resistant seedlings or, where appropriate, regenerated by a shelterwood system.

When prescribed burning, avoid igniting resinous stem cankers. This is especially important in stands with 25% stem cankers, because igniting these cankers can result in charring and possible death of trees.



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Hardwood Decay

IMPORTANCE: Diseases cause 45% of all mortality and degradation in the forests. Heart rot is the single most important disease of merchantable hardwood timber in the South, causing 75% of these losses. Heart rot can affect all parts of the tree, but frequently occurs in the butt log where its impact on the value of the tree is greatest. In the earlier stages, damage is in degraded wood. Advanced decays cause hollows, tree breakage, and mortality.

IDENTIFICATION: Damage from heart rot is easily observed through physical evidence of hollows, rotten wood, irregular or lumpy stems, cankers, catfaces, scars, and fungus fruiting bodies on stems. Most begin at basal injuries, like those caused by fire and logging damage.

Different fungi may behave differently in timber stands by rate of decay and spread, and host species attacked. Trees are predisposed to decay by wounding caused by insects, weather, fire, animals, and human activity such as logging.

PREVENTION: Minimize decay by growing species adapted to the site and by



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logging and other forest for coppice regeneration ground as possible.

CONTROL: Once the decay control. When thinning regeneration, remove all uneconomical, cut the tree and inoculum dispersal. This also run by decomposing fungi.

Never put scar sealant over existing scars, because this may further promote decay.



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preventing wounding. Carefully supervise fire control and prevention, road building, activities. When clear-cutting stumps should be as close to the

process begins, there is no hardwood stands for diseased trees. If this is leave it on the ground to reduce allows decay fungi to be over-

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Hypoxylon Canker



IMPORTANCE: Hypoxylon canker is an opportunistic, secondary disease in oaks that takes advantage of stressed trees. Studies have shown that it is present in many oaks, but in apparently healthy trees it is present in latent form. Hypoxylon canker more frequently affects red oaks than white oaks.

IDENTIFICATION: Oaks with Hypoxylon canker may have yellow, wilting leaves and dieback of the branches. These symptoms are the result of stress to the tree caused by drought, soil compaction, mechanical damage, or other site disturbance. The Hypoxylon fungus will invade the cambium of the trunks and limbs of these stressed trees. As a result, the outer bark of the tree will slough off in an area several inches wide to several inches or feet long. When first exposed, these areas will be tan and over time will

Trees usually die within weeks or these symptoms appear on the may live up to two years or more appear on the upper branches. infected trees will become rotten hazards if the tree is in a high

CONTROL: No known control of canker exists. Prevention is the avoid the canker. In a landscape, fertilize trees properly (especially and keep them free from soil

wounds. In forest minimize logging damage and soil compaction.

Remove severely infected trees which often become hazards in landscape settings. Prune infected branches to prolong the life of the tree. Hypoxylon never acts alone so take steps to prevent infestation.

For more information contact your local County Forester or the State Forest Health Forester at the AFC headquarters in Little Rock.



turn gray and eventually black. months when trunk. Trees after symptoms Dead wood in and become traffic area. Hypoxylon best way to water and during droughts) compaction and



Insects

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Ips Bark Beetles

IMPORTANCE: Pines of all ages and sizes are attacked by Ips bark beetles (*Ips grandicollis*, *calligraphus* and *avulsus*). They usually attack injured, dying or recently felled trees, and logging debris. They often kill only a few trees in a given spot, but under certain conditions become epidemic and destroy hundreds of trees. Damage is very high and compounded by the blue-stain fungus they carry that degrades lumber from infested trees.

IDENTIFICATION: Ips beetles are easily recognized by a scooped out rear end surrounded by spines. Black to reddish brown adults vary in size from 3/32 to 1/4 inch in length. Adults not fully mature, found under the bark, are usually yellowish to light brown. Fully-grown larvae and pupae are yellowish white and vary from 3/32 to 3/16 of an inch in length. Eggs are very small and white.

SIGNS OF ATTACK: Infested trees usually have numerous white to reddish brown pitch

tubes, about the size of a wad of gum, on the bark. In trees of low vigor, pitch tubes may be lacking and the earliest signs will be reddish bark crevices at the tree's base.

