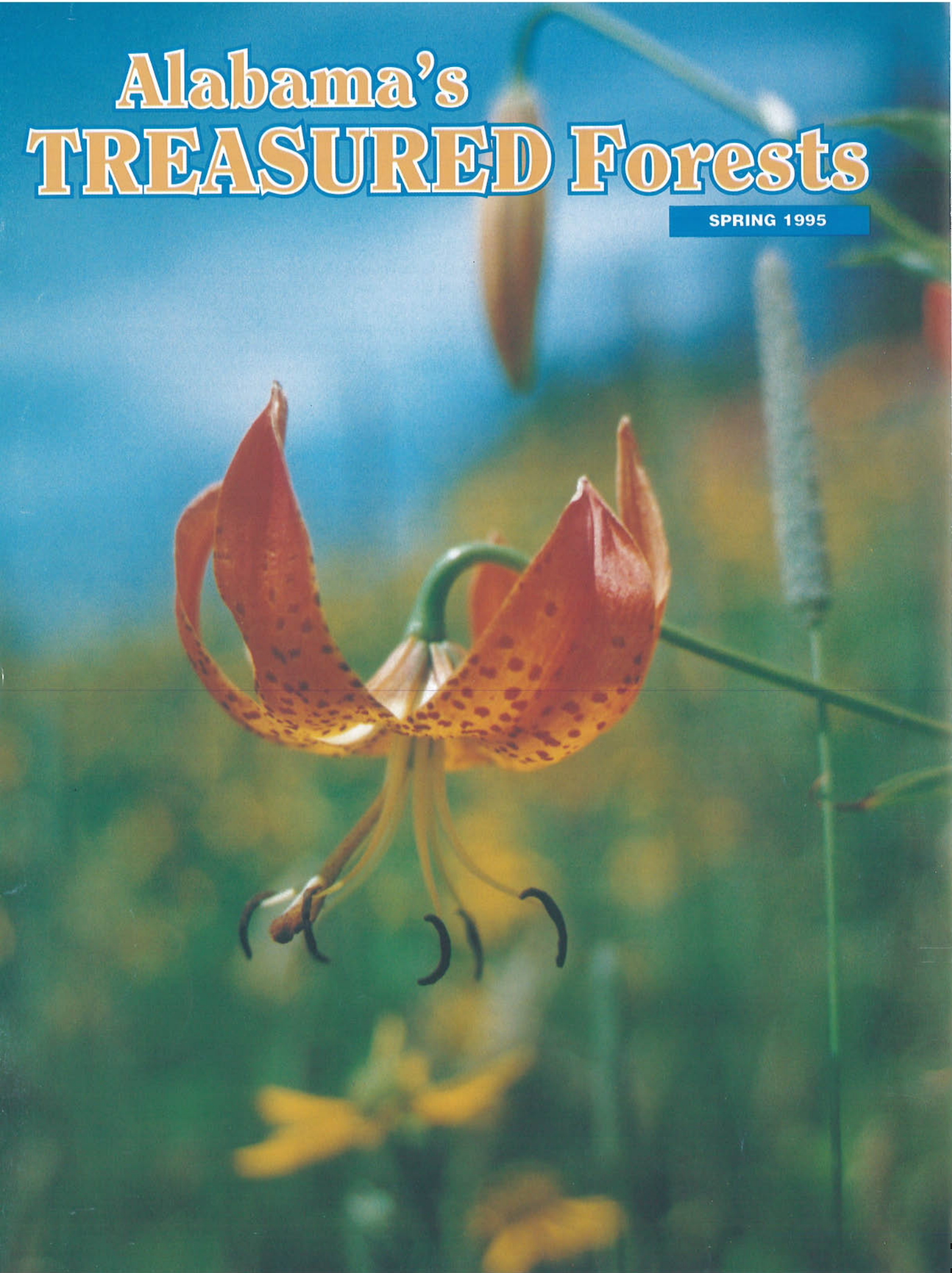
Alabama's TREASURED Forests

SPRING 1995



STATE FORESTER'S MESSAGE

by TIMOTHY C. BOYCE, State Forester

The Alabama Forestry Commission is unique in that it is one of the few state agencies governed by a board of commissioners appointed by the governor. Of the seven-member board, at least two members must be licensed and registered foresters, and at least three members must be forest landowners.

For the first time in the 25-year history of the Alabama Forestry Commission, we held a Commission meeting on the campus of Auburn University. A reception and dinner were hosted by the School of Forestry and attended by our commissioners, Auburn University President William V. Muse; Dr. Paul Parks, provost; Dr. Mike Moriarty, associate provost and vice president for research; Dr. John Pritchett, interim associate vice president for academic affairs and dean of Graduate School; faculty of the School of Forestry; and Forestry Commission staff. This gave the commissioners an opportunity to learn more about Auburn's curriculum relating both to forestry and wildlife.

Since its creation in 1969, the Commission has had an excellent partnership with Auburn University's School of Forestry in areas such as technical transfer to landowners, especially in the cooperative (co-op) and continuing education programs for foresters.

The undergraduate forestry program at Auburn University ensures that foresters are prepared to contribute to the natural resource community; the co-op program provides an opportunity for qualifying Commission employees to earn a forestry degree in order to better serve landowners through technical assistance and education; and the continuing education program allows professional foresters to stay current on new technology and research with regard to forest resource management.

We can all be proud of the excellent faculty at the School of Forestry and the leadership provided by Dean Emmett Thompson and Associate Dean George Bengtson. This leadership is exemplified through the school's ongoing teaching and research both at the Auburn campus and at the Solon Dixon Forestry Education Center in Andalusia. The nursery co-op program, herbicide co-op program, longleaf pine alliance, continuing education program, and the Forest Products Development Center are only a few of the outstanding programs that ultimately have a positive effect on private landowners.

No doubt as we are challenged by the many opportunities and issues facing forestry today, the School of Forestry will continue playing an important role in our joint success in making Alabama better for people through forestry.

Sincerely,

Timothy C. Boyce
State Forester

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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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Alabama's TREASURED Forests

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COVER: Turk's Cap Lily (*Lilium superbum* L.) For more on wildflowers in Alabama, see pages 28-30. Photo by Coleen Vansant.

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A TREASURE Teaches Lessons

by SARA B. BALDWIN, Ph.D., R.F.

The definition of stewardship is complex, and draws on several abstractions: responsibility, accountability, service, partnership. We live each of these in managing our family's 2,254-acre TREASURE of a forest. We choose among different management opportunities, seeking alternatives that are compatible with each other and with our goals. At the same time, we try to minimize the risk of losing this magnificent resource, protecting the interests of nine family members who co-own it.

Our goals are simple: 1) to provide income from timber production, 2) to enhance wildlife habitat, and 3) to provide for outdoor recreation and educational opportunities. But combining these goals is like a puzzle. Managing for full multiple-use benefits, working with the land's natural capabilities, creating diversity, and protecting it for the long term, is a fascinating challenge that teaches us about the meaning of stewardship.

Our timber management is the key to the puzzle. The timber stands we distribute around the property affect how much timber income we produce, how much wildlife we can support, and how appealing the place looks to visitors.

Timber Management

In some ways, our timber management reflects natural conditions. Our land is rugged and rocky. There are some steep slopes and many natural springs, branches, and streams. We also have frontage along scenic Hatchet Creek. Timber in these in operably steep areas, broad stream zones, and a buffer zone along the creek is "managed" by keeping our hands off. We let nature take her course here and concentrate timber production on more appropriate sites.

In other ways, our timber management responds to conditions left by prior owners. When Doug began work here in the early 1980s, some areas contained old fields planted in pines, some supported young plantations, and much of the land was in natural pine and hardwood mixtures. Unfortunately, many of the natural stands had been high-graded. The former areas are our pine producers: mature sawtimber stands have been clearcut and regenerated in pines, and the young plantations have been thinned to concentrate growth on the best sawtimber quality trees. The natural stands provide options; poorly stocked areas are being converted to pine production; the more vigorous mixed stands are thinned to promote sawtimber growth; and in some areas we plan to remove the pines, gums, and poplars in favor of oaks.

Each timber sale is planned individually. Our sale boundaries often follow the land contours; we use natural stand boundaries and keep away from stream zones. This always results in irregularly-shaped clearcuts that seem to drive timber buyers crazy. However, we use plenty of paint to help keep them from getting lost.

We have experimented with different regeneration methods. We choose among leaving seed trees, direct seeding, and mechanical or chemical site preparation followed by planting. Our choice is based on the existing stand conditions and our future plans for the site.

Thinnings work toward stand improvement; they give us a chance to use low quality trees and produce some income during the long time required to produce high-quality sawtimber stands. We mark the trees for removal ourselves. We also work with loggers who have small-scale equipment to minimize damage to the remaining stand.

Wildlife Management

Like the intertwined pieces of a puzzle, our timber management is an integral part of our wildlife management and vice-versa. The long-term result of our timber management program will be a mosaic of different stand types and ages. This will provide habitat diversity to support many game and non-game species.

Clearcut openings provide small plant foods and insects. Young pine stands provide cover. Hardwood slopes, ridges and stream zones provide mast trees and travel corridors. The irregularly-shaped stand boundaries provide edge habitat, while the long sawtimber rotations allow mature stands to develop, which favor commercially important deer and turkey populations.

Wildlife also benefits when we thin and prescribe burn stands. Thinning allows more light to reach the forest floor, stimulating plant growth. Burning reduces brushy understories in favor of grasses and annual plants; it also increases the level of nutrients in plants. Each of these is a way of providing wildlife more of their natural foods.

We also plant food plots for winter feed. The mixtures of wheat, oats, rye, and clover make little green islands in the drab winter landscape. They are also good spots for seeing wildlife year-round. Because there is so much natural food on the property, I sometimes feel the food plots are mainly for people—especially hunters. But when I see how heavily grazed they are by January and February, I'm glad we have plots; they give the deer an alternative to eating our young pine seedlings.

Recreation Management

Our timber management also provides one key to our recreation management. Although clearcuts aren't pretty, we are often able to hide them in hilly terrain. However, the young stands provide open views, and the irregular shapes and mixtures of stands are pleasing to the eye. Because we have a diverse forest, visitors see lots of different forests as they hike, ride, or drive around.

And the forest is always changing. It is fun to hear family members reminisce about the watermelon patch in front of the cabin; it is a sawtimber stand now that has been thinned twice. Although we don't disturb Hatchet Creek's banks, the creek is always re-arranging islands and sand bars that we discover when we canoe, fish, or swim with friends.

Diversity of stands, like these hardwoods next to young pines, is what helps make this TREASURE Forest something special.

