

Alabama's TREASURED Forests



WINTER ISSUE 1983

STATE FORESTER'S MESSAGE

By C. W. Moody



I'VE ALWAYS HEARD "Everything has its price." Probably, this saying was conceived and is perpetuated by those cynics among us. However, this magazine does have its price—economical not only to the one paying it, but all Alabamians as well.

Alabama's TREASURED Forests is mailed to those landowners who manage their forestland to achieve multiple benefits. These TREASURE Forest landowners are giving all Alabamians benefits in the form of timber products, recreational opportunities, clean water, fresh air, wildlife, and places of beauty. This is the price they pay—accepting the responsibility of good stewardship.

Other forestland owners can "subscribe," too. If you own forestland in Alabama and are sincerely interested in managing your land to achieve your own goals while providing other benefits, contact the Alabama Forestry Commission. For this small price, your name will be placed on our mailing list.

Alabama's TREASURED Forests is dedicated to helping all such landowners to optimize their forest resource values so as to reach the maximum potential, whether for direct returns or simply the feeling of self-satisfaction that comes from knowing that a contribution has been made to the prosperity of our nation and the needs of future generations.

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The Alabama Forestry Commission supports the Alabama Forestry Planning Committee's TREASURE Forest Program. This magazine is intended to further encourage participation in and acceptance of this program by landowners in the state. Any of the agencies listed above may be contacted for further information about the TREASURE Forest program.

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COVER: Seed orchard located on Boyd Batchelor's property in Pickens County.

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TIMBER SALE

the ultimate forest management decision

By MIKE HINSON, CHIEF, FOREST PRODUCTS DEVELOPMENT

THE AVERAGE LANDOWNER is generally an infrequent participant in the timber market. Since timber sales are typically made at intervals of years, most landowners do not develop a clear understanding of how the timber marketing system functions. This places them at a comparable disadvantage when they do attempt to participate in the market.

Many landowners choose to overcome this by using one or more of the various sources of professional assistance available to them. Reports of woodland owners who receive assistance from professional foresters prior to selling their timber demonstrate the value of knowing what you have for sale. A typical example is the case of a family forest woodlot owner in rural Alabama who had been offered \$10,000 for his timber. Through the help of a forester, the owner received \$60,000. This is not an isolated nor exaggerated example. Foresters' files are full of similar cases.

Thoughtful planning, management and timing, along with some knowledge of the market, can make a considerable difference in the economic returns from a woodlot investment. This article is intended to help private landowners get full value for their timber crop by avoiding common mistakes in selling timber, the ultimate forest management decision.

Planning The Sale

When to Sell

Ideally, cutting is part of an overall plan of management for woodland property and is performed at scheduled times during the growth and development of the timber stand. Periodic cuttings are necessary in managed forests to improve growing conditions in immature stands or to harvest mature stands prior to reforestation. In weighing the silvicultural and economic factors involved in the decision to cut timber, the landowner should keep in mind what he wants his woodlands to do for him. His present and future needs should be considered as he plans the management of his land. Forest management simply means that the forest is managed to achieve the goals of the landowner.

How Much to Sell

A minimum operational cut is usually considered to be about two to three cords of pulpwood per acre and in the case of sawtimber, 1000-2000 board feet per acre is the minimum cut that would attract buyers. A profitable sale depends on knowing what products the woodlands contain, in what volumes they occur, where potential buyers are located, and what price and market demand conditions exist. Increasingly, the selection and measurement of timber volume for sale purposes is a task for professional foresters.

Types of Sales

Sales of standing timber fall into one of two basic types: gross sales or unit sales. In gross sales all timber on a tract or a designated portion of the tract that meets the standards agreed upon is sold for a fixed price. Gross or lump sum sales are usually better for the average landowner, provided he has estimated the volume of his merchantable timber and computed its current fair market value before selling. Since title passes immediately to the buyer, the seller is freed of the risk of losses to fire, insects, diseases, wind, and theft. It should be reemphasized, however, that this method works to the seller's advantage only if he knows the volume he has, the products for which it is suited, and their value.

Unit sales are those in which payment is tied directly to the volume of timber involved. Payment is based on an agreed price per unit of measure (cords, tons, thousand board feet, piece, etc.) and is made in installments as cutting progresses. The unit sale may prove to be an advantage when the total sale volume is either exceptionally small or large, when there are some unusual or difficult access problems that might affect lump sum bids, and when the predominant number of potential buyers in the area are unable to finance large lump sum purchases. There is always a tendency in unit sales for the buyer to cut only the best timber or the easiest portion of the tract (high grading). Close supervision while cutting is in progress is necessary to protect the seller's interest, placing greater demands on his time or that of his agents.

Selling Methods

A landowner may choose any of the following methods in making a timber sale: sealed bids, auction or oral bids, negotiation or bargaining. The sealed bid method is rapidly becoming the most widely used in Alabama, and is advocated by both successful sellers and buyers. When handled properly, it is a fair and unbiased method of assuring top market price.

Sealed Bids: Sealed bid selling involves, as the term implies, taking bids from prospective buyers and opening them at a specified time and place. Each bidder makes only one bid, and no bids are allowed after the time for bid closing. Most experienced users of this method reserve the right to reject any or all bids. The key to a successful sealed bid is the prospectus or invitation to bid. It should describe the sale, the key contract provisions, and all terms and conditions of the sale. The invitation to bid should be sent to all prospective purchasers in the area in sufficient time for them to evaluate the sale offering. It may be desirable to make arrangements for a guided group tour of the sale area. Particular problem areas or contract provisions can be discussed at that time. Bids should be opened in public, at the specific time and place, and each one announced as it is opened. If the sale has been properly handled up to this point, and if the response has indicated an active market, the process will have established the market price.

Negotiations: Negotiated sales are those in which price is established by face-to-face bargaining between the seller and a prospective buyer. This method is perhaps most widely used by participants in the market for specialty woods, such as rare hardwoods, cooperage, dogwood, and others. It is often used for those wood products commonly sold by the piece, such as posts, poles, and piling. When the market demand for timber is weak or when the timber is of poor quality or difficult to reach, negotiation may be a good way to sell. To sell timber successfully by the negotiation process, the landowner must be thoroughly informed of market conditions, the condition and value of his timber, and

TIMBER SALE *continued*

the requirements of potential buyers, not to mention old-fashioned trading ability.

Auction: Selling timber by auction or oral bidding is a widely used method in Western states, especially for publicly owned timber. It is seldom used in the South where timber is 90 percent privately owned. When timber is sold by oral bidding, there is always the possibility of collusion between bidders. Also, since each bidder is fully aware of what his competitors have bid, he has only to exceed their bids by a nominal amount. In sealed bids where the competition is hidden, it is common to observe a significant spread between the high bid and the second highest.

Contracts and Deeds

Timber, regardless of species or product, should be sold under a written agreement, never an oral agreement. Several kinds of written instruments are commonly used to convey interest in timber. Contracts and deeds are most commonly used, however, there are also leases, cutting agreements, and indenture agreements, among others. A written agreement protects both buyer and seller by specifying and clarifying the responsibilities of each party.

Contracts: Contracts usually convey the right to cut timber, with title passing to the buyer when the timber is severed. Following are some key points that should be covered by the contract area:

1. A description of the land and boundary lines, and a guarantee of title.
2. A description of the timber conveyed, method of marking, etc.
3. A description of the amount, manner, time, and place of payment.
4. Provisions setting out the time for the buyer to begin and complete harvesting operations.
5. Clauses to cover damages to the residual stand; to soil, water or recreational values; to fences, buildings, roads and ditches; and to cover damage from fire resulting from the operation.
6. Protection of the seller from liability arising from injury to employees of the buyer or visitors to the operation.
7. Clauses covering logging methods, utilization standards, merchantability, and possible volume determinations, depending on whether the sale is on a gross or unit basis.

Many other provisions may or may not be appropriate for a particular contract. Some items might be default, assignment, warranty, insurance requirements, performance bonds, and others. Of prime importance to the seller is that the language covering payment be written to insure that the proceeds of the sale can be treated as a capital gain for tax purposes

(see tax considerations). The seller and his advisors should keep in mind that a long, complicated contract might discourage timber buyers, and cause them to submit lower bids, or it might be impossible to administer; and a contract that is too brief may not cover all necessary aspects of the agreement.

Deeds: Most of the major timber buyers in Alabama prefer to use a timber deed prepared by their own legal departments. Deeds tend to be somewhat standardized and are usually less complicated than contracts. In many cases, the only information needed to complete a deed is a legal description of the property, although clauses can be added to cover special or unusual situations of interest to either party. Title passes to the buyer when a properly executed deed has been delivered.

Legal Requirements: To be enforceable by either party against the other, the instrument must be signed by the other party. To be recordable, each instrument must comply with other legal and technical requirements of Alabama law. Because of these requirements, it is recommended that any contract or other written instrument used to convey any interest in timber be prepared by and executed under the supervision of a lawyer. Ideally the agreement should be prepared with the advice of a forester and a lawyer who are both experienced in timber transactions. The forester will know of any special situations the agreement should cover, and the lawyer will be able to express them in proper legal form.

Legal Expenses: Where the seller has no particular preference for the type of legal instrument to be used to convey his timber, the choice will probably be made by the buyer. Unless the parties agree otherwise, the seller pays for the deed preparation cost and any other revenue affixed to the deed before its delivery. The buyer pays the cost of recording as is the custom in normal real estate transactions.

Tax Considerations: Landowners who have made frequent sales of timber in the past must make subsequent sales with a "retained economic interest" to maintain eligibility for capital gains treatment of timber income. This means that the payment the owner gets for his timber must be directly connected with the severance of the timber. A timber deed may not meet this test, so it is important for the landowner in this situation to discuss the problem with competent tax advisors before executing a deed.

Checking and Follow-Up

Common Problems: A well-drawn contract or deed does not in itself assure that there will be no misunderstanding or problems in timber cutting. Problems can be minimized

and usually corrected before they become serious if the landowner or his agent will make frequent inspections of the work while in progress. The sale agreement is made between the landowner and a buyer, who usually contracts with another party to do the actual harvesting. It cannot be assumed that the contractor is fully aware of all the terms of an agreement to which he is not a party. He should be made aware, however, before he starts the harvesting operation.

The landowner should require notification from the buyer several days before any work begins. He or his agent should meet with the buyer's agent and the harvesting contractor on the sale area the first day of operation. Potential problems and special conditions can be discussed at that time. Common problems to watch for include cutting undesignated trees, failure to cut designated trees, cutting across the property line, and damage to residual trees and young growth.

Resolving Disputes: The buyer should designate, preferably in writing, an individual qualified to act as his representative who can be on the job site at all times or available on very short notice. All communications on the operation should be through this designated representative. If violations of the agreement are found, they should be settled immediately, not after the work has been completed.

In cases of litigation, public agencies and companies have only limited authority to act as landowners' agents and normally have an aversion to legal involvement. Thus a consulting forester is usually best qualified to assist the landowner in carrying out the complete timber sale and forest management job.

When the landowner finds himself faced with a serious dispute which cannot be satisfactorily resolved between himself and the buyer, he should contact his lawyer without delay. The lawyer can advise on the various possibilities and help select the most appropriate course of action.

Concluding The Sale

After timber harvesting is completed, a final inspection of the sale area should be made. It is important to see that all requirements of the sale agreement have been met and all violations corrected or compensated for. When the landowner is satisfied that all terms of the agreement have been met and full payment has been received, the agreement can be terminated. A letter to the buyer acknowledging satisfactory completion and releasing him from any further obligations is an appropriate way to conclude. Ending the sale in a cordial and businesslike manner helps to create a good relationship for future timber sales.

AFC Nurserymen Harvest Improved Pine Seed

By RAY COVIN, CHIEF, TREE IMPROVEMENT

ALABAMA'S LANDOWNERS will be able to plant 18,700 acres with improved pine tree seedlings from seed recently collected in the Alabama Forestry Commission's (AFC) improved pine seed orchards located at Geneva State Forest, Hauss Nursery, and Tuskegee Seed Orchard. During September and October, work crews were busy collecting 800 bushels of improved slash pine cones and 900 bushels of improved loblolly pine cones. A bushel of cones will yield a little more than one pound of seed. This seed will then be grown in AFC nurseries where it will be available for planting by Alabama's

landowners during the 1983-84 planting season.

Two different systems were used to collect the pine cones. Ripe slash cones were harvested by using a mechanical tree shaker to shake the cones from the tree. The cones were allowed to fall freely to the ground where they were gathered by AFC crews. The mechanical tree shaker caused little or no damage to the tree.

Loblolly pine cones are more firmly attached to the limb making it almost impossible to remove the pine cones by a tree shaker. Loblolly pine cones must be handpicked. AFC



"Cherry picker," being used in the loblolly pine seed orchard at Hauss Nursery, lifts the pickers to treetop level where they can handpick the loblolly cones.



personnel used three "cherry pickers" to carry the work crews to treetop level where the picking is done by hand.

After being harvested either by using the tree shaker or by handpicking, the pine cones were hand-cleaned of all pine straw, stems and debris, transferred to burlap bags and placed on racks for air-drying for three weeks. After proper drying, the cones are then sent to a commercial seed extraction company where the seed is extracted from the cones. The extraction company processes the cones and returns the seed to the AFC nurseries ready for planting. ♣

This tree shaker, being used in the slash pine seed orchard at Geneva State Forest, vibrates the tree, causing cones to fall to the ground where they are picked up by AFC personnel.

Boyd Batchelor is an ex-school teacher who has educated himself in the science of growing trees. Now he's using his Pickens County woodlands to teach another generation . . .

How to Grow a TREASURE Forest

By CHARLES E. CLINE, CONTRIBUTING EDITOR



WEBSTER SAYS A TEACHER is "one who causes another to know a subject." Boyd Batchelor has been a teacher his entire adult life. So has his wife, Sue Cowart Batchelor. He began his career as a coach, moved into administration and, when he retired in May 1976, was principal at Pickens County High School. His wife taught home economics.

But Boyd Batchelor is more than Webster's definition would indicate. Instead of teaching "another to know" a subject, Mr. Batchelor has taught *himself* to know a subject! His subject is *forestry*. He has already passed on to his three sons some of his own knowledge and enthusiasm for the woodlands and now nurtures these in other youngsters through a co-operative program with the Gordo High School.

Although the Pickens County landowner does not consider his own education complete, the fact that Mr. Batchelor was recipient in 1979 of the coveted "Helene Mosley TREASURE Forest Award" is sufficient testimony to document his success both as a self-educator and practitioner of that which he has learned.