HABITS: Adult beetles are attracted to weakened trees and chew round holes through the outer bark into the cambium layer. "Y" or "H" shaped egg tunnels are in the soft inner bark parallel with the grain of the wood, and generally free of boring dust. The distinct gallery pattern is used for identification purposes

even when larvae and adults are absent. Eggs are laid singularly in small egg niches cut along the main tunnel. Larvae hatch and feed in generally distinct lines. Larvae feeding filled with boring dust. Larvae mature, to adults in 25 to 40 days, depending. Emerging adults may or may not

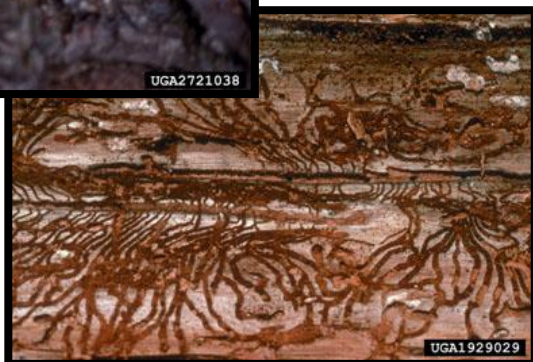
Predators, parasites, diseases and on Ips beetles, but usually not until the. These factors, changes in weather harvesting practices can reduce Ips

tunnels are usually pupate and transform on the temperature. attack nearby trees.

CONTROL:

starvation take a toll tree is beyond saving. conditions and proper

attacks and timber losses. Salvage cutting and good forest management are the most practical control measures.



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Pales Weevils

IMPORTANCE: Pales weevil (*Hylobius pales*) and pitch-eating weevil (*Pachylobius picivorus*) occasionally cause considerable losses to pine seedlings in Arkansas. Adults commonly feed on cambium of one-year-old seedlings but will also feed on and destroy older seedlings and saplings. When there are large population buildups, 50-80% of seedlings may be destroyed. These weevils are more important in Arkansas as larger tracts are clear-cut and planted.



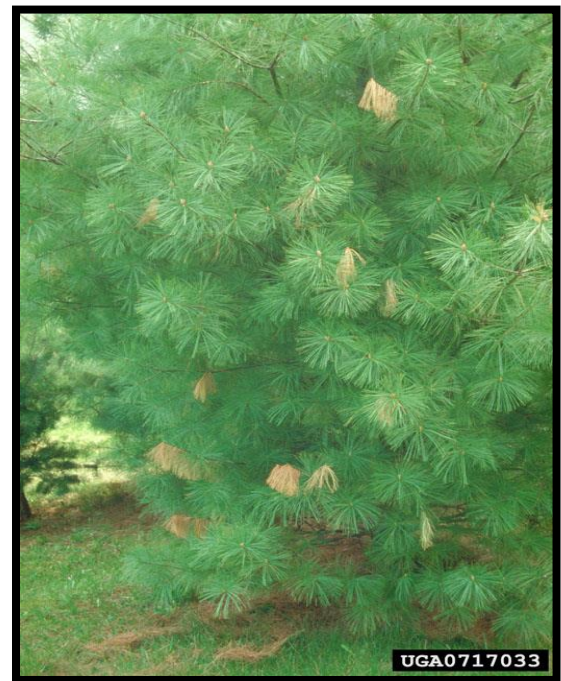
IDENTIFICATION: Weevils are robust, hard-shelled beetles characterized by a rigid and prominent snout with tiny chewing mouthparts at the tip. Pales weevil and pitch-eating weevil are similar in appearance. Adults are black or nearly so, and often speckled with whitish markings. They are 1/4 to 1/3 inch long. Larvae of both species are legless, approximately 1/4 inch long, and white with a dark brown head capsule. Pupae are white and the typical weevil beak is distinctive. Eggs are very small and white.

SIGNS OF ATTACK: Adults typically girdle bark around and below the root collar of one-year old and older seedlings. They may also eat patches of bark anywhere on the stem and branches. Seedlings suddenly wither and die. If insects are abundant, they may remove all of the bark and foliage, leaving only yellowish, pencil-like stubs protruding from the soil. Examination of pine stumps and large roots in the area may reveal larvae, pupae or oval fibrous covered (nest-like) pupal cells.