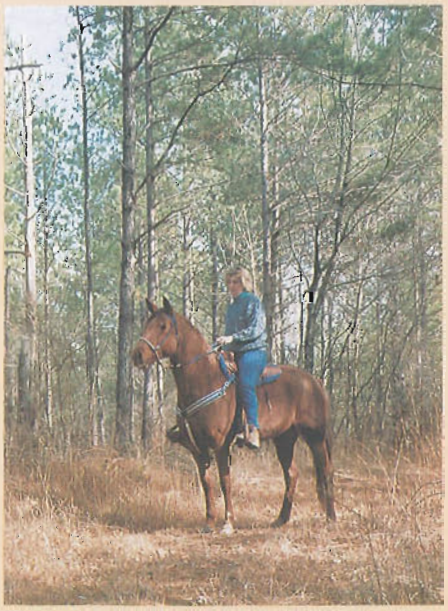
A lot of work has gone into trail maintenance and stream crossings like this one.

The other key to our recreation management is our trail system. The trail system started shortly after we moved to the property in 1991. Doug worked with the Rockford Men's Club to prepare trails for a motorcycle enduro, a community fund-raiser. He used old fire lines and old farm lanes and connected portions of our woods roads. We were delighted with the improved access—we were able to visit portions of the property we had never seen before.

The trail system grew. We added bits and pieces to total 25-30 miles by 1994. Clearing new trails is hard work, but worth it because they get a lot of use—hikers, mountain bikers, and especially horse riders. Often we are able to get 60 or more riders at a time out enjoying the forest. Maybe they'll learn a little about stewardship along the way.

This management scheme has taught us about forestry. Both Doug and I have studied a lot, but neither of us has seen a prescription for this in any textbook. Rather, managing a TREASURE Forest has taught us how to put things together—how to fit pieces of timber, wildlife, and recreation into a multiple-use puzzle.

It has also taught us a lot about being people. It has taught us to be patient, and given us the will to leave things alone. It has brought us to a closer partnership with each other as well as with the land. We are accountable to our other family members but, most of all, responsible for seeing that our actions now will serve the land's future productivity. Responsibility, accountability, service, partnership—our TREASURE forest has helped us bring the abstract meaning of stewardship to life.



Sara not only enjoys horseback riding, but has turned this recreational activity into a small business.

Editor's Understory

by KIM GILLILAND, Editor

The Alabama environmental license plate reads "QUERCS." It's the first clue that the drivers of this vehicle are serious about forestry. Sara Baldwin and Doug McConnell are both foresters who manage the McConnell family's TREASURE Forest in Coosa County. The property was honored with the Helene Mosley Award for the best TREASURE Forest in the state in 1994.

The property has been in Doug's family for two generations. Growing up in Birmingham allowed him to travel the short distance to the property on a regular basis and spurred his interest in forestry. That interest eventually led him to the University of the South and then to Duke University, where he met Sara. They were married in August 1983. Doug ultimately finished his education at the University of Idaho, where he acquired a Ph.D. in forestry; Sara later followed with a Ph.D. at Clemson University.

The couple moved to Rockford three years ago and began managing the 2,254 acres. There are actually nine family members who have ownership in the property. Doug and Sara were elected to manage the property since they not only have forestry backgrounds, but a strong interest in stewardship. "It's a responsibility to the rest of the family that we take quite seriously," said Sara.

When they first moved to Rockford, both immediately got involved in community activities. They became members of the Coosa County Forestry Planning Committee and volunteered with Boy Scouts and the County Industrial Development Board. Sara also volunteered when the *Coosa County News* began publication in 1992, and has written articles for the newspaper. A recent article focused on the history of the Coosa County Charcoal Plant, which Doug's grandfather helped to start. At its peak, the plant could produce 60-80 tons of charcoal a month for nine months out of the year. The plant closed in 1964, but the brick kilns remain on the McConnell property as a reminder of days gone by.

Sara Baldwin and Doug McConnell

Both Sara and Doug have a love for horses that has turned into a profit-making venture. They conduct trail rides on the property six months out of the year. What started as a word-of-mouth venture has now grown into a full-fledged business. Sara maintains a mailing list of over 150 people, and inquiries about the rides come in every week. Much time and effort have been spent clearing trails, and there is constant maintenance taking place, especially at stream crossings. Groups ride in the morning while Doug cooks lunch, and Sara usually follows the riders to ensure that safety procedures are followed and that no one gets lost. They also enjoy hosting family members who like to enjoy the recreational opportunities available.

Sara, who is a native of Virginia, grew up in a paper mill town where forestry was of great economic importance. She knew early on that she wanted to be a scholar and a scientist in the forestry profession. Living in rural Coosa County had drawbacks, though, and Sara and Doug both felt they had distanced themselves from the profession in some ways.

Doug's heart is in teaching forestry, which proved difficult a small town like Rockford. So teaching has led them away from Coosa County to Grenada, Mississippi. Doug is now teaching at Holmes Community College, and Sara is living there a portion of the time as well. Currently she has a part-time job in Grenada with the Alabama-based consulting firm, Resource Management Services.

A caretaker has been hired to feed their four horses and look out for the place while they're gone, and the McConnell's still plan to keep their trail-riding business going. In addition, they will continue to be active members of the TREASURE Forest Landowners Association. Sara is helping the organization start a newsletter.

Technically they may be absentee landowners once again, but Sara and Doug know where their hearts are—at a TREASURE Forest in Coosa County.

Brick kilns from the charcoal plant are now overgrown with vines.

Public Protected by Foresters' Licensing Law

by WILBUR B. DEVALL, Registered Forester, Professor Emeritus—Forester, Auburn University

During the latter part of the 1940s, small, circular sawmills in Alabama began advertising "CALL OUR FORESTER" if you had sawlog timber to sell. The public did not realize that "log buyers" were being given the title "forester" apparently for the purpose of instilling confidence in the public that the buyer would offer top prices for stumpage. This situation prompted professional foresters to think seriously about defining the status of the title "forester" to prevent non-professionals from using it to mislead the public.

In 1950, the Alabama Chapter of the Society of American Foresters discussed the pros and cons of developing a registration law for the profession of forestry. Three years later, the same group, under the chairmanship of Extension Forester Ivan R. Martin, voted to appoint a committee to draft legislation for the registration and licensing of foresters. Members accepting the assignment were R. Vance Miles, Jr., John M. Bradley, Jr., Glenn Antonie, William R. Sizemore, Billy Silcocks and C.H. Schaeffer. Prior to this action and beginning in the late 1940s, legislation of this type was being prepared and discussed in Alabama by Dr. T.D. Stevens, Head, Department of Forestry, Alabama Polytechnic Institute and a faculty member, Dr. Harold E. "Chris" Christen. Others included some of the members of the SAF committee. Foresters in Georgia took advantage of the early work accomplished in Alabama. In 1951 a similar law was enacted by the Georgia Assembly with wording almost identical to that being proposed in Alabama.

Act 533, 1957 Alabama Legislature, was passed in the regular session and became law during the year when signed by then Governor James E. Folsom. Following appointments to the Board by Governor Folsom, the five foresters met on January 27, 1958, for the purpose of organization. Present were Wilbur B. DeVall, elected chairman, R. Vance Miles, Jr., elected vice chairman, Jacob M. Stauffer, elected secretary, and members John T. Mitchell and C.T. "Cap" Prout.

Act 533 was passed "**in order to protect the public**" as set forth in it. This Act became known in the revised Code of Alabama, 1975, as CHAPTER 12 - FORESTERS. The original statement of intent is found in Section 34-12-2. The organic act further defined use of the title FORESTER and the PRACTICE OF FORESTRY. These two definitions are in use today by the Board and are the basis of most reports of violations. Unless exempted as provided, no person shall: 1) use the title FORESTER unless registered by the Board, 2) PRACTICE OR OFFER TO PRACTICE forestry as defined, or 3) use in connection with his name, advertise, assume or imply by title or description tending to convey the impression that he is a forester, unless licensed. These legal restrictions do not limit an individual from practicing another profession, practicing forestry on land of his employer or self-owned properties, doing forestry work under the "direct" supervision of a registered forester, or carrying out forestry practices on federal or state lands when employed as a federal or state agency respectively. Finally, a forester is exempt when his position is strictly "educational" and he is carrying out assignments while employed by a university, state or federal agency for educational purposes.

Protection of the public remains the legal intent of the law as it is administered in 1995. The goal can only be achieved when violations are reported to the Board in documented form. Violations are specified in the law as any act including: 1) practicing without a license, 2) using the title "forester" in connection with his name in any manner that will create the impression that he is licensed when he is not, 3) using the license of another, 4) giving false or forged evidence in an attempt to become licensed, or 5) using an expired or revoked license.

Enforcement

Most citizens realize that "ignorance of the law" is not an excuse for violating it. Therefore, it becomes the responsibility of the State Board of Registration, consisting of five registered foresters, whose names were submitted by the Society of American Foresters, Alabama Division, and appointed by the governor, to administer the law under all amendments, bylaws established by the Board rules coded under the Administrative Procedures Act, and motions passed by the Board.

The 1975 Code of Alabama, Chapter 12 - FORESTERS, gives the Board certain administrative-enforcement dictates and powers. For example, "All duly constituted officers of the law in Alabama, or any political subdivision, have the duty to enforce the provisions of this law and to prosecute individuals for violating the law." Furthermore, the Board is required to discipline its licensees by adoption and collection of administrative fines. The license of a registered forester can be revoked when, by documentation, a registrant is found guilty of: 1) gross negligence, 2) incompetency, or 3) misconduct. The official minutes of the Board reveal that all of these actions have been taken in one or more cases during the 37-year period beginning in 1958.

Enforcement of the law has been accomplished by the Board as evidenced by seven Legislative Sunset Committee reports to the governor. It is important to both the public and registered foresters that the words and phrases in the statute be understood. When they are not, reports of violations may be made but not substantiated.

Professional services include consultation, investigation, evaluation, planning, or any combination of these acts. Responsible supervision means that a registered forester assumes responsibility for the work of another not licensed. Application of forestry principles has to be viewed in terms of the services previously set forth in this paragraph. The statute becomes broader in its application and enforcement when one realizes that registration and a valid license are

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Fertilized Japanese honeysuckle is an excellent deer forage and provides cover for quail, rabbits and other wildlife.

Managing Natural Food and Cover for Wildlife

by STANLEY D. STEWART, Wildlife Biologist, Alabama Department of Conservation and Natural Resources, Game and Fish Division

Often the first question asked by people wanting to manage a property for wildlife is, "What can I plant?" This, however, is seldom the appropriate first action that should be taken to improve a property for wildlife. A person who asks this question usually assumes that food availability is the only factor to consider in meeting the needs of wild animals. But, abundant potential food sources are often unused by wildlife because of a deficiency of certain kinds of cover. Both habitat components, food and cover, must be given equal consideration for effective wildlife management.