Family Roots in "The Farm"

The Batchelor property is near the Benevola community, about 20 miles from Gordo. It is Sue's 'ole home place' and she now spends more time in the same house where she grew up than is spent at the home she and Boyd maintain in Reform.

The Batchelors leased the land in 1955 and purchased it from the Jones heirs in 1958. Three sons, Boyd C., Warren Lee and Leonard Arthur, were living at home in those years.

"We all loved the farm," Mrs. Batchelor said. "It was Boyd's and the boys' chief interest and most of the family's time away from school was spent there."

The parents encouraged their sons to take part in activities of the Future Farmers of America and helped each carry out his club projects. Boyd C. is now a State Farm agent living in Huntsville. Warren is employed by the Alabama Power Company in Birmingham.

It was Leonard's FFA project that first aroused the senior Mr. Batchelor's interest in forestry. "Before Leonard elected forestry as his project, trees were somewhere below grass, cattle and hay on my priority list," the father recalls.

It was in his efforts to assist Leonard that Boyd Batchelor began attending forestry demonstrations and seminars, reading the industry's trade journals, etc. As he educated himself in order to help Leonard, Mr. Batch-

elor's own appreciation grew and it was largely as a result of this experience that the landowner arrived at a decision to alter land management practices from an emphasis on cattle and hay to one aimed at growing timber.

The Batchelors had first planted some trees in 1958-59, but it was in 1966 that an annual planting program was commenced. Each year since that date 40 to 100 acres have been planted.



While attending high school, Leonard Batchelor won numerous honors for his work in forestry, climaxing his achievements in 1969 when, as a senior, he was winner of FFA's National Proficiency Award in Forestry. Leonard now lives in Tuscaloosa where he is employed by Sears. Frequently he drives the 30-odd miles to Benevola to help his father or simply to find relaxation among his trees.

Co-op Works Both Ways

While their sons lived at home the Batchelors had little need to go outside the family for the labor needed to tend the farm, but as the boys grew, went away to college, married, and ultimately acquired families of their own, opportunity lessened for them to contribute to that need.

"Oh, we still get together over the winter holidays to do some firewood cutting and tree planting," the senior Mr. Batchelor said, "but I have had to look elsewhere for my regular workers."

He has found them via a cooperative program with Gordo High School. Several male students attend classes each morning and work for Mr. Batchelor in the afternoon. They are paid minimum wage for the hours worked and receive some credit towards graduation for time spent in the field.

"It is a good program," the landowner said. "It allows these boys to earn some money

and gain valuable work experience. I get my work done at an affordable cost and have opportunity to use my skills as a teacher. I believe sincerely that I am able to give these young people a feeling for forestry that they couldn't get anywhere else."

Land Management Plans

The first management plan for the Batchelor lands was drafted in 1962 by personnel of the USDA's Soil Conservation Service. While some forestry practices were included, the landowner recalls "mainly cattle and hay" as its chief objectives.

In 1972, Mr. Batchelor sought assistance from the Alabama Forestry Commission (AFC) in preparing a plan with greater orientation to timber production. The AFC's man in the field at that time was S. Wayne Strawbridge—then a county forester, now a district forester with his headquarters in Tuscaloosa.

Mr. Strawbridge proposed a plan that recommended the tract be managed as four compartments: 1) 280 acres requiring site preparation before being planted to pine; 2) 110 acres to be planted to pine after the existing stand was reduced by about 50% via thinning; 3) 136 acres to be managed as hardwood stands, needing extensive timber stand improvement (TSI) work; and 4) 150 acres to be managed as mixed stands of hardwood and pine, also needing some TSI. Approximately 225 acres would continue in their existing use as hay fields and/or game feed plots.

Some practices recommended by the AFC management plan were already active, and the plan itself was finalized in the winter of 1972-73; but it was not until Mr. Batchelor retired in May, 1976, that he was able to fully implement the new program.

"You don't just switch over from cattle to trees on the weekend after you've made the decision to do so," Mr. Batchelor pointed out.

In 1973 the landowner sold 1,000 poles. The logging contractor cut them in October and Mr. Batchelor harvested cones from the felled trees. He negotiated the seeds' processing with International Seed Company, Birmingham, and the growing of seedlings with the forest nurseryman at Kimberly-Clark's Coosa River Newsprint Division. Outcome of this 'horsetrading' was that, a little more than a year after poles were harvested, Mr. Batchelor planted seedlings originating from those same trees among the very stumps of the parent trees. Today, almost 25,000 eight-year-old pines are "looking good," and are headed for another crop of poles.

How to Grow a TREASURE Forest *continued*

This exercise encouraged Mr. Batchelor to establish his own pine seed orchard. He now has 160 loblolly pines on a six-acre plot managed for seed production. All the trees are of exceptional quality and the plot is certified by the Alabama Crop Improvement Association, the first non-industrial pine seed production area to be so designated. To reduce the chance of pollination by trees of lesser quality, the production area has been isolated by planting a 400-foot-wide zone to slash pine.

Also, within this seed production area is one loblolly designated a "plus tree" by AFC foresters and geneticists from Auburn University's Department of Forestry, participants in a cooperative program aimed at locating and identifying trees of superior quality throughout Alabama. Such trees are used as a source of scions (grafts) to improve quality of seedlings grown in the Commission's forest nurseries. (See "Super Trees" article in Fall Issue of *Alabama's TREASURED Forests* magazine.) There are two "plus trees" growing on Batchelor land.

Intensive Management

Since beginning what he calls "intensive forest management based on (the plan's) cut-and-plant concept," Mr. Batchelor has planted more than 500 acres to pine. He has thinned 50 acres, released an additional 50 acres, and established more than five miles of firebreaks.

He has experimented by planting various species for use as Christmas trees and used prescribed burning as a tool for improving the timber stand and enhancing wildlife habitat. Firebreaks have been planted to fescue to provide browse for deer and mast-producing trees, such as water oak, beech and chinquapin, have been protected to support wild turkey and other wildlife.

The landowner began a sealed bid sales program for poles and saw timber grades in 1975 and has hired a D8 fitted with KG blade to do site preparation on about 30 acres. These are essentially the only aspects of his program that Mr. Batchelor has not accomplished himself, or with his own equipment and crews.

He owns a John Deere (JD-440) rigged with a dozer blade, a pulpwood truck (F-750 Ford with Big Stick loader) and an assortment of chainsaws and other forestry tools. He also owns wheel-type tractors and haying machinery, some of which contribute nicely to his forest management program.

Using this equipment and crews mustered from the student co-op program mentioned above, Mr. Batchelor does much of the work required in the AFC plan. It is used to remove diseased and cull-grade trees from hardwood stands, where the objective is to improve timberstand quality, and, of course, it is employed to thin pine stands as they reach the pulpwood phase of the growth cycle. Wind-blown, lightning-struck and bug-damaged trees are salvaged as soon as they are detected.

(Hurricane Frederick, September 1979, caused much damage on the Batchelor tract. Tornados spawned by the storm downed many trees, particularly in the swamp hardwoods along the Sipsey River, which borders the property. The landowner is still cleaning up some hardwoods damaged by Frederick.)

The equipment is also used to establish and maintain waterways, fire lines, roads and game feed patches. Of the latter, there are about ten varying in size from one-quarter to two acres. The woodlands support a large population of wild turkey, as well as a good-sized deer herd. Squirrels and quail are abundant.

On the subject of wildlife, Mr. Batchelor has had a "beaver problem" for many years—one he feels is at last being resolved. The

critters took over several areas along drains leading into the Sipsey River. Water backed up by their dams inundated approximately 20 acres and, of course, trees on areas adjacent to these ponds were girdled by the beaver.



Mr. Batchelor's landowning neighbor across the Sipsey is Gulf States Paper Company. When Gulf States inaugurated a beaver control program on its land, it became practical for Mr. Batchelor to do something about his own beaver problem. He dozed out the beaver dams and, as the pond areas have dried out, he has salvaged saleable timber and cleaned up the sites. These are presently being planted to game feed, but the landowner expects to return them to timber as there is opportunity.

Reasonably Secure Markets

Reasonably steady markets for a variety of forest products have enabled Mr. Batchelor to achieve much of his program with cash flow generated by the products being removed in the improvement process. He is able to sell both pine and hardwood pulp, and he has a market for hickory handle stock and hardwood veneer bolts—meshing nicely with his management objectives. He harvests these products himself, using his own machines and crews.

He continues to offer poles and saw timber on sealed bids to logging contractors, and it is through this program that he is able to achieve objectives which require heavy-duty timber harvesting equipment.

Mr. Batchelor, now 64, has a keen interest in walnut, persimmon and other potential high-profit forest products. And these are included in his overall program. For example, he expects to plant black walnut on the sites being reclaimed from the beaver damage. But Boyd Batchelor is a realist! He knows better than most people who may have spent more than half their lives inside a school house that his livelihood shall continue to come from the staples of his woodlands—loblolly pine, some shortleaf and slash, the oaks, poplar and gums.

He expects to manage these to yield him top value in the market place! ♣



Forestry Recordkeeping For Maximum Tax Benefits And Management Decisions

By DR. HARRY L. HANEY, JR., SCHOOL of FORESTRY and WILDLIFE RESOURCES, VPI

THERE ARE several questions commonly asked about forest management records and how they relate to attracting capital. First, why keep records? With the possible exception of accountants and historians, most people do not enjoy the detailed work required. On the other hand, good records permit qualification for all advantages in the Tax Code. Complete records facilitate tax planning with professional advisors, help balance forest farmers' tax savings with overall management objectives and provide them insurance when audited by the Internal Revenue Service. In this regard the Forest Service's soon-to-be-released "Guides to Federal Income Tax for Timber Owners" lists 16 IRS publications that relate to taxes on woodland operations.

How should records be kept? IRS regulations do not specify a particular recordkeeping system. It may be a formal double-entry method, a single-entry method, a business journal or the familiar shoebox system. The choice is left to the taxpayer and depends somewhat on complexity of the timber operations. The burden of proof, however, is on the taxpayer to substantiate entries on the Form 1040, Form T and other tax forms. Accurate and complete copies of contracts, receipts and records of expenditures should be kept that show date, amount, recipient, check number and purpose. A journal or business diary is the minimum record suggested for uncomplicated forest farming operations. Most should have ledger accounts to provide a permanent record of capital expenditures such as land, timber, buildings and equipment.

More specifically, what records should be kept for effective timber tax management? They must include documentation that permits qualification of sales for long-term capital gains treatment, recovering invested capital

through timber depletion, and deducting or capitalizing all "ordinary and necessary" expenses. Accurate records also allow one to take advantage of the reforestation law and other general business incentives applicable to forest management. Moreover, they can facilitate efficient treatment of timber sales income with income averaging, installment sales or both.

Long-Term Capital Gains

The key to effective tax management for most landowners is qualification of timber revenue for long-term capital gains treatment. The reward for long investment periods and management risks is, of course, capital gains deduction which is 60 percent of taxable gain. Standing timber, however, may be a capital or ordinary noncapital asset for tax purposes.

Timber revenues qualify for capital gains treatment if timber has been held for more than one year and if certain other tests are met regarding purpose for holding and method of disposing of the timber. Timber is treated as a capital asset if it is not used in one's trade or business or if it is not primarily for sale to customers in the ordinary course of trade or business. This distinction is critical to the form of disposal.

Owners may dispose of timber in three ways which qualify for capital gains. First, sales of stumpage for a lump sum will qualify if timber is a capital asset in the hands of the taxpayer. A lump-sum sale is the outright sale of stumpage for a fixed price agreed upon in advance, usually by a deed or sale contract which specifies timber to be sold.

The test of whether timber is held as a capital asset or for sale in the ordinary course of a trade or business depends on the facts and circumstances in each case. Good records

will help establish original purpose for purchasing the timber, number of sales and sellers' action in making each sale. These are only general principles. There is no hard and fast rule that answers all questions for all situations.

It is important to note that good records simplify information gathering for reporting lump-sum sales on Schedule D of Form 1040. Required information includes type of timber, date acquired, date sold, gross revenue and expenses of sale, and allowable basis, or proportional fair market value, of timber sold. (Basis will be discussed later in more detail.)

Landowners who plan frequent harvests should consider a contract to sell timber with a "retained economic interest" under provisions of Section 631 (b) of the Internal Revenue Code. This method of selling timber calls for a contract, or timber lease, that specifies the rate per unit of timber actually cut. It gives the buyer the right to cut designated timber, but legal title is not transferred until timber is cut. Thus, the seller bears the risk of economic loss until transfer occurs.

Date of disposal is the date timber is cut. It is considered cut when it is first measured in the ordinary course of business; for example, at the mill or after the follow-up cruise is completed. This may be important for short-term owners or holders of a contract right to cut timber. The latter must satisfy the holding period requirement for long-term capital gains treatment. The time of measuring cut timber cannot be shifted arbitrarily to gain a tax advantage.

An election can be made, however, to treat date of payment as the date of disposal if one or more payments are made under contract prior to cutting. No payments may be made before the seller has owned the timber for more than one year.

Forestry Recordkeeping *continued*

Gains and losses during the tax year are reported on Form 4797, Section 1231, and net gains are transferred to Schedule D, Form 1040. Good records greatly simplify this job.

An election to treat cutting timber as a sale under Section 631 (a) allows owners in a business or trade to receive long-term capital gains treatment for the fair market value (FMV) of stumpage as if it had been sold outright. Gain is reported in two parts. Long-term capital gain is the difference between the basis for depletion and FMV as of the first day of the tax year. Profit from conversion is ordinary gain computed by deducting FMV and cost of conversion from the sale price.

The determination of FMV is based on quantity per acre, accessibility and competition for the timber. Information used to support estimates of FMV is attached to the tax return. Schedule F, Form T, should be included to give details of the cutting. It is important to note that this election is binding on all sales in current and subsequent tax years and that the need for good records to support information on returns increases with each step.

Recovery of Capital

Recovering capital through depletion, which involves deduction of cost or other basis in timber as it is sold, is especially important for landowners who have recently purchased or inherited forest land. When land, timber and other capital assets associated with a farm forest are acquired, their value must be capitalized. Their proportional FMV, which is known as the basis, should be recorded in permanent ledger accounts for recovery as the assets are sold or exhausted. This information will also be reported on Schedule B, Form T.

When timberland is purchased, the basis is simply the actual cost plus any acquisition charges. Inherited assets get a step-up in basis to FMV, but gifts generally take the donor's basis. Ideally, basis should be recorded when assets are acquired and valuation documentation is fresh at hand. If properly recorded even a "windshield cruise" becomes credible over time.