LIFE CYCLE: Most damage by the pales and pitch-eating weevils occurs in spring and fall. Adults are attracted to the odor of freshly cut pine stumps, scorched pines, or dying trees, and feed on tender bark of nearby seedlings. Eggs are deposited in the root bark of stumps and trees. Larvae hatch in one to two weeks, and feed primarily in roots for six to eight weeks. Larval galleries are packed with granular borings and when larvae are mature, they construct a shallow fibrous covered pupa cell in the sapwood. The pupa stage lasts two to four weeks, depending on the temperature. New adults may feed on seedlings before flying to other cutover or recently burned stands. The weevils feed at night. By day, they may be found in litter or soil near damaged seedlings.

CONTROL: Under forest conditions, the most practical and inexpensive method of control is to delay planting recently harvested areas for 9 to 12 months. Also:

- If no pine has been cut from an area to be planted, there will be no weevil problem.
- If a pine stand is cut before June 1 and the area will be planted during the following winter, there will be no weevil problem.
- If 3 cords of pine or less are cut from an area or pushed down during site preparation after June 1, losses should be less than 5% if the area is planted during the following winter.
- If 5 to 10 cords/acre of pine are cut or pushed down during site preparation, losses may be up to 25% if the area is planted the following winter.
- If over 10 cords of pulpwood or 5,000 board feet of sawtimber are cut or pushed down during site preparation after June 1, use treated seedlings or plant seedlings next year.



Revised 11/2/05

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Insects

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Red Oak Borer

Red oak trees in Arkansas are currently facing very serious conditions. Although one agent might be the culprit, several factors must be considered before we can identify the true cause of the problem. Let us look closely at one agent currently affecting red oaks and briefly consider other broad-based factors.

IDENTIFICATION The adult Red Oak Borer [*Enaphalodes Rufulus* (Haldeman)] is a light brown, robust, long-horned beetle approximately 7/8 to 1-3/8 inches long. These borers are called long-horned beetles due to the length of the antennae. The antennae grow to equal the body length to about twice body length. The 1-1/4 inch larvae do the actual damage. Borer larvae are shiny white with dark mandibles and amber spiracles and are attracted to weakened, stressed, or damaged trees.



LIFE CYCLE Red oak borers have two-year life cycles. Although some adults are present every year, most adult beetles emerge in odd numbered years. They usually emerge in June or July to mate and lay eggs with each female laying an average of 200 eggs that hatch in ten to 13 days. The tiny larvae bore directly into the phloem layer (just under the bark) of red oak trees.



SIGNS OF ATTACK Damage is difficult to detect the first fall and winter of the attack, because only tiny pinholes are present. Dark stain spots the following spring and summer make attacks more prominent. Larvae excavate 1-2 by 2-2 inch chambers in the phloem-cambium area of the tree. From this chamber they extend an oval gallery or tunnel upward into the wood of the trunk for about two inches, then straight up for an additional two to four inches. Each emerging adult chews a 2 inch oval exit hole in the tree.

IMPORTANCE Most red oaks have a few beetles in them, but they prefer the older, large, over-mature trees. Although, red oak borers do not usually kill trees, their main damage is the

considerable degradation of lumber caused by the large galleries, related bark pockets, and stain. In the past year or two, red oak borers have built up tremendous populations. While a few beetle larvae will not kill a tree, several hundred can girdle and kill trees.

Now, thousands of acres of oak trees are declining and dying in the Ozark region of Arkansas. Several factors are working against the trees. While saying that red oak borers are killing the trees would be easy and let it go at that, other factors must be considered to arrive at the true picture.

On poor sites, oaks have a maturity of about 80 B 90 years. As oaks mature, they become more susceptible to attack by various insects and/or diseases. Drought years stress all trees, especially over mature trees. To compound the problem some diseases also successfully attack these already stressed trees. Arkansas has had three very dry summers in a row. When all these factors are considered, the picture becomes a little clearer why so many oak trees are dying.



How or why does all this apply to urban forests? Many stress factors are present in the urban environment; old trees under stress from soil compaction, severely limited root space, poor water management, air pollution, poor pruning practices, and nutrient imbalance. Trees existing in these conditions are prime targets for a host of pathogens. Red oak borers have been found in high numbers in many oak trees in urban areas.

CONTROL Urban trees need special attention to survive all the difficult conditions to which they are subjected. Irrigation in times of drought stress is essential to maintain tree vigor. Late winter or early spring fertilization is another good management practice. Urban trees should be on a 3-5 year pruning cycle to maintain good form and hazard reduction. Adequate protection of desirable trees around construction sites is essential. Chemical control of the red oak borer is not very practical.

Properly cared for and maintained trees add much to the urban environment over a long period. Without this care, tree service life is shortened and trees can become a negative instead of a positive feature in the urban environment.