The first question to ask (much broader in scope) is, "What can I do to improve wildlife habitat?" This may eventually involve some planting to establish certain kinds of food and cover that are found to be deficient. But, the appropriate first action is to assess the condition of existing natural foods and cover, and begin practices to enhance them. This is the right management approach because improvement of existing habitat is more effective and cost efficient than establishing new food and cover plants. Plants that are already growing on the site can usually be manipulated into an arrangement that provides excellent habitat for desired wildlife. Management of natural food and cover can be done on an extensive scale to create high quality habitat throughout a tract of land rather than in a few isolated locations as is often the case with plantings. Not uncommonly, plants that produce foods also provide cover. So another positive aspect of managing natural food and cover is that management techniques often enhance both components at the same time, an ideal situation.

Pine forests that are periodically thinned and prescribed burned produce abundant natural food and cover for wildlife.

Management Techniques

Thinning

Because of Alabama's extensive forest, the best wildlife management practice in many situations is to remove some trees rather than to establish more trees for wildlife. Thinning deciduous and coniferous forest stands to open the forest canopy is an excellent means of improving wildlife habitat. Various heights of trees, shrubs and herbaceous plants grow in an open-canopied forest. This diversity of plant species and structure provides variety in cover types and food items that attracts and supports a wide range of wildlife. Numerous kinds of forage, seed bearing and soft mast producing plants as well as shrub covers will begin to grow

in a thinned stand. If you are a landowner, keep in mind that this practice does not cost you anything, but in fact, someone pays you to perform wildlife habitat improvement on your property.

Thinning for wildlife habitat improvement, however, differs from thinning for timber stand improvement only. Poor quality trees or undesirable species normally removed in a thinning operation may include some trees that should be saved for wildlife. For squirrels and cavity nesting birds, retain about five cavity trees per acre. Retain a similar number of snag (dead or dying) trees. Important mast trees such as beech, dogwood, and black cherry should not be removed. A mixture of mast bearing red and white oaks should also be retained. Thinning for wildlife purposes will generally be more intensive than thinning for timber production only. This is because an open canopy closes as crowns of remaining trees spread, and the heavier thin retains an open canopy for a longer time.

For most wildlife, thinning should be done at varying intensity within a stand to develop a "patchy" pattern of understory growth. Group selection cutting in which small groups of trees are removed can create canopy gaps that result in patchy vegetation patterns. This method is useful for regenerating important wildlife trees such as oaks that require sunlight to grow. Edge feathering is a technique of variable canopy removal along a forest edge to stimulate growth of wildlife food and cover plants. This practice involves removing 75 percent of the overstory trees from the first 50 feet along a forest edge, 50 percent from the next 50 feet, and 25 percent from the next 50 feet. The result of this is vegetation ranging from thick shrub along the edge to open understory farther into the stand.

Mast production in hardwood stands can be improved by thinning. If possible, observe acorn production over a two or three year period and mark trees that produce well. Remove surrounding overstory trees to allow selected mast trees to crown out and increase production. Maintain a balance of red and white oaks to ensure mast production in years when some species fail. Thinning should not be done around beech trees because they grow best in shade.

Pine forests provide quality wildlife habitat when thinned periodically. If plantations are thinned at early ages, preferably age five to seven, canopy closure can be prevented. Pine stands maintained at 60-80 square feet per acre basal area allow adequate deer and turkey habitat to develop. For quail, pines should be thinned and maintained at no more than 60 square feet per acre basal area. Longleaf pine is particularly favorable for quail because of its characteristic small crown that affords a more open canopy.

Prescribed Burning

Prescribed burning is an excellent technique for stimulating growth of food plants and manipulating cover for wildlife. It is relatively inexpensive and can affect habitat changes rapidly over a large area. Many animals need herbaceous plants, shrubs and sprouting or young trees as part of their habitats. Fire is very useful for creating these conditions. A prescribed burn for wildlife should create a mosaic of burned and unburned vegetation that maintains adequate cover while stimulating new plant growth. Fire is most effective in a forest with an open canopy that allows abundant growth of understory plants.

Burning should be performed in January-February, and in March as weather and habitat conditions permit, to prevent interfering with nesting seasons, killing new spring plant growth or removing seasonal cover and foods. Burning for quail habitat improvement should be completed by March 1 to prevent destruction of early sprouting legumes, which are important quail foods.

For white-tailed deer, burning should be performed on a three-year rotation to improve browse production in the form of herbaceous plants and low growing hardwood sprouts and shrubs. For wild turkey, burning should be performed on a three- to five-year rotation to maintain a relatively open understory with scattered clumps or patches of shrubby vegetation for use as nesting cover. Grassy savannas are ideal turkey brood habitat and periodic burning can maintain this kind of cover. Bobwhite quail prefer to nest in weed-grass cover that is one year old. Burning should be performed on a two-year rotation to maintain this habitat type. Burn units should be relatively small, around 40 acres. Burn adjacent units in sequential years. Keep fire out of protective cover such as plum thickets and overgrown home sites. Prescribed burning not only creates proper cover conditions for quail, it stimulates abundant growth of important food plants such as lespedezas, partridge peas and beggar weeds. Excluding fire from pine sites for five or more years greatly reduces habitat quality for many wildlife species.

Discing

Strip discing is a useful technique for disturbing the soil and stimulating new plant growth that produces food and eventually cover types needed by various wildlife. Discing can break up cover that is too thick, such as dense broomsedge, and allow beneficial food plants, such as legumes, to grow. Disced strips also serve as firebreaks to separate prescribed burning units or to minimize spread of wildfire.

Strips can be disced through overgrown fields and open woods from November through March to encourage growth of wildlife food plants during spring and summer. Species such as ragweed, lespedezas, partridge peas and other seed producing plants will volunteer. Strips should be at least 15 feet wide. Each year establish new strips adjacent to those of the previous year. After discing strips adjacent to each other for four years, return to the first strip and repeat the process. You will clearly see the difference in plant species growing in the various age strips. This is primarily a quail management technique, but other animals benefit as well.

Fertilization

Japanese honeysuckle is a choice food and cover plant utilized by a number of wildlife species. Its evergreen leaves provide year round forage for deer and rabbits. The seeds are eaten by quail, turkeys and other birds. Its growth habit also makes it excellent cover for quail, rabbits, deer, foxes and other animals. Fertilized honeysuckle patches have been shown to double forage production and produce more and higher quality food at a lower cost than many planted wildlife food plots.

Honeysuckle should be limed and fertilized according to soil analysis. The lime application is important for fertilization to work well. Patches should be fertilized in spring with nitrogen (ammonium nitrate) and again in summer and fall with ammonium nitrate and a complete fertilizer. Application rates will vary with

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Water Issues Facing Forestry in Alabama

by L. LOUIS HYMAN, Chief, Resources Planning

One of the big issues facing the forestry community in Alabama is water quality regulations. The impact of these regulations is higher in the Southeast than in other parts of the nation. This is because the Southeast has a heavy annual rainfall, as well as an extensive waterway network. It is estimated that 20 percent of all runoff in the U.S. flows through Mobile Bay. There are three main water quality issues facing the forestry community: water pollution, non-point source pollution and wetlands.

The Federal Clean Water Act is the basis for water quality regulation. This law was passed as part of the first Environmental Revolution of the 1960s and '70s. It was soon followed by the Alabama Water Pollution Control Act. These acts targeted industry at first, specifically pipeline effluents. Because they have been successful, we have had tremendous reductions in pollution loads and the water is getting cleaner.

The Dioxin Debate

An example of how the system works is The Dioxin Debate. Dioxin is a nasty chemical. It causes cancer and has been linked with birth defects and other health problems. Dioxin is produced from many sources, with the bulk of it (86 percent of emissions) coming from medical and municipal incinerators. Dioxin is also produced by cement kilns, diesel fuel use, wood burning, metal smelting and bleaching wood pulp.

The story begins in 1985, when new technology was developed that pushed dioxin detection levels to parts/QUADRILLION. The regulations followed the technology, so that we now have Alabama Department of Environmental Management (ADEM) regulations prohibiting dioxin levels above 0.27 parts per quadrillion (a level of 0.00000000000000027). In 1988, the Environmental Protection Agency (EPA) and ADEM found trace amounts of dioxin in bleached pulp effluent. Prior to this new technology, no one knew there was any dioxin there. Since 1988, the pulp industry spent over $1 billion to clean up the problem. Nationwide, pulp companies reduced consumption of chlorine by 34 percent between 1986 and 1992.

According to a report by National Council on Air and Stream Improvement, the total production of dioxin in 1993 from all pulp mills in the U.S. was ***3 ounces.*** This is a reduction of 92 percent from 1988. In 1993, 90 percent of mills have no measurable output. The Dioxin Debate is a success story. We found a problem we were not aware of, and then we cleaned it up.

Non-Point Source Pollution

According to the Environmental Protection Agency, we now need to shift focus from mill effluent to non-point sources of pollution (NPS). According to the 1992 Water Quality Inventory Report by EPA, industry was the source of only 10 percent of water quality problems in Alabama. The rest came from NPS. NPS is made up of runoff, sediment and transported chemicals. The Natural Resources Defense Council calls it "poisoned runoff," but analysis shows that three-quarters of the load is natural ingredients, mostly sediment. The 1992 EPA report showed that based on the amount of sediment, forestry activities produce 5 percent and agriculture produces 30 percent of the NPS pollution loads. When forestry is compared to all assessed rivers, silviculture impacts only between 1.8 and 2.0 percent of the water of the state.

The Clean Water Act works to control NPS pollution through what is called the Section 319 program. Section 319 believes in states rights; it specifically gives responsibility to control water pollution to state agencies, but retains approval by EPA of all final decisions. Section 319 does not require state regulations, but allows states to use any means to control NPS that fits the state's needs.