But there are many landowners who fail to establish land and timber accounts for recording basis. When they get to critical harvest decisions, information for a well-informed choice is often missing. Accounts can be, of course, established retroactively by a qualified forester.

In addition, a merchantable timber account is a dynamic document. Prior to any current timber sales, adjustments for basis should reflect recent acquisitions, disposals, cap-

italizations and losses claimed. Similar adjustments are made in timber quantity to reflect purchases, growth and transfers from other subaccounts. Many timber owners favor the simplicity of maintaining one account for average depletion. The timber basis, however, may be handled by species, tract or other designation for larger, more sophisticated operations.

Reforestation Bill—PL 96-451

There has been much written and said about the recent 10 percent credit and amortization provisions on reforestation costs to \$10,000 annually. Public Law 96-451 reduces the present value of reforestation costs by 30 to 45 percent depending on the landowner's alternative use of capital and marginal tax rate. Good records are important to obtain full benefit of amortization over a period of years, to capitalize annual amounts over \$10,000 and to calculate recapture amounts if the land is sold within 10 years.

Other opportunities for tax savings include income averaging and installment sales, regular investment credit and provisions of the accelerated cost recovery system (ACRS) on equipment or the optional choice of expensing limited amounts rather than taking the credit and ACRS. These and other measures relating to timber taxes are described in further detail in articles by William K. Condrell, William C. Siegel and Dr. Harry L. Haney, Jr. in the November-December 1981 issue of *Forest Farmer*.

Example of Returns on Investment After Taxes

The following is a forest management situation typical of much southern timberland where the landowner is planning a harvest. Stand, management and landowner characteristics are based on average conditions in the Carolinas and Virginia, but the approach is applicable to forestry opportunities throughout most of the South. In the example, it is assumed that the person already owns the timberland.

Stand. The figures are based on a fully stocked loblolly stand with site index of 60 at 25 years. A 30-year, no-thin rotation yields 7,620 board feet Scribner or 30.6 cords per acre.

Management. Establishment costs \$120 per acre. Annual management costs and property tax equal \$5 per acre, and stumpage is \$80 per thousand board feet with a 3 percent real price appreciation (RPA). Pulpwood is \$10 per cord with 0 percent RPA.

Landowner. The taxpayer in the 50 percent marginal tax bracket is faced with 8 percent

inflation. Net present values (NPV) were computed for his opportunity cost of capital, a 12 percent average, after tax rate.

The following results are appropriate for a landowner considering various mutually exclusive uses for timberland he plans to harvest but not sell. The results expressed in current terms, including inflation and after payment of federal income tax show progressively greater returns as each succeeding provision of the Internal Revenue Code is incorporated into the tax accounting.

Table 1

Tax Accounting Measures to Boost Timber Income	Investment Return Rate (Percentage)
1. Basic situation without expense deductions and ordinary income treatment	14.3%
2. Addition of long-term capital gains treatment only	16.2%
3. Long-term capital gains, depletion and expense deductions	16.6%
4. Add credit and amortization	18.4%
5. Add Cost-share	21.7%

Landowners using these tax incentives and successive layers of tax accounting can greatly enhance returns on their forestry investments. It should be noted, for instance, that managed forests without these accounting measures return about 12 percent on investment, whereas the same forests could return up to 21.7 percent under the proper accounting system. Under such a system, owners with prime timberlands having site index of 70 at 25 years could have even higher returns of 23.6 percent. Also, forest farmers would have returns up to 24.6 percent where stumpage prices are double those used in the example such as in the deep South.

This brief example incorporates the rewards of effective recordkeeping. It assumes good management, and departures will reduce returns accordingly. Other multiple-use benefits, land appreciation and returns from forest farming after the first rotation would be in addition.

A general consensus exists that there is a problem of under-investment in reforestation and desirable growing stock on private nonindustrial forest land. Profitability of forestry is a necessary ingredient for attracting capital to do the job. Records that permit effective timber tax management are part of the package that must be communicated to landowners to ensure maximum after-tax profitability. Many authorities' reports and many landowners' experiences show great potential for improvement in this area. ♣



LANDOWNERS' LEGISLATIVE ALERT

NATIONAL By J. KENNETH MYERS, LEGISLATIVE AFFAIRS STAFF, FOREST SERVICE, USDA

WITH THE ADJOURNMENT of Congress for the election campaign on October 1, no further action occurred on the pending legislation reported in the fall issue of *Alabama's Treasured Forest*. Impending adjournments always bring forth a flurry of activity by the Congress and this time was no exception. Working late into the night, the House and Senate passed numerous bills. None, however, were passed that directly affect private landowners. The "lame duck"

session of the 97th Congress that began November 29, saw a heavy workload placed on the congressmen and senators. The appropriations acts were the priority legislation and action on them was to be completed by December 17. Included in these bills were the appropriation for the Department of Agriculture, one item of which is funding for the Forestry Incentives Program for the current fiscal year.

Looking ahead to the new Congress—the 98th—that begins in late January, 1983, it appears that the budget, employment, and Social Security will be major items of concern. Reauthorization, and possibly revision, of several environmental laws will also be on the agenda. Soil erosion and conservation will likely receive congressional attention. There does not appear to be any significant forestry legislation in the offing.

STATE By FRANK SEGO, LEGISLATIVE LIAISON, ALABAMA FORESTRY COMMISSION

THE 1982 GENERAL ELECTION is history. Composition of the new Alabama Legislature has been determined by the voters. New faces will appear in the House and the Senate in 1983. By virtue of his election as lieutenant governor, Bill Baxley will preside over the Senate from 1983-86. The House will make its selection of a speaker to succeed former Speaker Joe C. McCorquodale in January.

Members of the next legislature will conduct business on a new timetable adopted by their predecessors. The 1983 Legislature will convene on the second Tuesday in January (the 11th) for its organizational session. It will remain in session for not longer than 10 consecutive calendar days, then recess to convene in its first annual session the third Tuesday in April (the 19th). This timetable applies only to the first year of the term of

office of the 1983-86 legislators.

The legislature will convene on the first Tuesday of February in the second and third years, and on the second Tuesday in January of the fourth year. All annual sessions shall continue no longer than 30 legislative days and 105 calendar days.

The Forestry Commission will resume efforts to gain passage of additional forest acreage assessment bills on a county-by-county basis. A bill for Baldwin County passed in the third special session of the 1982 Legislature, but failed to get to the Secretary of State's office in time, even after it was signed by the governor. Other counties being considered for forest acreage assessment at the rate of 10¢ per acre are Talledega, Marion, Hale, Russell, Lee, Etowah, Marshall and Calhoun.

One obstacle facing the new legislators

is another attempt at reapportioning their legislative districts. If some plan isn't approved by a court-mandated deadline of March 1, the court has indicated that its own plan will be drafted and that could bring about new elections in 1983.

In 1982, the legislature held two special sessions for the sole purpose of drafting a reapportionment plan. The initial plan was rejected by the Justice Department and was challenged in federal court by blacks who contended it would dilute their voting strength.

The second reapportionment session was called in the summer of 1982 in an attempt to reach a compromise which would gain the approval of the Justice Department and the courts. It was approved on an interim basis so the elections could be held but the Legislature was given until March 1, 1983, to formulate a plan acceptable to all parties. ♠

Wood—A Source of Energy

By SANDRA JORDAN (Prepared for an Energy course at Auburn University in Montgomery)

IT HAS TAKEN NATURE millions of years to form the oil that we use to make gasoline. Scientists tell us that our supply of oil is limited—so limited that if we continue to use oil at our present rate, we could use up all there is on earth within the next thirty to forty years.

Oil, like coal and natural gas, is a fossil fuel. One way we can cope with our shortage of fossil fuels is to use more renewable fuels, such as solar, wind, and wood power. For example, many families are installing wood-burning stoves or fireplaces to heat their homes. This reduces the amount of heating oil, electricity, or gas that they have to buy. Families can buy or cut their own wood for less than it costs to buy fossil fuels.

Trees are a renewable resource. When poor quality and commercially undesirable trees are cut for firewood, new growth occurs.

Which Species Are Best?

Properties of the fuel play a part in burning and wood is no exception. The important properties of wood that affect combustion are species and moisture content.

Wood species affects combustion because density is species dependent. The available heat or heating value from a pound of any wood is about the same. However, wood is sold by volume, therefore, the density of the wood, not the heating value, is most important in establishing the available energy in a cord. The most suitable wood species are white oak, yellow pine, red oak, and white pine. They are listed in order of decreasing available heat per air-dried cord. Below is a chart of the Relation Between Available Heat and Density:

Table 1—Relation Between Available Heat and Density

Species	Density (lb 5ft ³)	Heating Value (Btu/lb)	Available Heat Per Air Dried Cord (Million Btu/Cord)
White Oak	48	8,810	23.9
Yellow Pine	41	9,610	22.0
Red Oak	42	8,690	21.7
White Pine	26	8,910	14.2 ¹

From this chart we observe that a dense wood like white oak has more energy per cord than a light wood like white pine even

¹*Safe and Warm Wood Heat* (Atlanta, Georgia, 1979) p. 26.

though their heating values are about the same.

Burning rate and heating value are affected by moisture content. Burning green wood versus seasoned or dry wood is difficult. Moisture content is how the “wetness” or “dryness” of wood is measured. The moisture content of green wood as cut in the forest can be as high as fifty percent. This means that up to one-half of the wood’s weight is water.² Moisture content is dependent on species, where the tree grows, and which part is burned. Green wood that is air-dried at least six months decreases in moisture content to around twenty percent. Dried or seasoned wood starts burning easier and burns better once started.

How Does Wood Burn?

Wood burns in four stages. The surface of the wood does not ignite directly on heating, but first undergoes thermal breakdown—resulting in vapors, gases, and mists—some of which are combustible. The first state of combustion exists up to 395°F. In this state there is a slow, steady weight loss as water vapor and other non-ignitable gases are driven off. In stage two (temperature range 395° to 535°F) more gases are driven off, and reactions first occur to liberate heat. However, there is no flaming until higher temperatures are reached. The temperatures in stage three range from 535°F to 935°F. In this stage gases continue to evolve and react giving heat. At first they are too rich in carbon dioxide and water vapor to sustain flame, but secondary reactions occur forming combustible gases which ignite and flame. Finally, all the gases and tars are driven from the wood, and pure carbon remains. Combustion of the

charcoal occurs in the fourth stage and the temperature of the wood surface rises above 935°F. Since all four stages of combustion

²*Safe and Warm Wood Heat*, p. 26.

occur simultaneously, many secondary reactions result which further complicates combustion.³

Where Do You Look for Wood?

Since wood is a renewable resource, it is also very plentiful if you know where to look. “The U.S. Forest Service permits the cutting of firewood for personal use in designated areas of the National Forests. Prior to cutting, however, a permit must be obtained from the District Ranger’s office covering the area. The permit will state what, where, when, and how much you are permitted to cut.”⁴

Landowners can also make a profit by selling from their own supplies. They can remove trees that are not profitable for commercial use. By removing these trees they upgrade the forest stand for future timber sale and at the same time produce income that would otherwise be lost. (See *Alabama’s Treasured Forests*, “Firewood As a Business Venture—A Way To Improve Your Woodlot,” Fall, 1982.)

Another way of obtaining firewood is after a logging operation is finished. These operations leave excess limbs and tops which are unsuitable for commercial use. This can cause a fire hazard. People are sometimes allowed to cut or purchase the downed slash. The individual landowner or company representative should be contacted for permission. Right-of-way clearings or new construction sites are also good places to get firewood.

Occasionally, timber and paper companies will permit individuals to cut designated trees in designated areas. Wood is usually measured by the cord which is a stack of wood four feet wide by four feet high by eight feet long or one hundred twenty-eight cubic feet. The cost of firewood varies considerably. If a person owns his own woodlot it may cost no more than cutting, splitting and hauling expenses. However, if you have to pay, it may range in price from eight to even two hundred dollars per cord.⁵ A good way to determine the actual cash value of wood is to compare it with other fuels with the same energy content. The table of equivalent energy values provides this comparison.

³*Safe and Warm Wood Heat*, p. 26.

⁴*Safe and Warm Wood Heat*, p. 20.

⁵*Heating with Wood* (Alabama Cooperative Extension Service) p. 3.

TABLE 2—Equivalent Energy Values⁶

Type of Woodburner	Typical efficiency (percent)	Heat output (million Btu's /cord)	Energy Equivalents			
			Electricity kwh	LP Gas gallon	Natural Gas 1,000 cubic feet	Kerosene (#1 fuel oil) gallon
Masonry or manufactured fireplace without air circulation	10	2.4	703	37	3.4	25
Manufactured fireplace with natural air circulation and outside combustion air	25	6.0	1758	94	8.6	63
Fireplace inserts:						
Simple construction	35	8.4	2461	131	12.0	89
Wood stove type	45	10.8	3164	169	15.4	114
Woodstoves:						
Simple box type (loose const., e.g. Franklin)	30	7.2	2110	112	10.3	76
Circulator type (double wall construction)	40	9.6	2813	150	13.7	102
Airtight type—radiant (controlled air intake)	55	13.2	3868	206	18.9	140

Table assumes one cord of 20% moisture content hardwood weighing approximately 3,800 pounds and producing 24 million Btu's when burned. Energy equivalence figures in other fuels have been adjusted for following average conversion efficiencies: electricity 100%, LP gas 70%, natural gas 70%, kerosene 65%.

With this chart you can compare the cost of other fuels with wood.

What's the Fuss about Woodburning Stoves?

From this one can ascertain that wood is relatively cheap. In terms of heating capacity, it is estimated that a cord of hardwood burned in an airtight stove will deliver as much heat as one hundred sixty to one hundred seventy gallons of number two fuel oil or two hundred sixty therms of natural gas, or 6300 kilowatt hours of electricity.⁷

There are three basic types of woodburning stoves: open, box, and airtight. Open stoves, which are also known as Franklins, attempt to combine the efficiency of an enclosed firebox with the romance of dancing flames. Open stoves are much more efficient than regular fireplaces but not as efficient as airtight stoves. They require frequent stoking to obtain a steady heating rate and cannot keep a fire overnight. A tightly constructed house can cause an open stove to smoke by restricting its air supply. Most open stoves are for people who want to keep warm while watching the fire.

Box stoves may be square, round, oval or pot bellied. Unlike open stoves they don't have doors for watching the fire. Box stoves are also very drafty, so control of the fire is limited to size and frequency of refueling. Box stoves are for occasional use with constant attention.