Both the Forestry Incentives Program and the Stewardship Incentives Program may be available in your county to assist in the cost of managing the Red Oak Borer. These programs pay for half of the costs for many forest management practices. Contact the local NRCS or AFC office for more information.

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Southern Pine Beetle Biology and Prevention

HOST: All species of pine, but prefer loblolly and shortleaf.

IMPORTANCE: The southern pine beetle (*Dendroctonus frontalis*) is the most destructive forest insect in the South. Weakening of trees by flooding, windstorms, and especially drought commonly precedes outbreaks. Trees of all sizes are attacked, but usually trees larger than six inches in diameter are infested first.

IDENTIFICATION: The brown to black beetle is about 1/8 inch long. Its hind end is rounded, in contrast to the scooped out posterior of Ips beetles. Larvae are white with a reddish-brown head and the pupae pure white. Fully-grown larvae and pupae are approximately 1/8 inch in length. Eggs are white, and easily visible to the eye.

SIGNS OF ATTACK: The first indication of attack is usually yellowing or browning of needles. The trunk will usually reveal white, yellow or sometimes red-brown pitch tubes, about as large as a wad of gum. Under drought conditions, pitch tubes may be very small or absent, and only reddish-brown boring dust will be present. Removal of the bark will show a distinctive winding "S" shaped gallery pattern. This pattern is quite different from the "Y" or "H" shaped gallery patterns of Ips beetle and is a good identification characteristic. In active spots, trees in the center have dark reddish-brown foliage. Foliage will change to light greenish or yellowish green on the edges of active spots.

LIFE CYCLE: Adult beetles are usually attracted to weakened trees. In epidemics, they attack trees that appear healthy and vigorous. Initial attacks are in the mid-trunk and then the length of the tree. Adult beetles bore through the bark and excavate long winding "S" shaped galleries. Eggs are laid in niches along the galleries. Larvae feed in the cambium until grown, and then excavate cells near the bark surface in which to pupate. After pupation, adult beetles chew through the bark and emerge. The complete cycle of the attack takes from 25 to 40 days, depending on the temperature.

CONTROL: Research has led to a better understanding of the beetle and its relationship to the tree and stand. With this information, we can prevent beetle attack or more effectively manage an outbreak.

The goal of an SPB prevention program is to identify pine stands growing under conditions preferred by the beetle. High hazard stands should be managed to favor vigorous tree growth and promote natural resistance to beetles.

To rate a pine stand for SPB hazard, obtain information on pine basal area, total basal area, stand age and site index. This information is taken at each plot, with plots generally five chains apart (each plot represents approximately 2.5 acres) and put into a formula to determine the score associated with a hazard class. The following formula determines SPB hazard for a stand.

$$\text{Score} = 1.8342 (\text{Pine BA}) + 0.4085 (\text{Total BA}) + 0.705 (\text{Age}) + 0.88 (\text{Site Index}) - 206.315$$

Where:	220 or above	Very High
	168 to 219	High
	62 to 167	Medium
	11 to 61	Low
	10 to 0	Very Low

Example: If total basal area is 130 sq. ft./acre, pine basal area is 120 sq. ft./acre, stand age is 27 years, and site index is 109.

$$\text{Score} = (1.8342 \times 120) + (0.4085 \times 130) + (0.705 \times 27) + (0.88 \times 109) - 206.315 = 181.85$$

The score of 181.85 is between 168 to 219 means the relative hazard rating is "High."

To reduce SPB losses in pine stands rated as medium or high hazard, consult a registered forester for management advice. Depending on the stand, the forester may recommend one or more of the following actions:

- Thin to basal areas of 70-100 sq. ft./acre to promote rapid tree growth and resistance to beetles.
- On sandy soils, use borax on tree stumps to prevent annosus root rot.
- Harvest and regenerate over-mature stands.
- Conduct a prescribed burn to reduce plant competition.
- Treat hardwood competition with herbicide to reduce competition.
- When practical, remove high hazard trees preferred by beetles, e.g., those damaged by lightning, ice, logging or other pests.