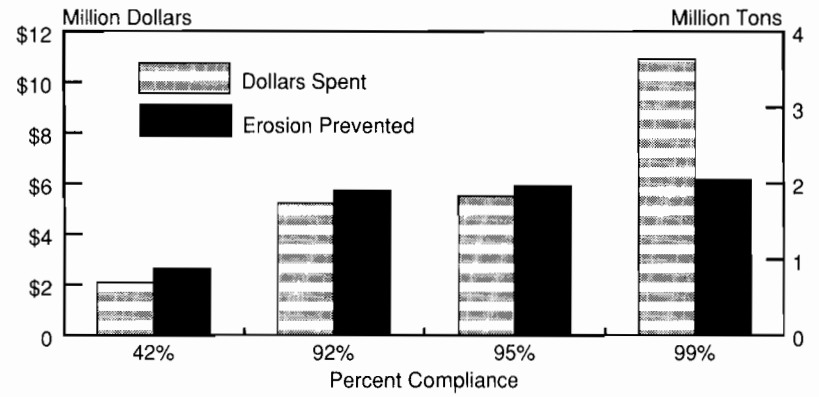
In Alabama, NPS pollution from silvicultural operations is managed using a Best Management Practices (BMP) system. The first set of BMPs in Alabama was written in 1972. They were redone in 1983, and a new updated version was developed in 1993. Alabama BMPs are guidelines that are designed to help landowners and loggers stay within the law on water pollution. This is done though suggestions on streamside management zones, erosion controls for roads, and wetlands rules.

While BMPs are "soft" rules, they have a hidden hammer, the ADEM Water Quality Regulations. If a person follows BMPs, he will probably not get any sediment into the stream, and will avoid all legal problems. If a person does not follow BMPs, there is a good chance that he will get sediment into the stream and thus violate the water quality regulations. When it is discovered that a logger is not following BMPs, the Alabama Forestry Commission (AFC) offers its help to show the logger and landowner how to fix the problem and restore the stream. If the logger refuses to follow BMPs and gets sediment in the creek, ADEM can begin enforcement proceedings. These actions may also trigger a lawsuit from EPA against the logger, the landowner and the procurement or consulting forester in charge of the timber sale. There have been cases in Alabama and Georgia where loggers and landowners have been fined for violating water quality standards by not following BMPs. The most recent case in central Georgia cost the logger $25,000 in fines.

BMPs have been accepted by landowners and loggers in Alabama. According to surveys by the AFC, 86 percent of inspected logging jobs in 1993 had adequate BMPs in place. In the 1994 survey, the AFC found a 92 compliance rate. This rate is better than many of our neighboring states. The highest compliance rate of any state was in California, which reported 98 percent compliance with their very comprehensive rules.

There has been some discussion about making BMPs mandatory through a forest practices act. A study by Virginia Polytechnic Institute (VPI) looked at the cost of such a program. The VPI study found that getting BMP compliance up to 92 percent was very cost effective, and that getting 95

Fig. 1 Cost/Benefit Analysis – Virginia BMP Compliance



Source: *Benefits and Costs of Forestry Best Management Practices in Virginia,* W.M. Aust, R.M. Shaffer and J.A. Burger, VPI, April, 1994

percent compliance also had acceptable costs. However, going for 99 percent compliance runs into greatly diminishing returns. The cost of the program nearly doubles, while the gain in water quality is barely 10 percent (Figure 1). The biggest portion of the increase in cost was for the government enforcement program, having to hire inspectors to look at every logging job. From a cost effectiveness point of view, targeting a 95 percent compliance, using a non-regulatory approach, may be the best option for Alabama.

The Alabama system of voluntary BMPs and ADEM regulations is working so well that they are being used by EPA as an example of the way for states to manage water quality in silvicultural activities.

Wetlands—Next Big Issue

The third thrust of the Clean Water Act is the protection of wetlands. This has also been a focus of confrontation and confusion. The first argument concerns what is a wetland. This delineation debate asks, how wet does a wetland have to be? Wetland regulations are administered by three federal agencies: the Army Corps of Engineers (ACE), EPA, and the USDI Fish and Wildlife Service (FWS). Each agency has developed its interpretation of what constitutes a wetland. In 1987, ACE published a manual that delineated wetlands based on vegetation, soil types and surface saturation. In 1989, EPA and FWS published their version that based delineation on vegetation, soils OR surface saturation. In response to the controversy that arose over the 1989 manual, the Bush administration published a third manual in 1991 that based delineation primarily on surface saturation. Under the Bush manual, about 50 percent of Alabama wetlands would be declassified. This book started another controversy which resulted in all the agencies being forced back to the 1987 ACE Manual on a temporary basis while the National Academy of Science studied the issue and develop a new manual.

Recently, an executive order was made to give the Natural Resources Conservation Service (formerly the SCS) the job of delineating agricultural wetlands, but not forestry wetlands. Forested wetlands still must be delineated by ACE.

The major problem is a perceived "loss of wetlands." On a national level, many wetlands were filled and converted to other uses, primarily urban growth and agriculture (especially prior to 1980). In Alabama, the more recent causes of wetland loss have been urban development and highway construction.

The basic regulation is any work in a wetland that creates "fill" or discharge of dredged material needs a permit from the ACE. The permit can require that the loss be mitigated by the creation of a new wetland nearby at the landowner's expense. According to the Competitive Enterprise Institute, Americans restored an estimated 167,000 acres of wetlands in 1994, while converting about 108,000 acres of wetlands to other uses. In other words, 1994 produced a net gain of wetlands across the U.S.

Normal forestry and agriculture are exempt from the wetland permitting rules, but any land use conversion needs a permit. This exemption has been the focus of many recent debates as well. In 1993, EPA issued what is known as the Tulloch Rule, which says that any land disturbance, by its nature, creates "fill" and thus requires a permit, even if no soil is dropped directly into water.

In what is called the Weyerhaeuser Case, a lawsuit still going on in North Carolina, EPA has determined that forest management of wetlands must keep the site in wetland species, which includes loblolly pine. BUT, clearing land (such as root raking and windrowing) as part of site preparation may need a ACE permit. Specifically, EPA suggested that if the site was a hardwood or mixed forest, and the site preparation is done to convert to growing pine, then a permit may be required. If the stand was a pine forest before harvest, then the landowner does not need a permit for site preparation. This proposed rule only applies to site preparation that includes soil movement. It would not apply to chemical site preparation, or shearing without windrowing. **This is still a proposal and has not been accepted by the court and is not yet law.**

A major discussion point today is the private property rights of swamp owners; specifically, when does denial of a permit become a taking of the property? The court has ruled that when the denial prevents any economic use of the land, the government has taken the property and must pay the landowner for it. But if the land still has some use (like growing hardwood timber), the government may not have to pay for denying a permit to build homes or a shopping center. These two issues are still open and will be debated in Congress later this year.

The New Clean Water Act

The Clean Water Act is due for reauthorization. This opportunity will renew debate on many issues discussed in this article and a few more. During the last session of Congress, eight separate bills were introduced to change the clean water rules. Some had common points, but many also contradicted each other. The starting point for much of the debate was a white paper published by the Clinton administration that contained their opinions on many issues.

One of the key issues in the debate was to require mandatory "management mea-

(Continued on page 12)

CALENDAR

May 17-19—Eufaula, AL. Eleventh Annual Alabama Urban Forestry Association Annual Meeting, featuring Dr. Alex L. Shigo as guest speaker. For more information contact Neil Letson at 334-240-9360.

June 8-9—Tuscaloosa, AL. "Estate Planning for Forest Landowners," an Auburn University short course. For more information call 334-844-1042.

June 21-23—Starkville, MS. Mississippi State University is offering a "Basic Forensic Workshop" for the wildlife professional. Intermediate course also offered. For more information contact Dr. Tommy Bonner at 601-325-8545.

July 24-28—Auburn, AL. "Timber Harvesting and Procurement," an Auburn University short course. For more information call 334-844-1042.

August 9-10—Auburn, AL. "Pest Management in Urban Forests," an Auburn University short course. For more information call 334-844-1042.

September 13-14—Auburn, AL. "Harvesting Operations in Wetlands," an Auburn University short course. For more information call 334-844-1042.

September 28-29—Birmingham, AL. Twelfth Annual Alabama Landowner and TREASURE Forest Conference. Indoor and outdoor sessions. More information and registration form in the summer issue of *Alabama's TREASURED Forests.*

October 18-19—Auburn, AL. "Forest Roads," an Auburn University short course. For more information call 334-844-1042.

Public Protected

Continued from page 7

required whenever a person, working as a forester, renders a service in which the "application, teaching, investigation or administration of forestry theories, principles, practices related to the environmental and economic use or biological understanding of gross areas of land are used and applied to support recommendations or to interpret data" for the public. The statute also makes it a violation, unless registered, for a person to direct or supervise persons engaged in the formulation or implementation of forestry practices—unless that person is exempt as described above.

As a forest landowner, you should be aware of the licensing law and know that it is there for your protection.

Managing Natural Food/Cover

Continued from page 9

soil conditions. An experimental plot at an Alabama Agricultural Experiment Station required 3.5 tons per acre lime and a spring (April) application of 136 pounds per acre nitrogen. Summer (June) and fall (September) applications were each 70 pounds nitrogen, 20 pounds phosphorous and 20 pounds potassium per acre in the form of 34-0-0 and 13-13-13 fertilizers.

Wildlife Corridors

Large agricultural fields and pastures normally receive very little use by wildlife except along edges. Tree and shrub corridors established through these areas will result in wildlife being present where little or none previously existed. Corridors can be created by breaking the ground to encourage new plant growth, then letting nature take its course. In pastures livestock will need to be excluded.

This is a situation where some planting is applicable. Corridors can be created quickly by planting 6 to 12 rows of pine trees on a wide (12 ft. x 12 ft.) spacing. Hardwoods can be planted too, but will grow slower. Scatter in a few soft mast trees like persimmon, mulberry, black cherry and plum along the edges. The wide spacing between trees allows natural vegetation to grow and an assortment of weeds, grasses, shrubs and trees will develop over time.

Conclusion

Naturally occurring trees, shrubs, vines, weeds and grasses form the bulk of wildlife food and cover plants. Habitat management should be focused on enhancing the arrangement and quality of natural food and cover because these have the greatest influence on the well-being of wild animals. Give natural food and cover management a try. Make it an ongoing endeavor and you will see the results.

Water Issues

Continued from page 11

sures" for all NPS activities, including forestry. These management measures are regulatory best management practices that would be enforceable to the letter, regardless of any water quality impact. If a streamside management zone is written as 35 feet wide, an SMZ of 34.5 feet would be a violation of the law, even if there is no sediment reaching the stream.

The Clinton white paper called for these management measures in all watersheds that have streams that do not meet water quality guidelines from any source. So if a stream is polluted because of a chemical plant, all timber cutting in the valley must follow EPA management measures. The white paper also called for regulation of all "new sources" of NPS pollution, which it defines as including timber harvesting.

Wetland regulations are also a major issue in the debate. Points under discussion include a new classification system for wetlands, changing the forestry exemption, and including a landowner rights statement.