The size and shape of the airtight stoves

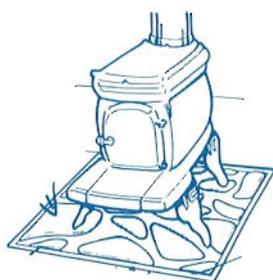
can vary, but "airtight" means that no air can get into the combustion area except where it's designed to get in, which is at the air inlet dampers. This makes them more efficient and more controllable than open stoves or box stoves. Airtights are for heating large areas over long periods of time with a minimum of supervision.

More efficient stoves use less wood to do the same heating job. Airtight doesn't automatically mean efficiency. Stove efficiency is a combination of how much heat is generated from the wood and how well that heat is transmitted to the room.

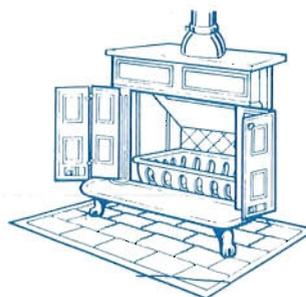
The stove should be sized to supply only the heat needed. Average values for heat output of typical stoves are:

- Small box 20,000 Btu/hr
- Large box or open 30,000 Btu/hr
- Small airtight 40,000 Btu/hr
- Large airtight 60,000 Btu/hr⁸

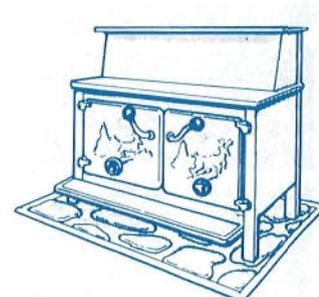
⁸Safe and Warm Wood Heat, p. 26.



Box stoves may be square, round, oval, or potbellied.



Open stoves, also known as Franklins, attempt to combine the efficiency of an enclosed firebox with the romance of dancing flames.



Size and shape can vary, but airtight means no air can get into the combustion area except where it's designed to get in—at the air inlet dampers.

Each of these points should be taken into consideration when considering the proper heating system for a home.

Summary

When wood energy is considered as an alternative source of energy, many factors should be taken into consideration: the cost of converting to wood energy, the efficiency of heating with wood, the units that are available and the right size unit for the work that it must do. Another consideration is that wood is a renewable resource in plentiful supply.

Those landowners who have desirable species available could reduce their own energy costs and even make a profit by selling firewood to others. In allowing firewood to be cut on your property, supervision is suggested. For more information on wood energy and developing woodlots, contact Mike Hinson, Chief, Wood Products Utilization, Alabama Forestry Commission, 513 Madison Avenue, Montgomery, AL 36130.

⁶Heating with Wood, p. 3.

⁷Safe and Warm Wood Heat, p. 1.

BURNED FOREST FIRE

Fire's Effect On Forest Soil

By PAUL S. FRANK, JR.,
FIRE STAFF SPECIALIST

Mention wildfire and people picture wildlife fleeing and trees aflame; but there may be a more subtle destruction of the forest floor.

TO DISCUSS THE EFFECT of fire on soil, a measure of the fire is useful. Fire intensity can be described following the blaze using the appearance of the litter, soil, and shrubs as criteria for classifying burned areas as lightly burned, moderately burned, or severely burned.

Lightly burned spots will have litter and duff singed, but the entire depth will not be altered. There will be less than 40% of the brush canopy burned. A lightly burned area will contain less than 15% moderately burned spots and no severely burned spots.

Moderately burned spots will have charred litter and duff, however, the mineral soil will not appear to be affected. Between 40-80% of the brush canopy will be burned on a moderately burned area. Charred twigs left by the fire will be one-quarter to one-half inch in diameter. Less than 10% of a moderately burned area will be severely burned, but 15% or more will be moderately burned.

On severely burned spots the litter and duff will be missing with ashes remaining. The soil will be visibly altered in color and soil structure. Plant stems remaining in the area will be greater than 1/2 inch in diameter. More than 10% of the severely burned area will contain severely burned spots and more than 80% will fit the moderately burned criteria.

Soil Temperature

Most of the heat released by a fire in the woods is dissipated into the atmosphere, however, some of it moves into the soil. The soil may be protected by a moist, thick organic layer. When the organic layer is dry or thin, high temperatures may be generated in the soil. Heating of the soil also depends on the amount of fuel, the intensity of the fire, and on soil properties.

Fuels have a direct effect on the amount of heat entering the soil. Lower temperatures occur under light fuels such as grass. Increased soil heating can be expected under heavy fuels, especially, under windows or piles of logging slash. Fire intensity related to the amount of fuel is also a factor in soil heating. More intense fires generate more heat. The combination of greater intensity with high fuel loading will increase the duration of the fire which in turn will increase the soil temperature.

Soils are heated by conduction and convection. Water absorbs heat. This tends to reduce the rate of soil heating as long as moisture is present. Moist soil will not exceed 212°F. Soil texture is important in that constituents of soil conduct heat at different rates. A sandy soil containing quartz sand will heat faster than a clay soil, in part, due to faster conduction of heat through quartz.

After a fire, soil temperature may be increased compared to that prior to the fire. The blackened surface will absorb more solar energy. Reduced shade will permit more solar energy to reach the surface. Litter and duff will be less effective in insulating the soil, if they have been consumed by fire or dry faster as a result of less shade. These effects will be more pronounced after the more severe fires.

Application

Heat affects soil in many ways. Soil may be baked hard. Soil pores may be clogged by surface debris washed into them by rain storms. Fewer soil pores may also result from the reduced action of soil organisms after a fire. When the forest floor, litter and duff, is destroyed, runoff may be accelerated resulting in decreased soil moisture and erosion. Conditions in which water is repelled by the soil surface can occur in some soils exposed to hot fires. Regrowth of vegetation can be slowed after very hot fires.

Considering that the factors tending to increase soil temperature are related to fires of higher intensity, burning plentiful fuels, and moving at slow rates; it would appear that the reduction of this fire type would reduce damage done by high soil temperatures.

Reduction of the fuel build-up in the forest would not only reduce the amount of fuel, but also reduce fire intensity. A good management tool in pine forests where fuel build-up is great is a prescribed fire. Prescribed fire, burning under exacting conditions to prevent high intensity, can reduce fuel in the forest with little or no damage to the soil. Repeated prescribed fires of light to moderate intensity will reduce the fuel build-up, encourage growth of grasses rather than brush, and enhance the quality of the pine forest for multiple use.

Prescribed Burning— What Is It?

By HUGH E. MOBLEY, CHIEF,
FIRE PREVENTION & CONTROL

THE USE OF FIRE in the Southern forests has a long history dating back to the period of the Indians—and even before mankind by lightning subjecting the forests to periodic fires that ran unchecked until stopped by some barrier or rains which extinguished the fire. The result was a mosaic of various forest types and size classes intermixed with savannahs and grasslands instead of a solid, jungle-like forest.

The practice of using fire was adopted by the early settlers and has become an important practice in managing the various forest resources in the Southern “piney woods.” Properly used, prescribed burning is an effective tool in the management of our forests because of its low cost and compatibility with other land-use objectives. Today, it is used in managing our forests for range, wildlife habitat, access for various uses, visibility, reduction of hazardous fuels, and many silvicultural aspects of timber.

In the South, about three million acres are prescribed burned annually to improve many of the resources of the forest. The major use is for reduction of hazardous fuels, but such burns also improve the other forest resources. As a natural part of the ecology of these stands, it has multiple benefits.

Just what is this “prescribed burning”? It is defined as fire applied in a skillful manner to the fuels of the forest, in a definite place, for a specific purpose, under certain specified weather conditions, to achieve specific management objectives. As a result of the experience of early forestland managers and research, it has been determined that fire does have a place in managing the Southern pine forests. In fact, Southern pine forests are “fire-climax” forests. Without fire, these forests would, in time, disappear, to be replaced with low-quality hardwood species as the pines died or were harvested.

As the sawmills clear-cut these forests in the early part of this century, they moved on, leaving vast areas denuded and subjected to wildfires so that new stands could not become established. Eventually, organized fire protection turned the picture around and the “second forest” appeared. Dedicated, aggressive fire protection and forestry assistance by State forestry agencies made this second forest a success, and forest industries again moved into the South.

This time, however, the policy was “management,” not the “cut-out and get-

out” policy of the teens and twenties. Foresters quickly learned, however, that total fire exclusion was not the answer. As the fuels built up, more wildfires occurred and became very intense, killing everything in their path. They were also very difficult to control. As more was learned about the behavior of fire and how it was affected by different fuels, weather, and topography, foresters learned to use low intensity fires to protect the forest from damaging wildfires while improving the many resources of the forest.

How is this done with fire that can destroy the forest? The use of fire to improve the forest has to be done under certain specific weather conditions and with specific techniques that will remove the unwanted brush and debris with a low enough intensity so as not to damage the pine overstory. A fire backing into the wind on a cool day is generally used, especially where there is a large build-up of fuel. The use of fire, however, is a complex procedure and requires people who are highly skilled and experienced to use it successfully. There are many variables that affect the intensity of a fire in the forest and its effect. All of these have to be understood and the principles applied for fire to be a useful tool.

The yellow pines of the South have a thick bark with good insulating qualities that protect the living cells of the cambium from damage by fire. The needles are susceptible, however, and the trees should be tall enough to protect the needles from the heat. Understory brush, on the other hand, has a thin bark and is readily killed. Removal of this brush allows grasses, legumes, and forbs to come in which are beneficial to deer, turkey, and quail.

Prescribed burning is a cheap technique that can be used to quickly treat an area. No other techniques are comparable due to cost, time, and damage to soil and trees where prescribed fire can be used. Fire, in turn, is limited in its use to certain areas and only on certain days. The smoke can also be a problem, especially if a highway or other areas sensitive to smoke are immediately downwind.

If you think fire might have a place in the management of your forest land, call your local Alabama Forestry Commission office for assistance. Your land will be inspected and a determination made whether to use fire. The agency will also assist in plowing firebreaks and conducting the burn for a small fee. ♣

Law Enforcement as a Fire Prevention Tool

By WALTER R. VEST, CHIEF
LAW ENFORCEMENT OFFICER

AS I TRAVEL THROUGHOUT the state, I continue to meet people who ask the question, “What are Forestry Commission employees doing wearing guns?” The Alabama Forestry Commission (AFC) has the responsibility of enforcing forestry-related laws and has been doing so since the 1930’s.

It was not until 1977 that the decision was made to put all AFC enforcement officers into uniforms, including guns. This change was made to improve the image of our law enforcement program and to better equip and train the people with the responsibility of enforcing our laws. The AFC now has 142 officers meeting Alabama minimum standards for law enforcement people.

Enforcement of forestry laws is intended to be a fire prevention tool. In the majority of wildfires, a forestry law has been violated. The AFC enforcement officers are trained to recognize these violations and to take whatever action is necessary to be sure the people responsible for the fires do not make the same mistakes again. The officers also conduct fire prevention programs for anyone upon request.

Law enforcement has proven to be a very effective way to cool down hot spots during bad fire seasons. Using a plan devised far in advance, the AFC can move into a problem area with as many people as needed to bring the situation under control. Such plans have been used several times, and the number of fires has decreased each day after the plan has been put into effect, even when the fire danger has increased daily.

With an increasing number of requests from other law enforcement agencies for assistance and the additional forestry laws such as burning permits, legislation was passed to give AFC enforcement officers full police power. Anytime AFC officers are asked by another agency for assistance, they are expected to render that help until the situation is brought under control. This is another reason AFC enforcement officers are wearing guns—to be ready to carry out the responsibility of law enforcement officers whenever the need arises.

However, fire prevention is not just the responsibility of AFC enforcement officers—it is every citizen’s job to be sure Alabama is protected from the threat of wildfire. If you see someone setting a fire to lands not owned or controlled by him, you should contact your local AFC office or the sheriff’s office immediately. ♣

Planning for Soil and Water Quality Can Assure TREASURE Forest Success

By BOB KUCERA, WATER QUALITY FORESTER

EROSION CONTROL IS one of the most important considerations for those who treasure their forestland. Every good quality represented in the acronym TREASURE can be positively or adversely affected by attention to erosion control. Proper forest management is a conservation practice which not only provides the financial returns of TIMBER production, but also the rewards of RECREATION, ENVIRONMENTAL quality, and AESTHETICS on a SUSTAINED basis. Erosion control in forest management maintains USUABLE RESOURCES of soil and water.

Soil and water are the heart of forests. Although forestry is the best use of land for protecting soil and water quality, there are times in the rotation when erosion can be damaging. These are during roadbuilding, site preparation, harvesting, and when plowing fire lines and making fire lanes. Each of these operations should be planned in advance to ensure that erosion occurs on the smallest area for the shortest amount of time and is kept out of ponds and streams.

The advanced planning for soil and water protection should be a part of the management plans and contracts for work done on forestland. The plans should present a means to accomplish the landowner's objectives while using common sense and technical knowledge of forest practices to maintain his property's assets of soil and water. Soil and water quality plans are best developed by, or under the supervision of, a registered forester simultaneously with other planning elements.

A good source of information for ideas and guidelines for soil and water quality protection is "Alabama's Best Management Practices for Silviculture," a booklet available at each Alabama Forestry Commission office. A basic concept brought out in the booklet is to minimize soil exposure. Often it will be best to seed grass on exposed areas such as log decks, major skid trails, fire lanes, road banks, and even road beds after they have been used. Grass will prevent improvements from being washed out and gullied

and will prevent soil from moving into the streams causing pollution. A Kentucky 31 fescue and white clover mixture is especially good for fire lines and lanes because it makes a year round green cover. See the seeding guide which was prepared by Jerry Johnson, Soil Conservation forester, for recommended seeding species, rates, and seasons.

Seeding Guide

Preparation of Seed Bed—If the bed is not prepared properly, attempts at seeding will be futile. The ideal time for seeding and fertilizing is while the soil is freshly disturbed and before the first rain when neither erosion nor compaction has begun. If compacting or crushing is present, harrowing, disking, or ripping is necessary to establish the seed bed. These areas should be broken up to a depth of six inches. If fertilizer is used, it should be applied at the rate needed to supply 75-85 pounds of nitrogen per acre (1000 lbs./acre of 8-8-8 or 699 lbs./acre of 13-13-13). Liming is also desirable on some areas.

activities

500 Attend District 3 Outings

District Three conducted two field days during the month of October. The first, held in Sumter County on October 4, was attended by more than 55 people. Forestry tour stops included a hardwood bottom, a mature pine stand, and a mature hardwood stand.