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Southern Pine Beetle Control Methods

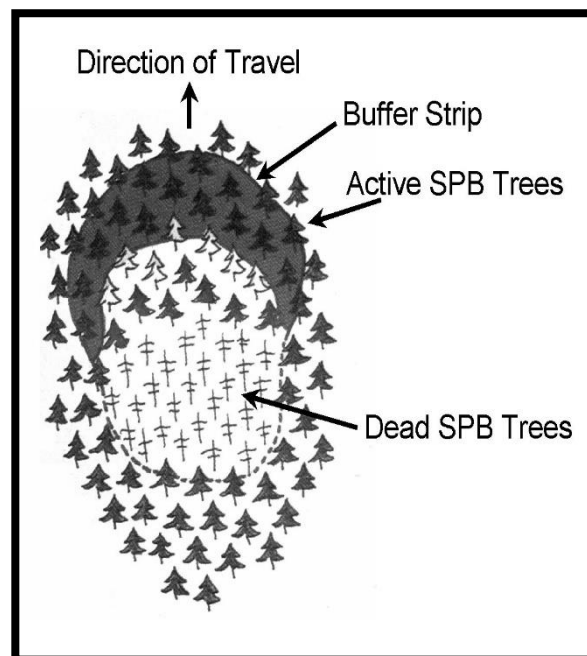
Southern pine beetle (SPB) control requires integration of three recommended techniques: salvage, cut and leave, and pile and burn. Control should be a year-round project; but winter control is especially important because brood densities tend to be higher and concentrated in fewer trees. Control of one infested tree during winter months may prevent 10 trees from infestation the following spring.

SALVAGE: When infestations occur in easily accessible merchantable trees, remove infested trees IMMEDIATELY. Promptly process infested material at nearby mills to minimize spread of SPB infestations. Chipping or burning should destroy infested slabs and bark. Encourage use of infested trees first.



Success in salvage control depends on removing all pines with fresh attacks and those with developing beetle broods. The best insurance is cutting a buffer strip of uninfested green pines around the active head of a spreading spot to interrupt the beetles' attractant source and stop their advance. The buffer strip also provides a margin for error, in case infested pines were initially overlooked.

- **WIDTH OF STRIP** - Make width equal to height of infested trees, e.g., when infested trees are 65 feet tall, cut the buffer a width of 65 feet.
- **MARKING THE BUFFER** - Start marking buffer strip from freshly attacked green pines and continue into the green, healthy pines.
- **CUTTING** - Start with outermost green pines and cut back towards old, dead, vacant pines (very loose bark removed easily). There is no need to cut dead trees. Cut only green, freshly attacked pines and pines with developing broods. In summer, these are green, fading, and red-topped trees.



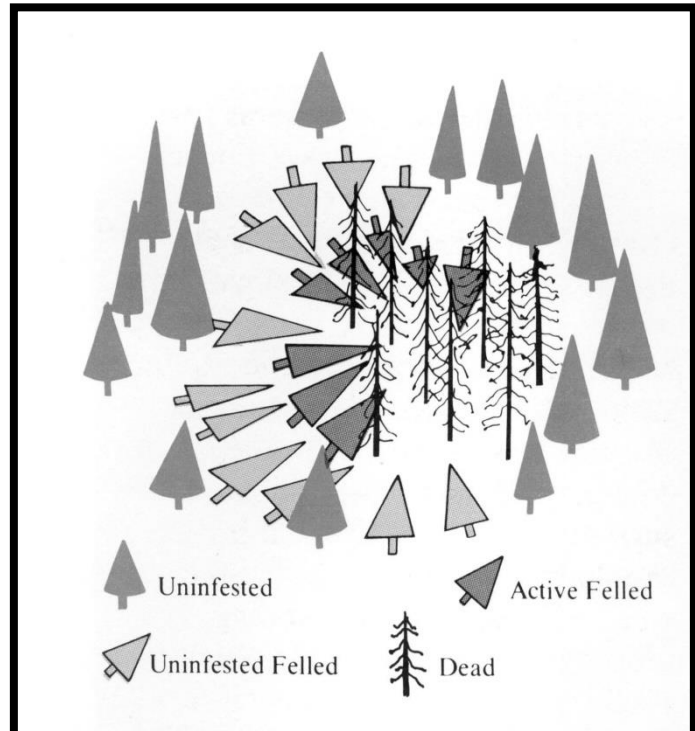
CUT AND LEAVE: As in salvage control, the cut and leave control method removes all pines with fresh attacks and those with developing beetle broods using a properly designed buffer strip. The same guidelines for the width of the buffer strip and beginning of the buffer strip apply. In the cut and leave method, infested trees and the buffer trees are felled into the center of the spot.