With the change in Congress this year, many of the issues discussed in the white paper may be dropped or changed radically. Last year, many environmental bills were held up by what the environmentalists have called the "unholy trinity": private property rights, risk assessment (including cost/benefit analyses), and unfunded mandates. With the decidedly conservative swing in Congress, this trinity may lead to a major change in how the government manages the environment.

Increased Service Is the Key to Forest Products Business

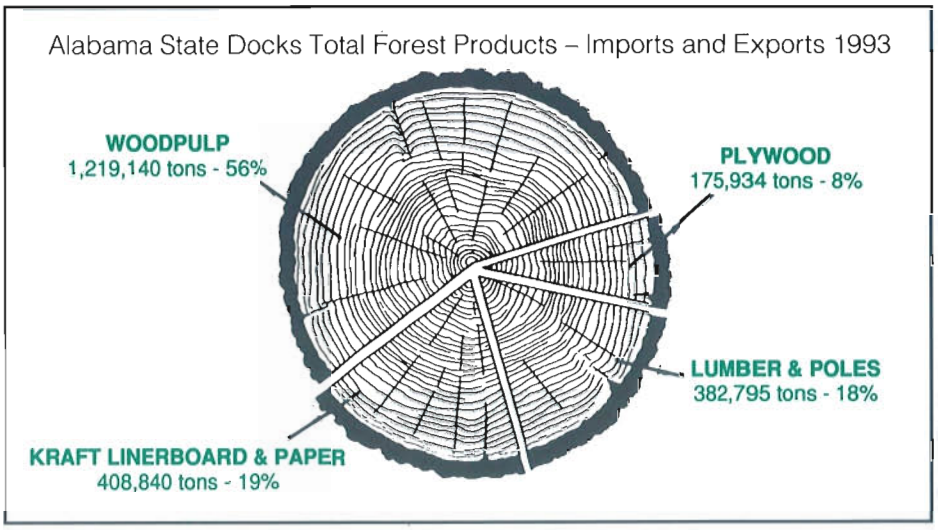
That the Port of Mobile reigns as the leading forest products seaport on the U.S. Gulf is no accident. It is the result of strategic planning, intensive marketing efforts, a vigorous capital improvement program and increased service by the ocean carriers calling at Alabama's seaport.

The Port of Mobile handled 52 percent of all forest products exports moving through the U.S. Gulf in 1993, and that percentage has increased steadily every year since a marketing emphasis was placed on forest products.

Total Alabama State Docks forest products tonnage has increased 83 percent since 1987—climbing from 1.2 million tons in Fiscal Year 1987 to 2.2 million tons handled in FY 1993.

Several years ago management decided to broaden the Docks' base of cargoes and specifically sought to increase forest products tonnage moving through port. To underline its commitment to garnering more forest products business, the Docks invested $5.3 million in renovating an existing 172,000-square-foot warehouse at Pier South B and dedicating it as a forest products terminal in 1988. Since then the Docks has acquired and renovated the 153,000-square-foot Blakeley Terminal and its wharf on the east bank of the Mobile River and constructed the Forest Products Terminal at Pier C. At 360,000-square-feet, this state-of-the-art facility is the world's largest terminal dedicated to handling forest products. Capital investment in forest products facilities at the State Docks since 1988 will amount to $46.5 million by the end of 1995.

As new woodpulp and newsprint mills have come on line in the region, the Docks' marketing teams have been able to secure the lion's share of cargoes exported by the mills. The seaport's natural advantages—strategic location, unmatched inland transportation infrastructure—coupled with the State Docks' commitment to being the best forest products seaport in the nation have aided in this process. Integral to the success of the Docks, though, has been the increase in the number of vessels and lines calling at the deepwater Port of Mobile.



E.G. "Buddy" Browning, Jr., general manager, General Cargo Marketing and Operations, Alabama State Docks, said, "We have seen significant increases in vessel calls at the Port, as well as additional services. Since 1986, when we specifically targeted forest products for growth, ocean carriers specializing in the handling of forest products have increased the number of sailings in Mobile by 235 percent."

Browning noted that service between the Port of Mobile and Caribbean, Central and South America has grown dramatically over the last few years, with Babuyan Carriers and Tramarco Lines doubling and tripling their calls at Mobile, respectively. Babuyan now offers two sailings per month from the Port of Mobile, and Tramarco offers four. Caribe USA initiated service between Alabama's seaport and Puerto Rico in 1992 and has since added several vessels to its fleet calling at Mobile. Last year the line offered 46 sailings from the Port.

"The largest increase in service and frequency of port calls is reflected in the Star/ACS service to Europe, the Mediterranean and the Far East," Browning said. This service has increased nearly 150 percent from 47 calls in 1987 to 115 calls in 1993. With its 'round-the-world Roll On/Roll Off service, the Wilhelmsen Line has increased its number of calls at the Port of Mobile from 18 in 1987 to 35 in 1993 and has experienced dramatic increases in cargo bound between Alabama's seaport and North Europe.

Since 1990 the Hoegh Line has increased its sailings from none to 16 per year, and the Spliethoff Line, which serves the Mediterranean and began calling at the Port of Mobile in 1992, increased their vessel calls to 17 last year. Masan Lines, also offering services into the Mediterranean, has shown continued growth with regard to frequency of vessel calls. Gearbulk continues to be the leading carrier at the Port in terms of imported woodpulp tonnages.

As the State Docks has improved its handling facilities, the lines serving the Port of Mobile have increased the number of vessels in service and the number of annual port calls at Mobile. The result has been that all parties involved have benefited, from the shipper to the seaport complex to the stevedoring firms and the longshoremen, from the overland and inland waterways carriers to the ocean-going lines. Subsequently, the Port of Mobile has not only held onto its title as the leading forest products seaport on the U.S. Gulf, it has steadily increased its share of the business.

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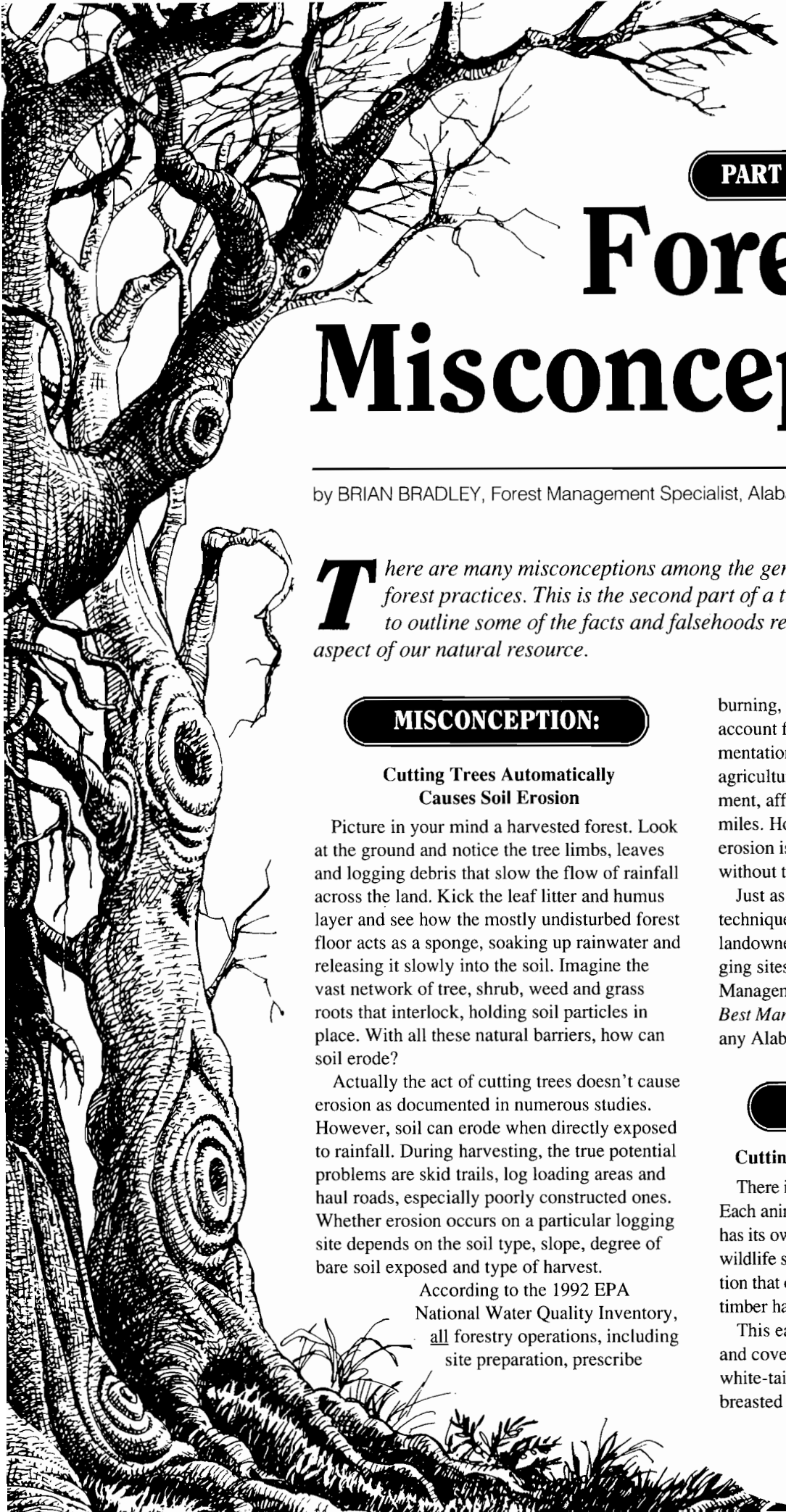


PART 1

Forestry Misconceptions

by BRIAN BRADLEY, Forest Management Specialist, Alabama Forestry Commission, Huntsville

There are many misconceptions among the general public about forestry and forest practices. This is the second part of a two-part article, which attempts to outline some of the facts and falsehoods relating to this often misunderstood aspect of our natural resource.

MISCONCEPTION:

Cutting Trees Automatically Causes Soil Erosion

Picture in your mind a harvested forest. Look at the ground and notice the tree limbs, leaves and logging debris that slow the flow of rainfall across the land. Kick the leaf litter and humus layer and see how the mostly undisturbed forest floor acts as a sponge, soaking up rainwater and releasing it slowly into the soil. Imagine the vast network of tree, shrub, weed and grass roots that interlock, holding soil particles in place. With all these natural barriers, how can soil erode?

Actually the act of cutting trees doesn't cause erosion as documented in numerous studies. However, soil can erode when directly exposed to rainfall. During harvesting, the true potential problems are skid trails, log loading areas and haul roads, especially poorly constructed ones. Whether erosion occurs on a particular logging site depends on the soil type, slope, degree of bare soil exposed and type of harvest.