State Forester C. W. Moody presented a TREASURE Forest award to William Holman following a lunch which was sponsored by James River Paper and Pulp, American Can, Weyerhaeuser, and McMillan-Bloedel. Forestry Commission personnel provided information on assistance available to landowners in the areas of fire protection and forest management.

The second field day and barbeque was held at the Bobby Manning farm near Reform in Pickens County. This event was sponsored by the Alabama Forestry Association, Alabama Forestry Commission, Advisory Committee on Forestry Research in Northwest Alabama, and was supported by the Alabama Forestry Planning Committee. More than 500 people attended and received advice on management practices, soils, wildlife, fire protection, and related topics. Several exhibits were set up to provide printed material, and a portable sawmill was actually in operation to give a firsthand look at the process.

U.S. Congressman Tom Beville was the keynote

speaker, and State Forester Moody again gave the TREASURE Forest award to landowner Bobby Manning and a W. Kelly Mosely Environmental Award to Donald Babb for work done with the Gordo Volunteer Fire Department.

Both days were successful!

\$500 Awarded In Arson Case

The Alabama Forestry Association presented a \$500 reward to Mrs. Elva Grady of Morgan County for her participation in the arson arrest of two Morgan County men. Mr. C. W. Moody, State Forester, and Hilton Watson, Alabama Forestry Association presented the award in Hartselle.

Gold Leaf Award Presented

Stephen McEachron, Lauderdale County Forester, was presented the Gold Leaf award at the International Society of Arboriculture at the Urban Forestry Conference in Charlotte, N.C.

Tennessee Valley RC&D Forestry Committee Revises Work Plan

The Tennessee Valley RC&D Forestry Committee met at the Reid Restaurant in Guntersville on October 22, 1982. A revised work plan for the committee for FY 82-83 was developed. Among other items, the committee decided to continue holding landowner seminars throughout the eight county RC&D area of Northeast Alabama. They agreed to hold two forest taxation seminars and four forest marketing seminars. Also, the committee plans to pursue the development of a

fuel wood harvesting system that would, at the least, reduce the cost of TSI, but hopes are to develop a harvesting system that will make fuel wood harvest profitable while achieving the goals of TSI. The committee will be working with Giles & Kendall, a cedar products manufacturer in Huntsville, on methods to manage the growth of Eastern Red Cedar.

Fire Cooperators Discuss Wildfire Season

There was a forest wildfire suppression cooperators' meeting at the District 10 headquarters on October 5, to discuss the upcoming wildfire season. Representatives from Great Southern and Georgia Kraft paper companies, and from the U.S. Forest Service were asked to serve on a Fire Prevention Committee along with three members of the District 10 staff. The committee will select three areas of high wildfire occurrence and make householder contacts, distribute prevention literature, and generally "be visible" before and during the coming spring wildfire season.

On September 27 the Alabama Forestry Commission and members of the industry fire cooperators met in Piedmont to discuss matters pertaining to fire suppression in District I. Industry manning of towers, better communication and incendiary fire occurrence on industry lands are a few of the items covered.

Russell County Demonstration Set

No firm dates have been set yet, but a landowner short course will be held on the John Rudd Demonstration / TREASURE Forest in Russell

Table 1—Seeding Species, Rates, and Seasons**Northern zone—Outside the Coastal Plain**

Spring (March 1-May 31). Use Mixture #1 or #2	Mixture	Species	Log Roads	Road Banks	Remarks
			lbs./acre	lbs./acre	
	1	Kentucky 31 fescue	15	20	Damp, shady sites
		White clover	4	4	Use inoculated seed
	2	Sericea lespedeza	20	50	Use scarified seed
		Weeping lovegrass	5	5	Poor, dry sites
Fall (August 15-November 15). Choose a #1 and a #2 and mix well.	1	Kentucky 31 fescue	15	20	
	1	Annual rye (cereal)	50-60	50-60	
	2	Sericea lespedeza	30	50	Use natural, hard seed
	2	White clover	4	4	Use inoculated seed

Southern zone—Inside the Coastal Plain

Early spring (March 1-April 30). Use mixture #1	Mixture	Species	Log Roads	Road Banks	Remarks
			lbs./acre	lbs./acre	
	1	Kentucky 31 fescue	15	20	Damp, shady sites
		White clover	4	4	Use inoculated seed
Late spring (March 15-July 15). Use mixture #1 or #2 or mix both.	1	Bahia grass*	20	35	Sandy soil, open sunny places.
	2	Common Bermuda grass	5	5	
Fall (August 15-September 15). Use mixture #1 or #2	2	Brown top millet	10	10	Use as wildlife food
	1	Kentucky 31 fescue	15	25	Damp, shady sites
		White clover	4	4	Use inoculated seed
	2	Bahia grass*	15	25	Dry, sandy sites
		Annual rye (cereal)	50-60	50-60	

*Bahia will germinate immediately if planted through August. For delayed germination, seed from October 1-December 15.

The seeding seasons listed above represent optimum times for sowing. Actually, successful seeding can be performed at any time during the growing season by taking advantage of rainy spells, using mulch, or by varying species.

County sometime this spring. Site preparation, prescribed burning and timber marketing will be the chief issues covered. The February or March meeting will be held at the same time as the ceremony of the E. V. Smith demonstration and field day at the Auburn University Extension facility in Macon County. The Alabama Farm Bureau is cooperating with the Extension Service on the details of these two events.

Two Receive W. Kelly Mosley Award

W. Kelly Mosley Environmental Awards were presented to Louise Bone, secretary, District 9 Headquarters; and Lorene Frederick, *Times Daily* writer. The awards were presented at the Open House ceremony on November 23, 1982 by Mr. C. W. Moody, State Forester. Mr. Moody conducted the awards ceremony, calling the winners "unsung heroes who have made significant contributions to wildlife and environment." Moody mentioned several articles about trees Ms. Frederick has written.

The award winners were notified of their selection by Larkin H. Wade, Head of Extension Natural Resources, Alabama Cooperative Extension Service Headquarters, Auburn University. He stated that Ms. Bone had spent "many hours in tedious research preparatory to nominating local trees to the Historical Tree Program." In the past years, she had two of her nominations selected to appear in the list of Historical Trees of the United States.

More recently, Bone has done research and nominated two trees in Florence to the Historical

Trees of Alabama list. Ms. Frederick was recognized for features about historical trees as well as wildlife and nature. An editorial written by her entitled "Natural Wonders" told about "our tremendous trees" and the work Ms. Bone had done to create interest in them. "In an era where cynicism and negativism often seem to prevail, Ms. Bone's optimism is refreshing," the editorial stated.

New District Office Opened

The District 9 Headquarters new office facilities were officially opened to the public on November 23, 1982. After opening remarks by District Forester Gerald Steeley, Mr. William E. Batson, Mayor of the City of Florence, welcomed the Alabama Forestry Commission to Florence. Mr. C. W. Moody, State Forester responded to the Mayor's welcome. The ceremony was attended by Florence City Officials, State Officials, Extension Service personnel and the general public.

The new facility is located on a five-acre wooded tract—part of the Florence City Park System. The area, known as Wildwood Park, was officially leased to the Alabama Forestry Commission after a vote of the citizens of Florence. An editorial written by the *Florence Times* reads as follows: In preparing the ground for the new building, the Forestry Commission has set a good example. Clearing of the site was kept to a minimum. Landscaping plans call for native planting with minimum disturbance of the land. Here is a good example of progress without destruction of natural resources.

calendar*

January 11—Alabama Forest Owners Association, 7:30 p.m., First National Bank, Hoover. "A Look Inside the Covers of Forestry Suppliers' Catalogs."

January 13—Northwest Alabama Fire Chiefs' Association, Millport, Alabama, 7:00 p.m.

January 19—Prescribed Burning and Timber Marking (indoors) and Forestry Tour, Henry County. Contact Richard Murphy, 585-2349.

January 27—Tax Seminar for Forest Owners, 7:30 p.m., Sparkman Civic Center, Hartselle. Contact Roger Nichols, 773-2114.

January 27—Forest Taxation, 7:00 p.m., Fort Payne, DeKalb County. Contact Alabama Forestry Commission, 845-1331. (tentative)

January 26-28—Southeastern SAF Annual Meeting, "Worth of a Forester."

April 14—7:00 p.m., Forest Marketing, Guntersville. Contact AFC, 582-4212. (tentative)

April 16—Alabama Forest Festival, Garrett Coliseum, Montgomery, 9:00-5:00. Free admission, free parking.

May 5—7:00 p.m., Forest Marketing, Athens. Contact AFC, 232-7940. (tentative)

May 24—7:00 p.m., Forest Marketing, Cullman. Contact AFC, 739-3530. (tentative)

June 16—7:00 p.m., Forest Marketing Fort Payne. Contact AFC, 845-1331. (tentative)

*Any Alabama Forestry Planning Committee member agency can be contacted for information about forestry events listed in this section.

Future Farmers Learn Forestry Skills

By TIM LYNCH



HOW DO THE future forest landowners in Alabama learn how timber should be managed? One way is through the Future Farmers of America program (FFA) offered in our local junior and senior high schools. Throughout the school year, these students study forestry as part of the F.F.A. program. They complete basic courses in forest management, tree planting, and marketing along with ones covering the multiple use aspects which include wildlife management and recreation.

The first warm spring days bring these students out of the classroom and give them a chance to sharpen the skills they learned with practical experience. Teams compete in county and district contests, eliminating all but the best. The reward for all this work is the opportunity for the winning teams to attend the Annual F.F.A. Convention in Montgomery and compete in the F.F.A. Forestry Judging Contest. This is the day they have been preparing for all year. One team will have the opportunity to prove that it is the best in the state.

In the fall of 1974, the Alabama Forestry Commission and Alabama Forestry Association met with the Agri-business section of the Department of Education. Aware of the tremendous interest shown by the F.F.A. students in the forestry portion of their studies, they wanted to develop a state contest that would both encourage this interest and reward the best students for their efforts. After much work by everyone in the group, a contest was developed that would be challenging and fun for the students. In 1975, the first annual F.F.A. Forestry Judging Contest was held at the Annual F.F.A. Convention in Montgomery with the Alabama Forestry Association furnishing the prizes. Each spring, as the weather warms up, local representatives of forest industry, the Alabama Forestry Commission, and other state agencies work with the local F.F.A. chapters helping them

set up and conduct county and district contests. This gives the students the opportunity to practice what they learned in the classroom and also to get acquainted with the local foresters who can give them advice and assistance in managing their families' forestland.

The contest consists of three parts, each one developed to test the skills of the students in a particular area of forest management. The first part of the contest is timber cruising. Trees are measured to obtain an estimate of the amount of forest products that might be derived from them. This skill is needed to get an idea of what volume is present on a tract of timber. All forest properties must have some estimate of total volume, volume per acre and volume by product so that the forest manager can decide the course of his future actions. The students measure all trees on a one-fifth acre plot and convert the measurements to volume per acre.

The second part of the contest consists of two closely related problems for the students to solve. The first exercise is in Timber Stand Improvement (TSI). Exercising proper judgment in removing poor quality trees from a timber stand at the right time is essential to the overall health, vigor, and value of the forest. Twenty trees are selected to represent a timber stand that needs either thinning or some TSI. The students are given a "situation" concerning the forest management objectives of this imaginary stand.

Information that will help the teams with their decisions will include such things as wildlife habitat considerations, markets, present condition of the stand and the final goal of the management plan. With this information the students will decide if each of the twenty trees should be removed, left, or deadened. The second problem in this part

of the contest deals with the fact that many farm woodlands in Alabama have been "high-graded" during previous harvests, often leaving inferior species of little market value. Sometimes it is necessary to harvest all merchantable timber, site prepare the land, and replant a stand of desirable trees. The students are given an area and must decide whether to continue managing it or clearcut, site prepare, and plant the area.

The third part of the contest gives the students three additional problems. To manage forestland one must not only know the volume of timber present, but also know what species are present. The students are given ten species of trees to identify. Trees and wildlife have been called the "twin crops" of forest management. Wildlife must have food, cover, water, and freedom from excessive disturbances. The managed forest provides each of these in abundance, but most species of wildlife have their own special habitat needs. The students are shown an area and must decide if the habitat is good, fair, or poor for several species of wildlife.

The final problem in this part of the contest is the determination of the site index of the area. This is a measure of soil productivity and future growth potential. It can be used as an excellent management guide in order to gain the highest economical return from the forest.

The training in Agri-business Education received by many high school students in Alabama, along with the opportunity to test their skills in this forestry judging contest, is assuring us that the younger generation will appreciate Alabama's greatest renewable natural resource. They will also have the knowledge needed to manage it wisely. From this group of high school students will come our future TREASURE Forest managers. ♣



HARDWOODS IMPROVED IN FOUR EASY STEPS

By TOM CAMBRE, SPECIALIST,
HARDWOOD MANAGEMENT

WHEN THINKING ABOUT ALABAMA'S forest resource, most people envision majestic pines. But, Alabama also has another forest—hardwoods—which accounts for close to four million acres of the state's forest base. With the emphasis that has come to be placed on pines, the quality of our hardwood resource has declined. Private landowners are the key to upgrading these trees through sound management practices.

The management techniques which should be applied to hardwoods are quite different from those required for pines. The landowner can begin by taking several steps which are valuable and relatively inexpensive to accomplish. First, he should select those trees which he desires as his final crop, and allow them to grow as long as they remain healthy and strong. In early timber sales, the buyer should be encouraged to take as many low quality trees as possible. These trees are usually "limby" and contain knots, crooks, scars, or other major defects. The landowner might want to consider these for fuel wood as well.

Another step is the elimination of cull trees which are sometimes hollow and have other defects. Such trees generally do not contain enough sound wood to make logging and milling cost effective. However, a few of these trees could be left as potential dens for wildlife.

A landowner should also know the quality and value of his timber. This puts him in a better position when accepting bids on marked stumpage. Even though early, low quality cuts will not generally attract high bids, the removal of these trees will provide adequate growing space for the better formed ones to grow into a high-grade product.

Woodland should also be protected from fire. Fire most often affects the most valuable portion of the tree from the ground to the

first branch, or butt log. Even though the tree may live for several years, these wounds may cancel any value that the wood could gain through future growth and would also make it more susceptible to rot, insects, and disease.

Livestock should also be kept out of hardwoods. Cattle prefer the same species that most landowners do in growing high-grade timber. The animals will eat the regeneration seedlings of ash, basswood, yellow poplar, and sweetgum. Those trees which aren't eaten will probably be trampled, reducing any future potential. In addition, the understory vegetation will be depleted, and soil compaction will be caused, lowering site quality.