PILING AND BURNING: Cutting infested trees, piling stems and thoroughly burning the bark may suppress unmerchantable or inaccessible SPB infestations. The entire bark surface of infested trees is thoroughly burned to insure effective control. Follow the procedures below to pile and burn.

- Identify and mark SPB-infested trees.
- Fell and pile all trees in center of infested area.
- Burn until all infested bark is thoroughly charred.
- Do not burn if it is unsafe or will promote significant soil erosion.
- Check carefully to ensure no green infested trees are overlooked.
- Check for breakouts and treat them as needed.

EPIDEMICS: The Arkansas Forestry Commission recommends the following during SPB epidemics:

- **CONTROL PRIORITIES** – Control the largest active infestations first using any control measures available at your disposal—salvage, cut and leave, or pile and burn. All control measures should include a buffer of green uninfested pines. Closely examine pines and determine which are infested; start the buffer strip at that point. Generally, buffers equal to the height of the pines are sufficient BUT with drought conditions and high populations, buffers of double the height should be used.
- **THINNING** – DO NOT thin pine stands during major epidemics. At least three things happen if pines are thinned during an epidemic: 1) Damage to standing pines causes pines to “bleed” sap attracting beetles and causing additional infestations, 2) Logging crews that should be controlling active infestations will be tied up on thinning and 3) The seller will receive only salvage value, which can be 50% to 75% of normal stumpage.
- **ROAD BUILDING** - Limit or delay road building in pines stands during an epidemic. If the road must be built immediately, spray damaged pines and pines adjacent to the road with a pesticide.



- **UTILITY RIGHTS-OF-WAY TRIMMING** - Cease all trimming of rights-of-way pines in epidemic counties until the epidemic is over.

TAX CONSIDERATIONS: According to the Internal Revenue Service, SPB losses to commercial timber stands do not qualify as a casualty loss. By IRS definition, a “casualty loss” must result from an identifiable event “sudden, unexpected or unusual in nature.”

PremERCHANTIBLE stands destroyed by SPB may qualify for a casualty loss deduction, although it is limited to the “adjusted basis” minus any compensation received—such as through insurance. If the landowner took advantage of the tax credit and amortization when the stand was established, and claims a casualty loss for the premerchantible timber, then credit and amortization may be subject to recapture.

Probably the best way to deal with young plantations destroyed by drought or SPB is to re-establish them and claim the 10% reforestation tax credit and 7-year amortization on the re-establishment costs. If the landowner took advantage of the credit and amortization when establishing the original stand, it is possible to continue to amortize the original establishment costs and the re-establishment costs up to a maximum of \$10,000 annually. In this case, the landowner would have two amortization schedules and will claim the tax credit twice (on the investment—not the stand.)

For commercial timber trees lost through drought and SPB, some costs may be recovered by the adjustment occurring in the “timber depletion unit.” This spreads less volume over the adjusted basis resulting in a higher timber depletion unit. However, if the landowner sells timber to salvage it, the timber depletion amount is deducted on a per-unit basis. If sale proceeds exceed the adjusted basis (determined by the depletion unit), the landowner ends up with a taxable gain.

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Illustration Credits: Direct Control Methods for the Southern Pine Beetle, Handbook No. 575, Ronald F. Billings, Texas Forest Service, www.forestryimages.org

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Prescribed Burning

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Prescribed burning is fire applied in a skillful manner under exacting conditions to a specific area for a definite forest management objective.

The southern yellow pines are so-called fire climax species. This means that historically, vast pine stands were established naturally in the south because of their relative resistance to damage by fire, compared with hardwood species.

Prescribed burning is a way to mimic the natural order of perpetual pine stands on southern uplands. In addition to the economic value of these stands, the associated natural wildlife habitat is also mimicked by the skillful use of fire. The carrying capacity is enhanced for those game species that normally inhabit the southern woodlands. Furthermore, habitat critical for certain endangered or threatened plant and animal species that historically occupied the southern uplands can only be preserved by the skillful use of fire.