According to the 1992 EPA National Water Quality Inventory, all forestry operations, including site preparation, prescribe burning, firelane construction **and** harvesting, account for only 7 percent of the nation's sedimentation problem in rivers. Not surprisingly, agriculture was the leading source of impairment, affecting 72 percent of the impaired river miles. However, it is important to remember erosion is a natural process occurring with or without the influence of people.

Just as most farmers use erosion prevention techniques like terraces and filter strips, landowners can minimize soil erosion on logging sites by following EPA approved Best Management Practices. For a copy of *Alabama's Best Management Practices for Forestry* contact any Alabama Forestry Commission office.

MISCONCEPTION:

Cutting Trees Is Always Bad For Wildlife

There is no "perfect" forest for wildlife species. Each animal, game and non-game species alike, has its own habitat requirements. In fact, many wildlife species thrive on the new young vegetation that occurs after a major disturbance like a timber harvest, forest fire, tornado or hurricane.

This early plant growth provides critical food and cover for such species as bobwhite quail, white-tailed deer, indigo buntings, yellow-breasted chats, cottontail rabbits, various rap-

tors, prairie warblers, wild turkeys and even the endangered Florida scrub jay. Some species are quite adaptable to habitat changes (raccoons), while others are more specific in their habitat needs (red-cockaded woodpeckers) and don't adjust well.

Forests with a mosaic of young and old trees, small open areas and brushy thickets provide a wider diversity of habitats than extensive forests of roughly the same age trees. The harvesting of trees for society's benefit often has the added bonus of providing important vegetative conditions needed by many wildlife species.

MISCONCEPTION:

All Old Growth Forests Are Gone

Part of the problem when talking about "old growth" forests is defining the term. In most instances no definition is provided. Interestingly, the U.S. Forest Service uses different definitions of old growth based on geographic area and the tree species in a forest. For example, old growth in the Douglas fir forests of Oregon usually consists of 200 plus-year-old trees, a multi-layered canopy and decaying trees on the forest floor. An old growth definition for our loblolly pine forests in Alabama, where 100-year-old pine trees are exceedingly rare, would be quite different.

When the acreage for the various types of USFS old growth definitions are added together in Oregon and Washington, a picture emerges. Over 8.1 million acres of "old growth" exists on National Forest and Park land in these two states alone. **Almost 85 percent of this unique forestland is currently protected (2.7 million acres) or proposed for protection (4.2 million acres) from any timber harvesting.**

In addition, over 10 million acres of mature timber that has never been harvested, but doesn't yet meet the USFS definitions of old growth, is quietly growing older each and every year on USFS land.

In California, where the vast majority of redwood trees occur, 33 state and federal parks and reserves protect 262,000 acres of redwood forest of varying ages. No timber harvesting is allowed on this land base.

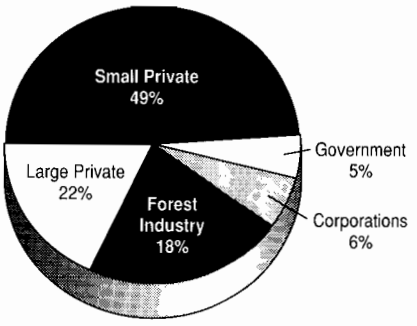
As happens with humans, all plants, including trees, eventually die, so at best we are only temporarily "preserving" old growth forests.

MISCONCEPTION:

Large Paper And Timber Companies Will Pay The Most If Property Taxes In Alabama Are Raised

Over 70 percent of forestland in Alabama is owned by non-industrial private landowners. As Figure 1 shows, any property tax increase will have the greatest effect on the private, individual and family ownerships, especially those owning less than 500 acres of forestland.

Fig. 1 Forestland Ownership in Alabama by Ownership Classification *(percent acres)*



Source: 1990 Alabama Forest Landowner Survey - Alabama Forestry Commission

MISCONCEPTION:

Alabama's Forests Rank At The Bottom

Our state's forest is important to the entire nation. Alabama's forests rank near the top in several categories. For example, nationally our forestland ranks:

- Fifth, in forested acres (21.9 million acres).
- Second, in timberland acres. Timberland is forestland capable of growing at least 20 cubic feet of wood per acre per year and is not withdrawn from harvesting in wilderness or other designation.
- Sixth, in urban forests designated by the National Arbor Day Foundation as Tree City USAs.

MISCONCEPTION:

Producing Forest Products Uses Excessive Energy

Perhaps surprising to many people is that producing a ton of lumber, from harvesting the tree to drying the lumber, requires 70 times less energy than producing a ton of aluminum. In addition, according to the American Forest and Paper Association, lumber and wood products companies are extremely energy efficient, using sawdust, bark and other wood waste to provide 75 percent of their own energy needs.

The paper industry also uses wood waste and other materials to furnish roughly 56 percent of the energy needed to make paper products. Over half of the industry's electricity needs are met through the process of "cogeneration." Cogeneration is the process of using one form of energy to create two other useful forms. For example, pulp and paper mills often use wood waste and other materials to generate steam, which is then used to run turbines and produce electricity. The steam is also used to run paper-making equipment. As a result the energy need from outside sources and made from coal, nuclear power, hydroelectric dams, etc. is greatly reduced.

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LANDOWNERS LEGISLATIVE • ALERT

NATIONAL

by TERRI BATES, Washington Office, National Association of State Foresters

The House Republican "Contract with America" dominated the early days of the 104th Congress. Although forestry is not formally a part of it, the items that are on the agenda—balanced budget, line-item veto, unfunded mandates, regulatory reform—have potential impacts on private forestland management and landowners.

On the plus side, the shift to a Republican dominated Congress improves the chances for consideration of more favorable tax policies that address forestry. Measures that include a restoration of the 50 percent deduction on current capital gains were introduced on the first day of the new Congress. As proposed, the House Republican's bill would index the basis for determining the capital gain to remove inflationary effects on assets held longer that a year. In addition, separate legislation has been introduced that would allow expensing by small businesses (including farmers and timberland owners/operations) to be increased from $17,500 to $25,000.

Hearings that included a panel of forest landowners were held in late January. Testifying in favor of a capital gains reduction, a forestry panel noted other needed tax reforms to address the special needs involved with long-term forest management, such as an increase in the reforestation tax credit, modifications to the IRS active/passive management rules and reforms to estate/inheritance tax law.

The prospects for these changes appear as bright as they've ever been in years. Senator Bob Packwood (R-OR), original sponsor of the reforestation tax credit and amortization in provisions from a state heavily dependent on forests, is the chairman of the Senate Finance Committee.

The "Contract with America" also promises to address the issues of private property rights and takings. H.R. 9, the House Republican "Contract" bill, would require the government to compensate property owners for any federal action diminishing the value of their property by greater than 10 percent. A host of other bills was also introduced early in both the House and the Senate and hearings were underway by February.

Environmental Legislation

Legislation protecting wetlands and threatened and endangered species ground to a halt in the last Congress due to private property concerns. The Clinton administration was roundly criticized from both sides for not taking a stronger and more direct stance on the issue. However, early this year, Vice President Gore appeared to stake out strong opposition to several bills, saying legislation that calls for compensation for government actions would compromise legitimate environmental protections, erode property values for middle class landowners, and impose huge costs on the federal treasury. Simultaneously, the administration was taking steps to ease the regulatory restrictions imposed on private landowners in the Pacific Northwest within habitat range of the Northern spotted owl.

Several moderate Republicans have been reaching out to state and local groups to gauge whether there is sufficient support to reduce the potential costs and narrow the scope of a proposed property rights bill. These members are not likely to seek significant change unless they find broad support from affected landowners.

Resolution of these issues will impact the debate and course of reauthorization of both the Clean Water and Endangered Species Acts. The House appears eager to take up both these acts and began a series of hearings on Clean Water in early February. Action in the Senate is expected to be slower and is tied to the chairman of the Environmental and Public Works Committee, John Chafee (R-RI). In contrast to many of his House and Senate Republican colleagues, Chafee is considered more environmentally prone and was even challenged on this ground for the committee chairmanship. As the former ranking member of the committee, he worked closely and was often an original cosponsor with former committee chairman Senator Max Baucus (D-MT) on many of the issues.

There will be significant pressure to pass these two acts and other environmental legislation whose authority has expired. Republicans have said they are committed to withhold annual funding for any programs that are unauthorized.

Budget Expectations

Other major components of the Republican agenda—constitutional amendments for a balanced budget and presidental line-item budget veto—were working their way through Congress in early February. Both have already kicked off lively debate that is likely to be picked up at the state level, the final step in the ratification of constitutional changes. All sides acknowledge that a balanced budget within five years will require tremendous cuts in discretionary program spending; the debate centers on the method by which those cuts will be made. Forestry and landowner conservation programs have been easy targets for budget cuts in the past. Many have only recently recovered from major cuts inflicted during the Reagan administration, yet are likely to be easy and tempt-

ing targets in the months ahead by the fiscally conservative Congress.

Still, the Clinton administration weighed in on February 6 with what it called a "leaner but meaner" budget for 1996. Forestry and conservation programs hold their own for the most part with increases proposed for the Forest Stewardship, Stewardship Incentives and Wetlands Reserve programs. The administration has even taken steps to extend the Conservation Reserve Program with plans for a new sign-up in the works for late this year or early next year. Many consider the administration's budget the "high water mark," with expectations that the Republican Congress will feel pressed to begin taking significant strides toward a balanced budget before a constitutional amendment has even passed. Rumors have circulated in Washington since January that Congress will act to rescind moneys already appropriated for the current year and is already looking hard at cost-share programs such as the Stewardship Incentives Program. Overall, prospects for forestry and conservation funding are at best mixed at this time.

Farm Bill

Though the Farm Bill is up for reauthorization this year, neither administration nor Congress has thus far pushed forward with specific recommendations. Many conservation and farm groups have begun to bring their recommendations to Washington. Most seem to strongly support continuation of the forestry programs permanently authorized in the Forestry Title of the 1990 Farm Act, as well as extension and even expansion of the Conservation and Wetlands Reserve Programs.

Several groups, including the National Governor's Association, have proposed providing states with conservation "block grants," along with the authority to target those funds according to state-determined priorities. Hearings are expected to begin in the spring. Senate Agriculture Committee Chairman Senator Richard Lugar (R-IN) has said he wants to take a hard look at farm commodity programs. This is likely to be the major area of focus—and controversy—for the 1995 Farm Bill.

ALABAMA

by FRANK SEGO, Legislative Liaison, Alabama Forestry Commission

To the surprise of no one and to the obvious delight of Alabama's forestry community, Rep. Jimmy Clark of Eufaula was elected to a record third term as Speaker of the House of Representatives.