Landowners should also be familiar with soil, site, and moisture conditions and their

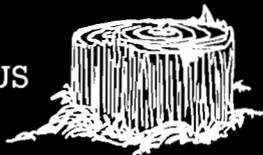
relationships to tree growth. Hardwoods are not suited for every site! Those sites with the best potential should be addressed first, and then those with marginal potential should be attended.

Specialists are available from a number of sources. Frank Shropshire, U.S. Forest Service Hardwood Specialist in Jackson, Mississippi, travels the Southeast helping individuals with hardwood problems. The Alabama Forestry Commission also has a hardwood specialist located at the district office in Dadeville. In addition, private consultants are available statewide.

Remember, hardwoods take special care and attention, but are certainly worth the effort in the end. Take advantage of the assistance that can be provided to you! ♣

STUMPED?

ASK US



ABOUT IT!

Q. *What can I do to prevent a chimney fire?*

A. Check often for creosote accumulation in the chimney & stovepipe. Such buildup should not exceed 1/4". Many creosote fires occur because of extremely hot fires on very cold days. Periodical cleaning and proper maintenance should prevent such a fire hazard.

Q. *How do I obtain a burn permit?*

A. Every district office has a toll-free number to obtain such permits. Usually this number is on the inside cover of your telephone book. If not, look under State Government listings for the Alabama Forestry Commission office nearest you. They can provide assistance. For convenience, knowing your Section, Township & Range prior to making the call would be helpful.

Q. *Does the Alabama Forestry Commission still use fire towers?*

A. Some fire towers are still being used in Alabama. However, the agency has come to rely heavily on the use of aircraft. Detection is improved and other benefits are prevalent as well. Pilots can spot fires quickly, and in those cases "deliberately set," the suspect can be tracked by air while ground personnel hurry to the scene. Pilots are also helpful in guiding fire units into rough terrain areas.

Q. *What's the difference between a forester and a ranger?*

A. A forester is an individual who has completed at least a B.S. degree in forestry

or related field from an accredited four year program at a college or university. Many foresters hold advanced degrees. A professional forester must be registered with the Alabama Board of Registered Foresters to practice forestry in Alabama. A ranger is an individual who is trained in various forestry aspects on a para-professional level. He or she may have an Associate degree as a forest technician from a two-year program at a ranger school or junior college.

Q. *How can I get someone to speak on forestry to my civic club?*

A. Depending on the particular aspect of forestry, any of the Alabama Forestry Planning Committee member agencies could be contacted. These agencies are listed on the Table of Contents page in this book.

Q. *What precautions should I take to minimize smoke problems when burning chopped logging slash?*

A. Burning logging slash can cause serious smoke problems due to the large amount of fuel mixed with moist soil. Chopping slash is preferable to piling and windrowing. The burn should be made when the chopped slash is dry, and steady winds are prevalent to insure a quick burn. The burn should not smolder into the night. Contact your Alabama Forestry Commission representative for assistance in identifying areas that might be sensitive to smoke and for assistance in planning the burn. ♣

See The Big Picture

By TOMMY PATTERSON, CHIEF, FOREST MANAGEMENT

ARE YOU A forest landowner trying to become acquainted with your property? Have you owned forestland quite awhile and periodically have to make land management decisions?

If you answered yes to either of these two questions, you should already realize the importance of maps and aerial photographs. However, too few landowners are aware of the many sources for these particular management tools.

Maps come in many descriptions depending on their intended use. An atlas usually pictures an entire country or region. A state highway map shows cities and major roads in one state. A county road map narrows the view even further to indicate those roads and landmarks not considered necessary enough to highlight on the previous map types. Few, if any, of these maps are very useful to you the forest landowner in making forest management decisions because they do not illustrate your own stands of trees, trails, creeks, hills and hollows. Of course, you could certainly hire someone to draw a property map for you, and your forester will include in your forest management plan a timber type map that will illustrate many of your property landmarks. There is another map source available to you that provides excellent detail at a relatively small cost.

The United States Geological Survey was established by Congress in 1879, with one principal objective being to provide multi-purpose maps and related data of appropriate scale, content and accuracy to satisfy modern requirements. A major element of this program is the series of topographic maps produced by the Geological Survey.

Maps Easily Identify Land Features

A topographic map is a line and symbol drawing of natural and selected man-made features. A distinguishing characteristic of a topographic map is the portrayal of the shape and elevation of the land by contour lines. These maps show the location and shape of a mountain, valleys and plains; the networks of streams and rivers; and the principal man-made landmarks. Wooded areas are distinguished from clearings through the use of different colors.

Topographic maps are available in several different degrees of detail, normally referred to as a scale. Map scale is the relationship between the measurements of the features as shown on the map used as they exist on the earth's surface. Scale is generally stated as a ratio or fraction (1:24,000 or 1/24,000). The numerator, customarily "one", represents map distance, and the denominator, a large number, represents horizontal ground distance. Thus the scale 1:24,000 states that a unit such as one inch on the map represents 24,000 inches on the ground. Large scale maps, such as 1:24,000 are especially useful to forestland managers. This particular scale of 1:24,000 indicates that one inch of map distance represents 2,000 feet of actual ground distance.

To obtain a topographic map that will include your property, you must first identify the location of your land in the state and order a map of that particular part or quadrangle. To make this selection, you should first order, free of charge, from the address listed below a State Index Map. Included with this index map is an order form for you to request the particular quadrangle map that includes your property. These maps currently cost two dollars each. The State Index Map and the quadrangle topographic maps may be ordered from the Geological Survey of Alabama, Box 1424, University, Alabama 35486.

Aerial Photos Show Detail

Most everyone is familiar with the old saying, "A picture is worth a thousand words." This phrase holds much truth to forest managers, for what better way to evaluate all the variables of nature than with a picture or photograph?

The kind of photographs most widely used by forest managers are aerial photographs. Aerial photographs as you probably have already guessed are photographs of the ground taken from the air usually by airplane or satellite. These pictures serve many of the same uses as maps but can show detail not normally illustrated on maps.

Aerial photographs can be made with color, infrared, color infrared, or black and white film. They can be taken during the growing season or during the winter. Many foresters

prefer pictures taken during the winter as they more dramatically contrast the stands of pines (evergreen) versus the stands of hardwoods (deciduous trees).

The most readily available source of aerial photographs to the private forest landowner is the Agricultural Stabilization and Conservation Service (ASCS).

This federal agency maintains an office in every county to administer a wide variety of agricultural and forestry programs. Each office has on file aerial photographs covering their entire county. Reprints of these photographs are available for purchase by the public through the county offices. Several different scales are available ranging from 1:660 to 1:2640 and price varies accordingly. The largest size print will cost eight dollars while the smaller size sells for six dollars. Orders must be placed in the ASCS office of the county in which the land is located using ASCS order form No. 441. Usually allow about a month for delivery.

Another source of aerial photographs is the Soil Conservation Service (SCS). The SCS will provide an aerial photograph, again a black and white taken during the winter, if they prepare a conservation plan for your property. Also available, free of charge, from each county office is a copy of that county's Soil Survey Report. This report is designed to provide the user with information about the surface soil and subsoils and their suitability for farming, engineering, and forestry and related uses. In order for the user to determine soil types on specific locations, copies of black and white, winter time, aerial photographs are made a part of this report. Though not quite as clear as actual prints these photograph copies can still provide the forest manager with useful information. To obtain a report, simply request one from your local SCS office.

We have discussed just a few of the sources of maps and photographs available to you as a forest manager. These sources are the most readily available to the general public. Through more research you can find others.

Help yourself to make good management decisions by arming yourself with good management tools. Latch on to all the maps and pictures of your property you can afford, so you, too, can see the big picture. ♣

Alabama's TREASURE Forest Program

By NEIL LETSON, TREASURE FOREST COORDINATOR

ALABAMA IS BLESSED with many natural resources. Of these, trees may be the most valuable. They are abundant and serve as the backbone to the leading industry in the state—forestry. Yet, most landowners do not receive all the values of their woods.

Studies show private nonindustrial forestlands produce about half their potential value. Couple this with a weakened economy and it becomes important for Alabama landowners to better manage their lands. That is why the Alabama Forestry Planning Committee (AFPC) sponsors the TREASURE Forest Program.

Started in 1976, the TREASURE Forest Program locates and publicly honors people who manage their forests for all the resources for which their land is suited. The name TREASURE is an acronym for these uses. They are TIMBER, RECREATION, ENVIRONMENT, AESTHETICS, and a SUSTAINED USABLE RESOURCE.

To have a certified TREASURE Forest, all a landowner needs is to have one or more primary forest goals, a written or oral plan, and a program which protects the forest from most harmful agents (fire, insects, disease, etc.). Other land uses must also be considered, but less intensively. Any private, public or corporate landowner is eligible for TREASURE regardless of acres, location or land use.

Important to the TREASURE Forest Program is the right of every Alabama landowner to decide what benefits and objectives he wants from his forest. For example, one person may manage primarily for wildlife, while another might favor timber or recreation or perhaps environmental quality. The opportunity for each of these landowners to decide his management goal is one of the key points of the program, and each would qualify for TREASURE Forest certification as long as he manages the other benefits with his main objective.

How to Apply

For those interested in having certified TREASURE Forests, the process is simple.

Someone must first submit the landowner's name to his county or local representative of an AFPC agency. This can be done by anyone. Nomination forms and pamphlets are available at the local office of each cooperating agency.

Once the nomination form is completed, it is then sent to that area's TREASURE Forest district coordinator. Upon notification, he will then arrange for a registered forester and wildlife biologist to inspect the property at the convenience of the landowner or his representative. Other local AFPC members are also given an opportunity to join in the inspection. The inspection team examines the property and makes recommendations. They do not certify or reject the property for TREASURE Forest.

The inspection process varies in length from a couple of hours to more than a day, depending on acreage, accessibility and the type of management being done.

Each team follows a set of guidelines during their inspection. They determine the following:

(1) the location, size and type of the property; (2) the landowner's objectives and if a plan is being followed; (3) the presence of any harmful agents (fire, insects, disease, etc.) and what steps are being taken in the area of control and prevention; (4) timber, types, stock density, and any hardwood sites and timber management being done; (5) game and non-game species present, plus the condition of wildlife habitat; (6) evidence of erosion and what is being done to control it, as well as consideration given to water quality, aesthetics and the general environment.

On every inspection record is a space for the "inspector's comment." This allows both inspectors to add any information they feel will help in the final decision-making process.

When completed, the inspection record is then forwarded to the State TREASURE Forest Coordinator who places it in a permanent landowner file until the Services Subcommittee meets. The Services Subcommittee meets quarterly based on the number of applications. A unanimous vote

by all members is required for certification.

The district coordinator is notified of each decision. He then arranges a ceremony to present the award which consists of a TREASURE Forest sign, certificate and cap. Certification is good for a period of five years, at which time the property is reinspected. Those maintaining TREASURE standards will be recertified and continue to display their TREASURE signs.

Since 1976, a growing number of Alabamians have shown their belief in the TREASURE Forest concept. To date, 203 forest landowners (328,886 acres) have been certified by the program. An annual award plus \$500 is given each year to the outstanding TREASURE Forest landowner in each of the three Alabama Cooperative Extension Service districts. A state winner is selected from these and given an additional \$500.

Through the efforts of these and other potential TREASURE Forest landowners, Alabamians will continue to enjoy the multiple benefits of the state's forestland. ♣

Agencies Comprising the Alabama Forestry Planning Committee

Alabama Department of Conservation and Natural Resources
Alabama Department of Education, Vocational Division, Agribusiness Education
Alabama Forestry Commission
Alabama Soil and Water Conservation Committee
Alabama Cooperative Extension Service, Auburn University
School of Agriculture, Forestry and Biological Sciences, Auburn University
Alabama Agricultural Experiment Station, Auburn University
USDA—Farmers Home Administration
USDA—Forest Service—National Forests in Alabama
USDA—Forest Service—Southeastern Area, State and Private Forestry
USDA—Soil Conservation Service
USDA—Agricultural Stabilization and Conservation Service
Tennessee Valley Authority

AFC's Management Objective Is To Make Choccolocco A TREASURE Forest

By LOU HYMAN, CHIEF, STATE LANDS
RANDY KENADY

CHOCOLOCCO STATE FOREST contains 4,506 acres in Calhoun County and is located on Highway 9, approximately 12 miles northeast of Anniston, Alabama.

The land making up Choccolocco State Forest was purchased from several private landowners in the 1940's by the State of Alabama. Prior to becoming a state forest, approximately half of this acreage was in cultivation or pasture. When cultivation ended, much of the land seeded naturally with pine, and until recently, very little effort was given to reforestation or timber stand improvement. Today, the forest contains several timber types, from upland oaks on top of Choccolocco Mountain to young pine plantations, to beautiful yellow poplar stands along Choccolocco Creek.

Bounded on the west by Fort McClellan Military Reservation and on the east by Talladega National Forest, the forest is leased to the U.S. Army for military training purposes. The forest serves the Fort McClellan Military Reservation as "corridor" between the Reservation and Talladega National Forest.

The primary goal of the Alabama Forestry Commission's (AFC) management plan is to secure TREASURE Forest status for Choccolocco State Forest. This is being done by emphasizing the three forest resources of timber, recreation, and wildlife.

A formal forest management plan was developed for Choccolocco during the fall of 1981. First a complete inventory of the timber and other resources was made. The results were then analyzed using the Woodland Resource Analysis Program (WRAP), which is available through the AFC. This program helped in developing a timber management plan that relies heavily on natural regeneration.

A prescribed burning program was also developed for Choccolocco. This program was designed to achieve six goals. In order of priority these goals are seed bed preparation, improvement of access and recreational

opportunities, wildfire hazard reduction, improvement of wildlife food sources, improvement of wildlife game habitat, and hardwood control. This program was designed to minimize aesthetic damage by trying not to burn adjacent stands in the same year. The stands will be burned every three years for five years, then the stands will be burned every five years thereafter.

Prescribed burning is done . . . to develop a fresh browse layer within four feet of the ground

There is a major problem on the forest—kudzu. There are about forty-eight acres in which this fast growing weed smothers trees making the land unproductive for anything but kudzu. Kudzu control methods require killing the rootstock. The site is first burned to remove old growth and bare the soil. Any merchantable trees are then salvaged from the site. In June, after the roots have started to sprout, the site is treated with a soil sterilant. After about nine weeks, the site is spot-treated to kill any missed root sprouts. The site is then burned once again and spot-treated the following spring. The site will be naturally restocked with grasses, so erosion problems should be minimal. Once the site has lain fallow for at least six months, it can be planted to pine.