BENEFITS: Prescribed burning provides multiple benefits:

- Eliminates wildfire fuels such as leaves, branches and herbaceous vegetation that accumulate in pine stands of all ages. This reduces the hazard to wildfire and helps regeneration.
- Controls low quality hardwoods and shrubs that compete with pines for moisture and nutrients as well as reduce visibility and access through the stand. Hardwoods persist because they grow in the shade.
- Prepares sites for tree planting by clearing the forest of litter leaving bare mineral soil and full overhead light that is needed for natural and artificial pine regeneration. This is most effective when done just before harvest cutting for natural seeding.
- Increases sunlight to forest floor, producing more grass, fruits and seeds for wildlife.
- Reduces risks of annosus root rot. These infestations occur less frequently when periodic burning reduces litter which reduces the fungus.
- Improves visibility for harvesting and marking timber by reducing the understory before harvest cutting. This also helps lower the costs of harvesting.
- Increases growth of many flowering annuals and other plants.

- Increases presence of many fire dependent species like the red-cockaded woodpecker.
 - Increases edge effects many species use when seeking travel routes, feeding spots or shelter.
 - Improves visibility and access for forest recreation and aesthetic benefits.
 - Less expensive and produces less undesirable effects than alternative methods.
 - May be used in combination with chemical or mechanical treatments to often enhance the results.

ENVIRONMENTAL EFFECTS: The following are environmental effect of prescribed burning:

- Control hardwoods in the understory with low intensity burns that harm the thin bark of hardwoods leaving the more timber-productive pine stands uninjured if they are 4 inches in diameter or larger.
- Soil properties both chemical and physical are not greatly affected by prescribed fires.
- Prescribed fire will not destroy all the litter layer or the roots of understory plants like wildfire can. This helps control runoff and erosion protecting water quality.
- Prescribed fire provides one of the best and most economical means of reducing air pollution resulting from forest fires. Prescribed fires release lower amounts of air pollutants than wildfires since they burn less fuel. Fires in the South burn 3 tons of fuel per acre and produce 17 lbs. of particulate matter per ton of fuel burned where wildfires use 7.5 tons and make 58 lbs respectively. Shorted duration is another advantage of prescribed fires.
- Wildlife benefit from prescribed fires by having improved food and cover conditions. Wildlife does not get trapped in the slow-moving, small-sized fires. Prescribed fires should be avoided in the spring to prevent hurting the young wildlife.
- Prescribed fire improved accessibility for hunting, hiking and other recreational activities by controlling the understory.

COST: Because prescribed fire works in harmony with nature, achieving desired results with prescribed burning is often less expensive and produces less undesirable effects than alternative methods such as chemical treatments or mechanical clearing. However, prescribed fire is a tool that can be used in combination with chemical or mechanical treatments to often enhance the results.

PLANNING THE BURN: Prescribed burning is a highly technical job requiring knowledge of fire behavior, suppression techniques and the environmental effect of fire. You should have a written prescribed fire plan, prepared by a professional forester for each area to be burned. Your plan should be drawn up before the burning season. Plans can be short and simple or complex with the area varying from a few to over 1,000 acres. Large area should be divided up into units with similar topography and fuel amounts and types that can be



burned in one day. Use existing barriers such as roads and creeks as much as possible making sure they are still effective at the time of the burn.

The written plan should include the purpose (examples include hazard reduction, wildlife habitat improvement, brush control), needed weather conditions, the burning technique to be used, the season for burning, the time of day, and the equipment and manpower needed. The plan should also include the following information on a map or aerial photograph: location of the area and number of acres to be burned, exterior boundaries and adjacent landowners, existing firebreaks, firelines to be plowed, interior areas to be excluded from the burn. Manpower is usually a crew leader and 2 to 5 helpers. The leader should be experienced prescribed burner, preferably the same on who located and plowed the lines. All personnel should be trained beforehand.

Weather is very important and should be watched a month before the planned burn. Watch daily forecasts for the weather matching the prescription.

PRECAUTIONS: In turn, prescribed fire is limited in its use to certain areas and only on certain days. Smoke can also be a problem. Prescribed burning is a complex tool that takes planning, advance preparation and skillful use by experienced and knowledgeable people.

Prescribed burning is a complex management tool. Contact the Arkansas Forestry Commission county office for assistance. Information on prescribed burning and charges for burning conducted by the AFC is also available at www.forestry.arkansas.gov.



BURN NOTIFICATION LAW: Before any burning is done, you should notify an Arkansas Forestry Commission office of your intention to burn along with the time and location of the intended burning. The legal description of this property is as follows: Section ____, Township ____, Range ____ in _____ County, Arkansas. This helps alerts fire fighters that your burn is not a wildfire. You can call in your intention to burn to the AFC at 1-800-830-8015 or your local AFC office.

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