The magnetism of the veteran Barbour County lawmaker was never more apparent than it was on the opening day of the legislative organizational session in January. He left no doubt that he will bring together all wings of the House in what promises to be the most eventful four years of our time.

Another longtime House member, Rep. Seth Hammett of Covington County, received the nod for Speaker Pro Tem. Hammett also serves as president of Lurleen B. Wallace State College in Andalusia. He was voted the outstanding House member following the 1989 session.

The next question was, "Who will head the influential Ways and Means Committee?" Several names had been whispered around the State House, but the one that emerged as the Speaker's choice was none other than Rep. Bill Fuller of LaFayette. He had just completed his third term in the House and had been reelected without opposition by his Chambers and Lee county constituents.

Rep. Pete Turnham, whose legislative career dates back to 1958, will again serve as vice chairman of the House Appropriations Committee. Turnham easily was reelected from Lee County in November.

Senate Taps Figures

While the House was shaping its future structure, members of the Senate were going through the same organizational paces. However, the selection process for a Pro Tem was decidedly different. The names of Senators John Amari, Birmingham; Gerald Dial, Lineville; Michael Figures, Mobile; and Wendell Mitchell, Luverne, were placed in nomination for the No. 2 post. Sen. Figures, generally known to have been the choice of Lt. Gov. Don Siegelman, claimed victory on the third ballot.

The four-term senator thus becomes the first black in Alabama's history to serve in this capacity.

Siegelman, as presiding officer of the Senate, then chose Sen. Mitchell as the upper chamber's floor leader, giving him the privilege of being a voting member of every standing committee except local legislative panels, unless otherwise appointed.

Sen. Lowell Barron of Fyffe was immediately selected to head the prestigious Finance and Taxation Committee's General Fund Subcommittee. Barron was deputy chairperson of both the General Fund and Education subcommittees of F&T in the last administration. He also is a member of the Auburn University Board of Trustees.

Barron's vice chair for the General Fund is newcomer Bill Armistead from the redrawn Senate district that embraces Bibb, Shelby and Chilton Counties. He first came into state government as a member of former Governor Guy Hunt's cabinet.

Forestry Committees

Richard Lindsey, the soft-spoken, three-term representative from Centre, will take another turn as chairman of the House Agriculture, Forestry and Natural Resources Committee. Rep. Curtis Smith of Clanton is the committee's vice chair. Both men were leaders of this segment during the 1991-94 term.

The Senate Agriculture and Forestry Committee gets a new look in both name and chair. Formerly called the Agriculture, Conservation and Forestry Committee, it has been separated from Conservation and will be headed by the man who succeeded Sen. Ann Bedsole from Mobile's 34th District. He is Harry E. (Hap) Myers, Jr., chairman of the Board of BCM Engineers Inc. in the Port City. Sen. Al Lipscomb, self-employed farmer and landowner from Magnolia Springs, is the vice chairman. Lipscomb first came to the Senate in 1990 and has voted favorably on legislation beneficial to forestry.

(Continued on page 19)

THREATENED & ENDANGERED SPECIES

Alabama Leather Flower

by JAREL L. HILTON, Botanist, Alabama Natural Heritage Program

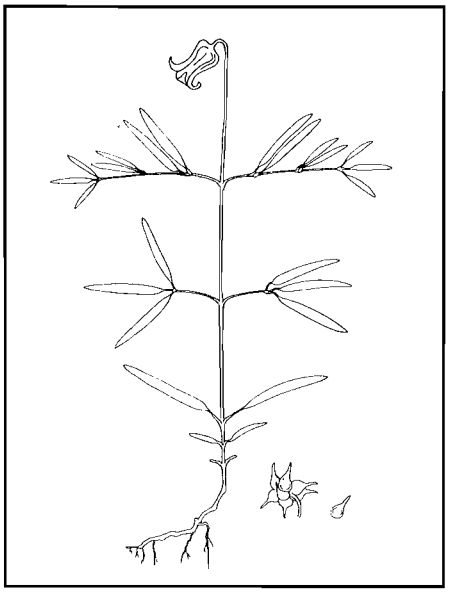
The cure for cancer may be locked within the secrets of a rare plant growing in the recesses of a dark jungle. What if that cure is right here in Alabama? Alabama is incredibly rich in its numbers and kinds of plants and animals, but amazingly poor in its biological study. There are 18 species of plants that are endemic to Alabama; they are found no where else in the world. One of these species is the Alabama leather flower, *Clematis socialis*, which was discovered as recently as 1980 by Dr. Robert Kral, professor of botany at Vanderbilt University. While collecting plant specimens, Dr. Kral was surprised to see a mass of bright blue bell-shaped flowers growing in a highway right-of-way in St. Clair County. Much to his surprise, Dr. Kral did not recognize this plant, yet it appeared to be a member of the leather flower genus *Clematis*. Species of *Clematis* have long been prized by horticulturalists for their showy flowers and attractive foliage. It is surprising that a plant as beautiful as the Alabama leather flower had gone undiscovered for so long!

History

Dr. Kral published a written description of the Alabama leather flower in 1982 when it was known from only one locality in St. Clair County. In 1985, a second population was discovered in Cherokee County, also on a highway right-of-way. Because these sites were small as well as vulnerable to repeated disturbance, the U.S. Fish and Wildlife Service listed the Alabama leather flower as an endangered species in 1986. Since then, three additional populations have been discovered within two to three miles of the two original populations, bringing the world's total number of Alabama leather flower populations to five.

Species Description

The Alabama leather flower is a member of the buttercup family Ranunculaceae, and has erect, narrow stems averaging 8-12 inches high and about 1/10 inch wide, often with a purplish tint. Its leaves are



narrow, 2 to 5 inches long, 1/4 to 1/2 inch wide, and occur in leaflets of 3 to 5. The overall hue of the foliage is that of bright spring green. The flowers are bell-shaped, bluish purple in color, and average 3/4 to 1 inch in length. The fruits are called achenes, and have a tan, flattened, ovate seed covering 4/10 inch in length, which draws into a narrow style about 1 inch long, with short silvery hairs. Plants are perennial and flower from late April into May.

Several characteristics set the Alabama leather flower apart from other members of its genus. Most of the horticultural varieties of *Clematis* familiar to gardeners are climbing vines. The Alabama leather flower stands erect. It is also unique in that its flowers are blue, coupled with the characteristic of a leafless flower stem. Only one other leather flower in the Southeast exhibits these two characteristics combined with an erect habit. Even more unusual is the development of rhizomes that form dense clones, which result in the showy display of blue flowers like those first observed by Dr. Kral.

Habitat

All of the known sites for the Alabama leather flower have been greatly impacted by human activity. Although we can not know for sure, the natural habitat for the Alabama leather flower was probably open grass-sedge-rush meadows and adjoining hardwood swamp forest. Plants are found rooted in a sticky, wet, silty clay soil, and occur in the floodplains of creeks. Many of the native plant species found in association with the Alabama leather flower are indicative of an open prairie type habitat historically found in pockets throughout the Ridge and Valley physiographic region. Some of these plant associates include asters, sunflowers, rosinweeds, blazing stars, goldenrods, eupatoriums, ragworts, and daisy fleabanes. The adjacent swamp woodland is composed of species such as green and white ash, lowland oaks, black and sweet gum, persimmon, red maple, dogwood, sassafras, buckthorn, elderberry, and arrowwood.

Most of the population originally discovered by Dr. Kral is now protected by The Nature Conservancy with its Virgin's Bower Preserve. Efforts are being made to protect portions of this population and the Cherokee County population growing on the highway right-of-way by an agreement between the U.S. Fish and Wildlife Service and the Dept. of Transportation. The biggest threat at the moment comes from residential development of present sites, and herbicide, mowing, and scraping of

(Continued on page 19)

Threatened & Endangered Species

Continued from page 18

highway-rights-of way during road maintenance. Public education and awareness is the key to the survival of rare species like the Alabama leather flower. Several articles have appeared in local newspapers and newsletters featuring the Alabama leather flower and were positively received by the public. For further information, contact the Alabama Natural Heritage Program, Alabama Department of Conservation and Natural Resources, State Lands Division, 64 N. Union, Montgomery, AL 36130.

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PEST ALERT

by JIM HYLAND, Chief, Forest Health Section

There are several pests that landowners should be aware of that may affect them in 1995 or the near future.

Southern Pine Beetle—Bark beetle infestations will be on the increase in the summer of 1995. Alabama entered the winter with 20 epidemic counties. Warm weather this winter allowed populations to build. It is conceivable that the number of epidemic counties may double. The problem counties should center on central, north-central and south-central counties. The Forestry Commission has intensified its aerial detection and control efforts. Landowners should periodically check their pine stands for dying infested trees. Landowners can get assistance by calling any of the Forestry Commission's 1-800 numbers listed in phone books or their local county Forestry Commission office.

Dogwood Anthracnose—A relatively new disease affecting Alabama dogwood trees is occurring in Northeast Alabama. Dogwoods growing in higher elevations (above 900 feet) are being attacked by this deadly disease. Dead and dying dogwoods have been found in the following counties: Jackson, Madison, Marshall, DeKalb, Calhoun, and Cleburne. Symptoms include purplish leaf spots, dying branches and eventually dead trees. There are controls for homeowners and/or treatments for forest landowners in infected areas. Homeowners planting dogwoods should not move native wild dogwoods from infected areas and should inspect any dogwood seedlings before purchasing them.

Gypsy Moth—Although there has been no known defoliation of hardwoods from gypsy moths, the threat is getting closer each year. Since its introduction in 1869, the gypsy moth has been a primary defoliator of hardwoods in the Northeastern United States. Recent defoliations have occurred in Tennessee, Georgia, and North Carolina. Each year the USDA Animal Plant Health Inspection Service and the Alabama Forestry Commission install gypsy moth detection traps across Alabama. So far only isolated areas of moths have been found. No defoliation has occurred. Efficient control measures will be implemented if any problem is detected.

Alabama Legislative Alert

Continued from page 17

The New Senate

In our last issue of the *TREASURED Forests* magazine we introduced the House of Representative for the new quadrennium. Now, we focus on the new Senate, which is composed of 12 Republicans and 23 Democrats.