In order to qualify as a TREASURE Forest, a tract must be actively managed for multiple uses. Choccolocco State Forest features the three land uses of timber, recreation and wildlife.

Recreation management on Choccolocco State Forest has been restricted in the past because of the Army lease. One area with high recreational potential is along the western

border of the forest. Located near Bain's Gap Road, which crosses Choccolocco Mountain, is a very pretty granite waterfall. Near the base of the waterfall is a flat area where the chimney of an old lodge remains. This area could easily be developed into a picnic grove for local residents, and a set of nature and hiking trails can be designed to take advantage of the coves and ridgelines in this area.

A more involved recreation investment would be to develop a camping area along Choccolocco Creek just south of Joseph Springs Motorway. The demand for such an area is high, as is evidenced by the high usage of camping sites in Talladega National Forest and at Cheaha State Park.

The two major game species featured on Choccolocco State Forest are white-tail deer and wild turkey. Habitat management for these species consists of three major practices: prescribed burning pine stands, maintaining food plots, and maintaining woodland openings. Prescribed burning is done in such a way as to develop a fresh browse layer within four and a half feet of the ground. This enhances deer habitat. The open understory resulting from prescribed burning also enhances wild turkey habitat.

Food plots are very useful tools in game management. Presently, there are six active food plots totaling about 15 acres on the forest. Present crops include winter rye, soy beans, and sunflowers.

The third part of wildlife management is the maintenance of woodland openings. These openings are kept as firebreaks maintained by the Army. These breaks will be fixed for wildlife by planting them to winter grasses.

As far as forest management goes, not much has been done on Choccolocco State Forest for the past forty years. But with the organizing of the State Lands Section of the Alabama Forestry Commission a little over a year ago, there has been significant progress made. The section is now working on getting Choccolocco State Forest nominated as a TREASURE Forest in the near future. ♣

To get seedlings out of forest tree nurseries and into landowners' hands in good condition is the challenge to be met by AFC nurserymen.

'Tis The Busiest Season

By WILLIAM H. PADGETT, CHIEF, NURSERIES

THE LIFTING OF forest tree seedlings in Alabama Forestry Commission (AFC) nurseries begins the first week of December and extends through February of the following year. The reason for this is that the seedlings are in their most dormant condition and will withstand the shock of transplanting much better than at any other time.

The lifting season is perhaps the busiest time during the entire year of a nursery. Attention must be given to each detail in acquiring sufficient labor, proper equipment and materials to provide for a successful lifting season. The shipping schedules must be closely coordinated with the nursery and the needs of the landowner.

Each of the AFC nurseries lifts and packs approximately 500,000 seedlings per day. In the case of severe weather when the field crews are hampered in the use of mechanical lifters, the production is lower. Also, when the nurseries have to resort to hand lifting, as in the case of longleaf pine and hardwood seedlings, the production is closer to 200,000 seedlings per day. Since the lifting season is only about 60 days long, it is imperative that the lifting operations proceed with the utmost efficiency and with as few interruptions as possible.

Once the seedlings have been lifted from the seedbeds, they are transplanted to the packing shed where they are graded and packed. The seedlings are graded based on visible characteristics of the individual seedling. However, this method does not guarantee success in outplanting. The most acceptable means of grading seedlings has been based on the presence or absence of secondary needles, winter buds, woody tissue of the stem, root-collar diameter, and size as compared to other seedlings of the same species from a given seedbed. Even with these guidelines there is still some disagreement concerning them.

The process of culling inferior quality seedlings is a vital entity of the lifting and packing process. Culling removes at least

10% of the seedlings that are of an inferior grade. Also, seedlings that have been damaged in the lifting process, diseased, or damaged by insects are culled. Fusiform rust infected seedlings are always culled but many times are overlooked because of the variations in the rust gall. Fortunately, the percentage of rust is rather low, less than one-half of one percent, in most years. Also, this gives a good check of efforts to control fusiform rust earlier in the year. Seedlings that are broken, stripped of bark, roots and tops (foliage) are



culled. Each nursery has a display with cull conditions for the grading crew to use as a guide.

The AFC has for several years been using a weight-count method rather than counting each individual seedling. This method has proven to increase daily production, lower cost, reduce root exposure, reduce handling of the seedlings and is comparable in accuracy to counting. The seedlings must be uniform in size to gain the maximum benefit from the weight-count method. When the seedlings are not uniform in size closer monitoring of the seedlings per bale is imperative.

The importance of the packing process cannot be minimized. The packing material that is used to protect the seedling roots must

be high in moisture-retaining capacity. The material must be of a quality to permit seedlings to be stored for several days without drying out. The wrapping paper around each bundle must prevent moisture loss and withstand frequent and rough handling. The bundles of seedlings are fastened with steel or plastic strapping around each end to prevent the seedlings from slipping out and to facilitate handling.

Spaghnum moss is the material most commonly used to protect the roots of the seedlings. However, in recent years, other materials, such as sawdust, wood chips, clay dips, and water retaining gels, are replacing spaghnum moss.

After the seedlings have been packed they may be picked up immediately by the landowner or moved promptly to a storage area. The storage area should be cool, well ventilated and not subject the seedlings to extreme temperatures, either freezing or heat. If either of the latter situations occur, damage to the seedlings results with a subsequent lowering of survival. The seedling bales should not be stacked more than three bundles high because of physical damage to the seedlings and the possibility of heating which occurs through the normal respiration of the seedlings. The bundles should be watered at least weekly if they are to be stored for an extended period.

The shipping of seedlings varies according to the landowner. Many of the smaller landowners pick up their seedlings at the nursery in their automobiles or pick-up trucks. The larger landowners may use an open tractor-trailer or a refrigerated van. It makes no difference what type of vehicle is used, but the seedlings should always be protected to the greatest extent possible. Long hauls on open vehicles will cause some seedling damage through the drying of foliage.

It is necessary that the nurseries adhere to a shipping schedule to supply the seedlings, as needed, to prevent any delays in planting operations. ♣

Hazard Rating— A STRATEGY FOR BATTLE AGAINST BEETLE

By JAMES R. HYLAND, CHIEF FOREST PEST MANAGEMENT

THE SOUTHERN PINE BEETLE (SPB) is the most destructive insect pest of pine forests in the South. Research has led to a better understanding of the beetle and its relationship to the tree and stand. With this information, we can take measures to prevent beetle attack or to more effectively deal with an outbreak once it occurs.

Much of today's southern pine forest resulted from natural seeding and planting on abandoned agricultural lands from 1930 through 1950. Young stands grew rapidly with little or no tending. Insect problems developed and intensified as stands became

crowded and vigor declined. Proper forest management offers the most promising and long-lasting means of reversing this trend.

The SPB occurs across all geographic regions of the South. Site conditions, tree species, and size classes associated with SPB attacks differ somewhat between the Coastal Plain, the Piedmont, and the Southern Appalachian Mountains (TABLE 1). But slow radial growth and dense stocking are common measures of high-hazard stands.

The goal of prevention programs is to identify pine stands growing under conditions most preferred by the beetle. These high-

hazard stands should be managed to favor vigorous tree growth and to promote natural resistance to beetles.

The best way to assure long term protection from SPB is to take these precautionary measures:

1. Hazard rate pine stands to assess susceptibility to SPB.
2. Manage high hazard stands to increase tree growth and reduce risk of SPB infestations.
3. Detect and control active SPB infestations when they occur.

Hazard rating provides a basis for scheduling thinning or other preventative treatments. It also aids in setting control priorities should an outbreak occur. Timber losses can be reduced during outbreaks by controlling infestations in order of priority, based on stand hazard, tree value, and level of beetle activity.

A variety of rating systems have been developed for different areas throughout the South, but two systems seem to be most applicable to Alabama—the Texas System and the Sader System. The first step is to determine which system the landowner or forester should use for his stand (see map). *These systems are good for loblolly and shortleaf pine ONLY.*

Table 1.—Characteristics of stands susceptible to SPB attack.

Southern Coastal Plain	Piedmont	Southern Appalachians
Densely stocked stands	Well-stocked stands	Densely stocked natural stands
Large proportion of sawtimber	Small sawtimber	Large proportion of overmature sawtimber
Declining radial growth	Slow radial growth during last 10 years	Slow radial growth
Poorly drained soils and low-lying areas	High percentage of clay in surface and sub-surface soils	Dry, south-facing slopes
High percentage of shortleaf and/or loblolly pine in the stand	High percentage of shortleaf pine in the stand	High percentage of shortleaf and/or pitch pine in the stand

Texas System

1. To rate a pine stand for hazard to SPB using the Texas System, you need information

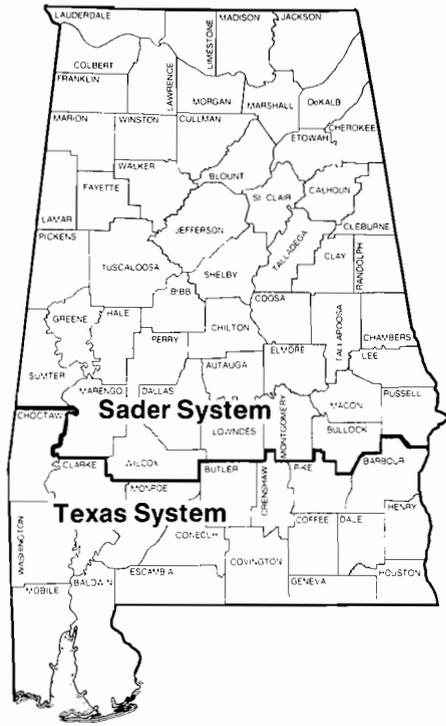


TABLE II. Hazard Rating

Pine Basal Area* (sq ft/acre)	RIDGE			OTHER TERRAIN			BOTTOM			HAZARD
	TREE HEIGHT* (feet)			TREE HEIGHT* (feet)			TREE HEIGHT* (feet)			
	less than 50	50-75	more than 75	less than 50	50-75	more than 75	less than 50	50-75	more than 75	
less than 80	low	low	low	low	low	low	low	low	med	HAZARD
80-120	low	low	med	low	med	med	med	med	high	
more than 120	low	med	med	med	high	high	med	high	high	
	TREE DIAMETER (inches)			TREE DIAMETER (inches)			TREE DIAMETER (inches)			
	less than 6	6-12	more than 12	less than 6	6-12	more than 12	less than 6	6-12	more than 12	

2. Determine if the landform is 1) a ridge, 2) upper 1/3, 3) middle 1/3, 4) lower 1/3 or bottom.

Sader Example:

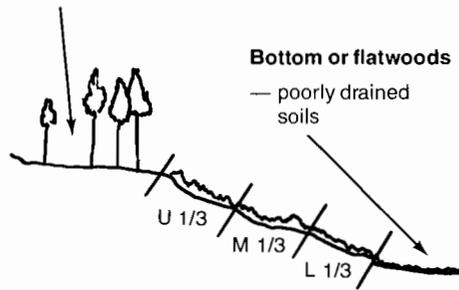
Your landform is a pine stand on the upper 1/3 slope with a basal area of 115 and an average diameter of 10.5 inches.

Go to the upper 1/3 line read across on the 81-119 BA to the 11.5-9.6 column and read under P-High.

Landform Descriptions

Ridge

— well drained soils



Bottom or flatwoods

— poorly drained soils

"1/3's" — sloping ground between ridge and bottom
— moderately drained soils

What "Hazard Rating" Means

The higher the hazard the more volume a landowner will lose if an infestation starts in that stand. In a low hazard you can expect to lose a very few trees if a spot starts; on the other hand, in a high hazard you can expect to lose a large number of trees. The hazard has little bearing on the probability of a spot starting.

Forest Management Guides To Reduce Hazard

To reduce the likelihood for future SPB attacks in pine stands rated as medium or high hazard, consult a trained forester for management advice. Depending on the nature of your stand and other considerations, he

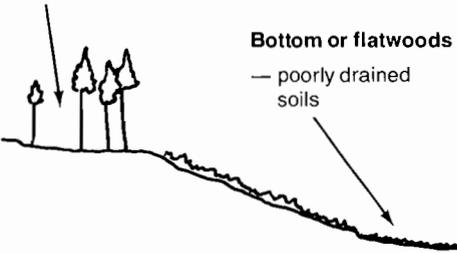
on landform, pine basal area and average tree height. (Average tree diameter may be substituted for height).

2. Determine if the landform is: 1) a ridge, 2) a bottom, or 3) other terrain (see landform descriptions).

Landform Descriptions

Ridge

— well drained soils



Bottom or flatwoods

— poorly drained soils

3. Select the appropriate hazard based on landform. Using basal area, pine or pine-hardwood, and diameter, read the category from the table.

Table III.—SPB Hazard Rating System

		11.5+DBH		11.5-9.6 DBH		9.6-5 DBH	
		P	P-H	P	P-H	P	P-H
Ridge	120+ BA	Very high	High	Very high	Moderate	Very high	Moderate
	81-119 BA	Very high	Moderate	High	Moderate	High	Low
	80- BA	Moderate	Very low	Moderate	Very low	Low	Very low
Up 1/3	120+ BA	Very high	Moderate	Very high	Moderate	High	Moderate
	81-119 BA	High	Moderate	High	Low	Moderate	Very low
	80- BA	Moderate	Very low	Low	Very low	Very low	Very low
M 1/3	120+ BA	High	Moderate	Moderate	Low	Moderate	Very low
	81-119 BA	Moderate	Very low	Moderate	Very low	Low	Very low
	80- BA	Very low	Very low	Very low	Very low	Very low	Very low
Low 1/3	120+ BA	Moderate	Low	Moderate	Very low	Moderate	Very low
	81-119 BA	Moderate	Very low	Low	Very low	Low	Very low
	80- BA	Very low	Very low	Very low	Very low	Very low	Very low
Bottom	120+ BA	Moderate	Low	Moderate	Very low	Moderate	Very low
	81-119 BA	Moderate	Very low	Low	Very low	Low	Very low
	80- BA	Low	Very low	Very low	Very low	Very low	Very low

Other terrain
— sloping ground between ridge and bottom
— moderately drained soils
— also includes all terrain other than ridge or bottom

3. Select the appropriate hazard table based on landform. Using average pine basal area and tree height (or diameter), read the hazard category from the table.

Sader System

1. To rate a pine stand for hazard to SPB using the Sader system, you will need information on landform, pine basal area, species composition and average tree diameter.

HAZARD RATING^{continued}

may recommend one or more of the following actions:

1. Thin to reduce the pine density to basal areas of 70-100 square feet/acre (see below).

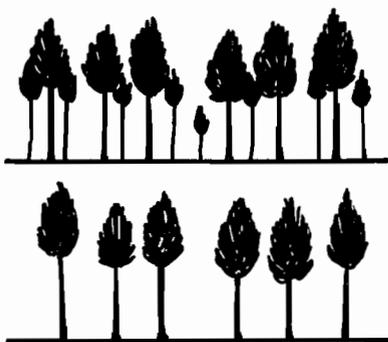


Figure 1—Low thinning will remove small, slow-growing trees that are susceptible to SPB attack (top). Healthy dominant and codominant trees should be favored as crop trees (bottom).

This will promote rapid tree growth as well as resistance to beetles. High-hazard stands are characterized by dense stocking and slow radial growth. Thinning will stimulate growth and vigor in young stands and reduce the likelihood of future losses from the SPB. Low thinning or “thinning from below” is recommended to reduce competition and remove slow-growing trees which are most subject to SPB attack (FIG. 1). The poorer crown classes—suppressed and intermediate trees—are cut first. Dominant and codominant trees with large live crown ratios and desirable phenotypic traits should be favored as crop trees. They are most likely to respond to thinning and to provide the greatest number of silvicultural options in the management of residual stands.

Thinning schedules depend on the close relationships between site quality, stand age, stocking, live crown ratio of individual trees, and growth rate. Root and crown competition among individual trees develop at ages 10 to 15 years on most sites. Crowding can occur earlier than age 10 on better-quality sites that contain a large number of trees. Initial thinning should be scheduled before live crown ratios drop to 40 percent. Delay will reduce stand vigor to levels unfavorable for growth but attractive to the SPB.

Degree of thinning is determined by the intensity of management, the kind of product desired, available markets, and natural conditions particular to each location. Depending on site quality, basal areas of 70 to 100 square feet to the acre are recommended to reduce the potential for SPB attacks. The risk of beetle attack in most instances will increase considerably when stocking levels exceed 100 square feet to the acre. Wide spacings distribute growth on fewer stems, resulting in the production of small sawlogs by age 35 to 40 years on good sites. Close

spacings are recommended for high yields of wood fiber. Thinnings should be scheduled as needed to maintain desired stocking levels and stand vigor.

2. Harvest and regenerate overmature stands. Susceptibility of trees to SPB attack increases with age. Mature and overmature trees usually have slower radial growth, flat-topped crowns, and sparse foliage. These trees seldom respond to intermediate cuttings and should be replaced with the most resistant host species or a species mix suited to the area.

Many overmature pine stands throughout the South are being intentionally preserved for ecological, wildlife, or aesthetic reasons. These stands are extremely susceptible to attack and should be monitored regularly to detect the build-up of SPB populations early when remedial action can save the pine component.

3. Conduct a prescribed burn to reduce plant competition. Prescribed burning should be considered as a pest management practice. Burning can be used to eliminate suppressed high-hazard trees from overstocked stands. Stand vigor will be further increased by reducing competition from understory hardwoods and vegetation. Prescribed burning before and after thinning also reduces severity of annosus root rot in the South. Controlled use of fire does not increase SPB activity; it can be a useful tool in reducing losses from pests.

4. When practical, remove high-hazard trees preferred by beetles—those damaged by lightning, ice, logging, or other pests. Every stand has some damaged or weakened trees that are highly susceptible to SPB attack. This damage can result from lightning, logging, ice, or other destructive agents. Injured trees may also attract the black turpentine beetle, and *Ips* species. Susceptibility is greatest immediately following damage and tends to decline with time. Salvage cutting to remove severely damaged trees should be completed as soon as possible.

Extreme drought or flooding increases the probability of SPB attack in stands. There is little the forester can do to prevent these conditions, but losses may be minimized through frequent aerial detection flights over high-hazard stands during periods of extreme climatic stress. Infestations that do occur in these areas should be treated using approved control procedures.

5. Favor mixed stands of pine and hardwood, rather than pure pine. The SPB prefers pure pine stands. A mixture of pine and hardwood species reduces the potential for spot incidence and growth. Stands composed of pines and hardwoods may be suited to owners of nonindustrial woodlands and

who are managing for products other than or in addition to timber; such stands often support diverse wildlife populations, are aesthetically pleasing, and contribute to soil improvement. However, intensive forest management is required to obtain and maintain the mixed species composition best suited for a given location.

Disease Interaction

Stands should be managed to prevent or reduce losses from all disease and insect pests. Studies have shown a close association between annosus root rot and SPB attack. Precautions should be taken to reduce the danger of annosus infection. When planning intermediate cutting to remove high-hazard SPB trees or to promote stand vigor, annosus root rot should be taken into consideration. For information concerning annosus and its prevention and control refer to the article in Alabama's Treasured Forests, Vol. 1, No. 1.

Stands with littleleaf disease are generally high-hazard SPB areas. “Locus” trees—those first attacked and preferred by the SPB—are often dominant and codominant shortleaf pine trees with large live crown ratios and root systems in incipient stages of decline. Trees in advanced stages of littleleaf decline are seldom killed by the SPB. Sanitation cuttings are recommended to utilize both diseased and SPB-attacked trees. Stands should be regenerated before they reach advanced stages of decline, usually between the ages of 30 and 40. Loblolly pine is not as susceptible to littleleaf disease as shortleaf pine and should be favored when regenerating stands.

Planning and Application

The risk of SPB attack and rapid spot growth is lowest when insect populations are down. This is the best time to plan and implement silvicultural treatments related to pest management. Mill quotas are not filled with salvage wood, and operators are available to conduct intermediate cuttings. The “reservoir” of SPB-infested and high-hazard trees is removed, and more growing space is provided for residual trees. High-hazard stands can be identified and treated to reduce their susceptibility to beetle attack and the potential for spot growth in a future outbreak. Low-hazard stands can be tended to maintain vigor and rapid growth. Stands and forests that are highly resistant to SPB attack should be a primary objective of management. Prevention silviculture offers the most practical and long-lasting means of achieving this goal. In short, good forest management is good pest management! ♣

Observing Squirrel Signs in the Forest Habitat

By CHESTER E. BILLIE, JR., WILDLIFE SPECIALIST

TREE SQUIRRELS HAVE BEEN some of the most popular game species since colonial times. The two most important species are the gray squirrel and the fox squirrel. Other common names for these species are the cat squirrel and red squirrel. They are true rodents, belonging to the order *Rodentia*, having two upper and two lower incisors as well as a wide space between the front incisors and premolars.

The gray and fox squirrel are closely related, with similar traits and life needs. However, the two have several differences that distinguish them physically. Gray squirrel pelage is usually gray in color, but may be melanistic (black) or albino (white). The pelage of the fox squirrel is usually reddish or rusty, but may also be melanistic or albino. The hair on a gray squirrel's tail is white tipped, whereas the hair on the tail of a fox squirrel is rusty tipped. Adult gray squirrels average about one pound (0.45 kg) in weight, whereas fox squirrels weigh from one and a half to two pounds (0.67 to 0.9 kg). Gray squirrels have a body length of eight to ten inches (20 to 25 cm) and a tail length of seven and a half to ten inches (19 to 25 cm). Fox squirrels have a body length of ten to fifteen inches (25 to 38 cm) and a tail length of nine to fourteen inches (23 to 36 cm).

The food habits of gray and fox squirrels are similar, as they like the same things and seek them in the same way. They are omnivorous feeders, eating a variety of items, both animal and plant. Principal late fall and winter foods are nuts, particularly hickory, pecan, walnut, and oak. Of the oaks, the white oak group is preferred rather than the bitter red oak, which contains tannin. In times of emergency, squirrels may take buds, insect larvae, roots, and tree bark. The main springtime foods include stored nuts, buds, leaves fungi, and insect larvae.

Squirrel presence can be readily seen by signs of feeding activity. Since these animals

frequently feed on mast while sitting on the lower limbs of trees, evidence of mast remnants will often be found at the base of trees or under the canopies. The repeated use of the same limbs by squirrels as feeding perches day after day will result in concentrations of broken pieces of hickory nuts, acorns, pine seeds, beech nuts, dogwood drupes, or other mast remnants on the ground. If such signs are abundant during food production seasons, there is likely a good squirrel population in the area.

Other favorite squirrel feeding areas that can be easily observed are stumps, downed logs, or rocks. These elevated places are selected so squirrels can observe the surrounding area for possible danger while feeding. Mast remnants or broken pieces will usually be concentrated on these objects during and for a considerable time after the mast producing season.

In addition to mast, squirrels feed seasonally on buds, flowers, and occasionally on tree bark. For example, in springtime, pieces of yellow poplar flowers can be seen under canopies whenever squirrels are present. Buds of several species of oak, red maple, and beech are eaten from late winter on into the summer. Squirrels sometimes eat the bark of selected trees. This is evidenced by complete debarking down to the cambium on portions of trunks and limbs.

Tree cavities or nests are essential for good squirrel habitat. Cavities are holes in trees located usually 15 or more feet (4.5 m) above the ground level. Entrance holes are from two and a half to three inches (6.4 to 7.7 cm) in diameter and the cavity depth is 14 to 15 inches (36 to 38 cm). Cavities may start from limb scars or knots which allow the entrance of decay into the tree. Squirrels begin helping the process of decay by gnawing at the bark around these small decayed openings until an entrance hole is made into the bole of the tree. This process may take from a few months

to several years. Cavity construction can easily be detected by fresh gnawing signs and/or new bark growth. This same sign is seen in maintenance activity of cavity entrances as squirrels attempt to keep new bark and wood growth from closing the entrance. Cavities may be found in a variety of hardwood trees species but seldom will they be found in stands or individual trees under 30 to 35 years old.

Leaf nests are variable in size and shape but average 12 to 14 inches (30 to 36 cm) in diameter. Nest interiors are usually constructed of shredded leaves and strips of bark. Easy-to-strip trees will often show signs of bark removal for nest construction. Exteriors are composed mainly of twigs and leaves. Nests are usually a minimum of 15 feet (4.5 m) above ground level and are often found in a crotch or limb fork next to the tree trunk. Live vines are often used to help anchor the nests in contrast to tree age and diameter for cavities. Nests may be found in a wide variety of conifer and hardwood species from four inches (10 cm) and larger in diameter.

Although leaf nests verify the presence of squirrels in an area, a count of nests alone is not a good indication of squirrel population. Some nests may be abandoned and others may be constructed by young squirrels that do not yet have the capability to reproduce. Well-constructed nests may last from one to three years, but most begin to disintegrate into a shapeless mass of twigs and leaves if not maintained.

Squirrels are very adept at hiding from persons walking through their habitat. However, their presence may be detected by hearing the squirrels' audible calls. These sounds vary from a low pitched mewling sound to a squeal and bark. Those nearest the observer will not usually call as loudly or frequently as those some distance from the observer. The calls are most audible in the early morning and late afternoon. ♣



EDITOR'S UNDERSTORY

Cynthia Page

LONG FALL SHADOWS creeping toward the summit probably made the big white house perched on the hill take on a familiar appearance. In fact, from the hollow the scene before us reminded me of the opening shots from "The Waltons."

The yellow gravel driveway simply magnified the other autumn colors all of which were complimented by the slate gray fencing and barnboards of the equipment sheds. Common rural working implements were stored inside, and a pulpwood truck sitting in the middle of the yard declared that today would be a working day.

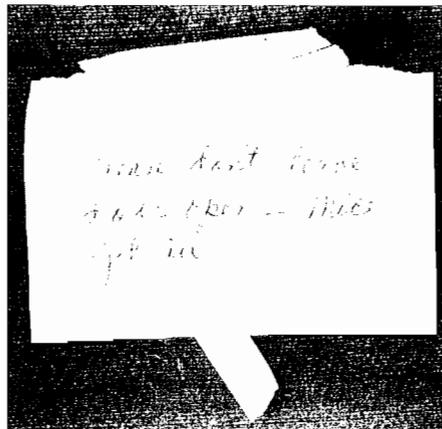
The rambling house had a familiar air about it—a definite "lived-in" appearance. Outside, a pear tree laden with ripe fruit lowered its boughs to within a fingertip's reach. Everything affirmed my thoughts that children had played here, laughter had been heard here, and memories had been made here, too.

As Boyd Batchelor came to greet us in the driveway, I was almost certain that John Walton himself was approaching. Batchelor extended his large hand. The handshake, firm but not overpowering, indicated that we were indeed welcome.

Now here was an honest to goodness real person, nothing pretend was apparent as he stood before us with plaid shirt opened and slightly disheveled. It only emphasized what I'd already gathered—a lot of HARD work went on around here! His graying hair was a little windblown and his broad smile added a warmth to his greeting that can only be felt when sincere.

As we entered the house, immediate apologies were expressed for Mrs. Batchelor's absence (it was beauty parlor day) and the disorder of our surroundings. This, of course, is only a customary gesture in the South, and obviously the house was not disorderly.

Being a good host (or well trained), Mr.



Batchelor offered coffee to the group, and we settled down to a large rectangular table in the middle of the dining room. His dialog showed that he was proud of his accomplishments. He and Mrs. Batchelor had both been educators and had maintained two households during the time that they taught. This proved that their hearts had never really left this place.

Mrs. Batchelor (Sue) soon returned home.



(Of course, apologies were again in order.) She, too, greeted our company with a sincere welcome. Her freshly styled black hair framed a lovely face, covered with only a slight amount of makeup. Small things can tell so much about a person, and her loveliness was enhanced by her simplicity, right down to the only piece of jewelry she wore—a small gold wedding band.

Soon I was convinced that my suspicions were correct about the memories made here. Sue had grown up in this house, and she and Boyd had taught their three boys to appreciate the outdoors here. From an early age, they had all been a part of tree plantings, logging, and cattle grazing. Each grew up to demonstrate this through achievements in F.F.A. proficiency areas.

Batchelor speaks affectionately of his boys' accomplishments, and rightfully accepts that he and his wife played a dominant role in their developing a love for nature. There are still annual family tree plantings and firewood cuttings. Only now, there are grandchildren who climb the pear tree and fill the house with laughter.

Mr. and Mrs. Batchelor both have provided leadership and direction to our youth. They did it with their own children and with others. How often do we find people who feel an obligation to make such a contribution?

Mr. Batchelor said, "We're too old to make too many mistakes. What we do has to pay off." So they make the best of the time they have. I ran across one of Longfellow's poems which probably describes the Batchelors' philosophy:

Let us then be up and doing,
With a heart for any fate;
Still achieving, still pursuing,
Learn to labor and to wait.

Families such as this are hard to find, except perhaps in a television series. ♣

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