April 18

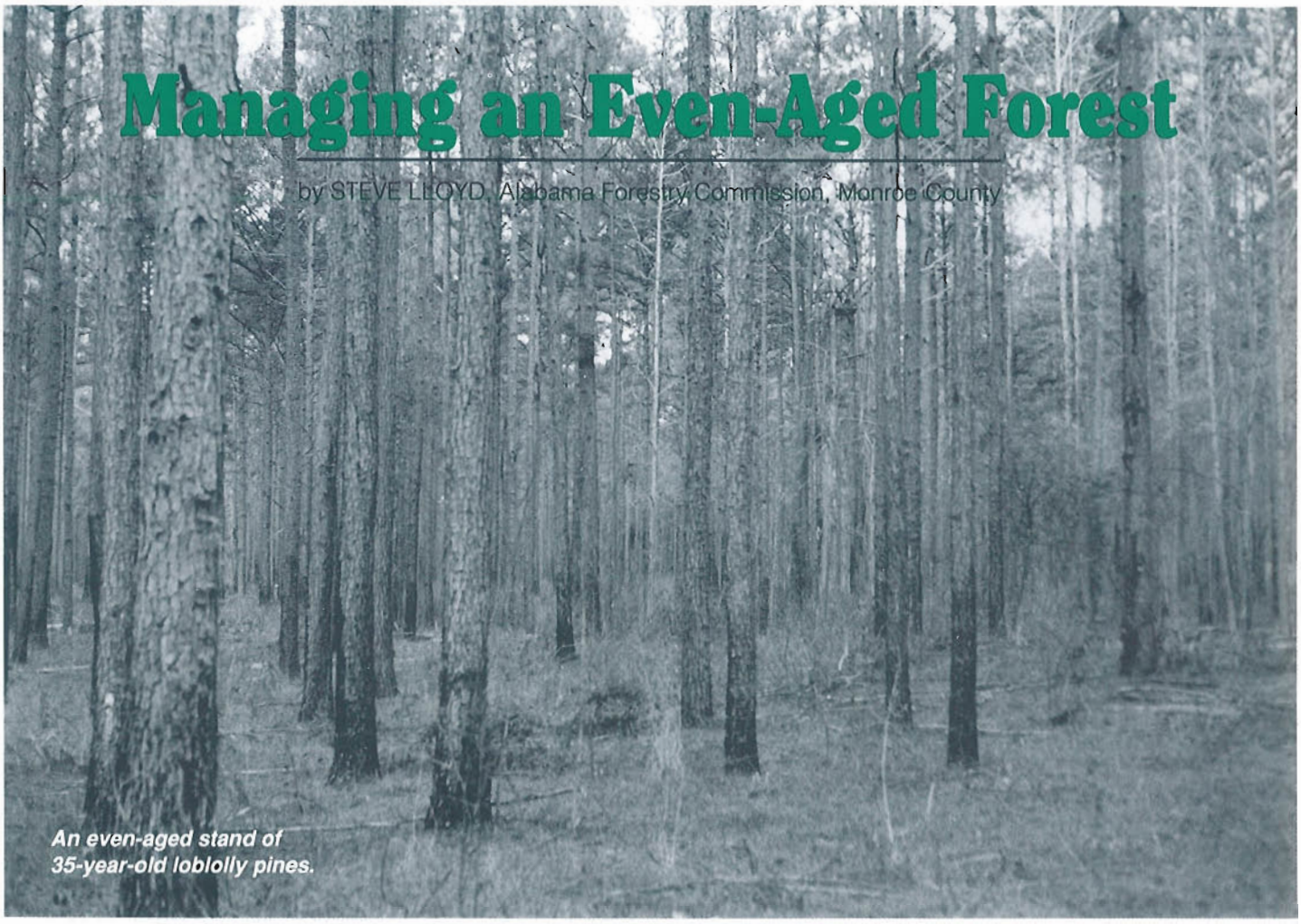
The question of whether we would have baseball or not was still up in the air as this column went to press. However, one thing is certain: the 1995 Legislative "season" will begin on schedule with Governor Fob James making his first pitch at 6:30 p.m. on Tuesday, April 18 at the State Capitol. 'Til then . . .

The 1995-98 Alabama Senate:

Bobby Denton (D)	Tuscumbia	Edward "E.B." McClain (D)	Brighton
Tom Butler (D)	Madison	Sundra Escott-Russell (D)	Birmingham
Tommy Ed Roberts (D)	Hartselle	Phil Poole (D)	Moundville
Don Hale (R)	Cullman	W.H. "Pat" Lindsey (D)	Butler
Charles Davidson (R)	Jasper	Hank Sanders (D)	Selma
Roger Bedford (D)	Russellville	Charles Steele, Jr. (D)	Tuscaloosa
Dewayne Freeman (D)	Huntsville	Larry Dixon (R)	Montgomery
Lowell Barron (D)	Fyffe	Charles Langford (D)	Montgomery
Hinton Mitchem (D)	Albertville	T.D. "Ted" Little (D)	Auburn
Roy Smith (R)	Gadsden	George Clay (D)	Tuskegee
Dell V. Hill, Jr. (R)	Alpine	Chip Bailey (D)	Dothan
Doug Ghee (D)	Anniston	Wendell Mitchell (D)	Luverne
Gerald Dial (D)	Lineville	Dwight Adams (R)	New Brockton
Bill Armistead (R)	Columbiana	Albert Lipscomb (R)	Magnolia Springs
John Amari (R)	Birmingham	Michael Figures (D)	Mobile
J.T. "Jabo" Waggoner (R)	Birmingham	Hap Myers (R)	Mobile
Jack Biddle, III (R)	Gardendale	Steve Windom (D)	Theodore
Rodger Smitherman (D)	Birmingham		

Managing an Even-Aged Forest

by STEVE LLOYD, Alabama Forestry Commission, Monroe County



An even-aged stand of 35-year-old loblolly pines.

With timber prices constantly increasing, managing your timber to its fullest potential is becoming more important every day. Depending on a landowner's objectives, there are several forest management strategies to choose from.

Forests are generally managed by using even-aged or uneven-aged systems. In an even-aged stand, all the trees are relatively the same age. An even-aged stand that has been artificially planted will probably be all the same age, whereas ages of trees in a natural even-aged stand may vary as much as 10 years. An uneven-aged stand will have trees of all ages throughout the stand. Of these two methods, even-aged systems are predominantly used by forest managers in the Southeast. Even-aged systems are simpler to use, logging is generally cheaper, and most commercially desirable species need the full sunlight provided when using this system. With this in mind, there are several ways to obtain an even-aged stand. These include clearcutting, the seed tree method, and the shelterwood method.

Clearcutting

Clearcutting is probably the simplest and most widely used method of replacing an old stand. Clearcutting involves removing the entire stand and replacing it through natural seeding or planting. Using this method, some type of site preparation will be needed. Since small pine seedlings need full sunlight to reach their fullest potential, removing the remaining trees and brush from the clearcut is necessary. Site preparation also aids the tree planting process. The most common methods of site preparation used in the Southeast include prescribed burning, shearing and raking, drum chopping, and herbicides.

Clearcuts can be regenerated through natural seeding by relying on nearby trees to seed the area. However, yearly seed crops cannot always be counted on and limitations of seed dispersal limit the size and shape of the area. Although this is a legitimate method of reproduction, artificial regeneration is generally used because there is less risk of failure and seed or seedlings can be obtained from genetically improved trees. Also, there is no restriction on the size and shape of the area when using artificial regeneration.

Artificial regeneration requires either direct seeding or planting seedlings. Direct seeding involves spreading seed over the entire cut area. This method is cheaper than planting seedlings, but there are several drawbacks. Seed germination is influenced by weather, and there is no control over seedling spacing. Planting seedlings is most prevalent because there is less risk of failure and greater control over spacing, which optimizes tree growth and makes mechanical harvesting much easier.

With the advent of the environmental movement, large clearcuts will probably become less popular. Smaller clearcuts are also more favorable to many species

of wildlife. Nevertheless, clearcutting is an important silvicultural tool used in even-aged management.

The seed tree and shelterwood methods of regeneration are cheaper and provide less soil disturbance than clearcutting. Both rely on natural seeding to regenerate the stand. However, it is important to control unwanted vegetation that competes with seedlings for nutrients and light.

Once the trees are large enough to withstand a control burn, a prescribed burn every three to five years will aid the regeneration process. Prescribed burning is a cheap silvicultural tool that will help control unwanted vegetation and removes excessive amounts of debris on the forest floor. In order to germinate, seed must reach mineral soil. Prescribed burning helps facilitate this process.

Seed Tree Method

The seed tree method requires the removal of timber in one cutting except for a small number of trees left to provide seed for the development of a new stand. The number of seed trees needed depends on tree size and species, but generally ranges from four to twelve trees per acre. This method is mainly used with light-seeded species such as loblolly pine.

When choosing seed trees, look for several things. Trees should be in good physical condition and not susceptible to windthrow. Look for evidence that the tree has produced cones in the past. The trees should have large, vigorous crowns and be old enough (usually greater than 30 years old) to produce a sufficient quantity of seed. Also, trees should be properly spaced to get uniform coverage of seed.

After the stand has been cut and the selected trees remain, the soil must be prepared to ensure seed germination. Prescribed burning is the most common method of preparing the seedbed. Timing the burn before seedfall will enhance germination. Mechanical site preparation can be used to prepare the seedbed, but the cost is much higher.

Once an adequate number of seedlings have been established, the seed trees can be removed or left in place. The number of trees used in the seed tree method should not provide enough shade to inhibit the growth of the new seedlings.

After the initial cut, it takes three to four years to get an increase in seed production. Also, most trees do not produce an ample seed crop every year. Loblolly and slash pine may only produce a good seed crop every three to five years and longleaf pine may only produce a good crop every five to seven years. Although the seed tree method of regeneration may be less costly than regenerating a stand after clearcutting, the uncertainty of its success may be prohibitive. Some landowners may not be willing to invest the time needed to obtain a fully stocked stand.

With the seed tree method of regeneration, a few trees are left to provide a seed source.

Shelterwood Method

The shelterwood method is similar to the seed tree method. The shelterwood method is generally used with heavier-seeded species such as longleaf pine. Consequently, more trees are needed for proper seed dispersal. For example, only five 20-inch loblolly pines may be needed to properly seed an acre of land. As many as fifteen 20-inch longleaf pines may be needed to seed the same area. Trees should be selected using the same criteria as with the seed tree method.

Once the stand has been thinned to the desired level, prescribed burning should be used to prepare the seedbed and promote adequate germination. Several years may pass before a sufficient number of seedlings are produced. The remaining stand should then be removed. There are several advantages to using the shelterwood system. By leaving more trees on the site, the productive capacity of the area is more fully utilized and the soil is better protected. The remaining seed trees are the best on the site and increase in value during the time needed to obtain proper regeneration. Also, this method is more aesthetically pleasing than the other methods. However, as with the seed tree method, its success is dependent on weather conditions and seed production.

Conclusion

Clearcutting and regenerating the area by seeding or planting is the most costly of all even-aged methods of management. It is the least aesthetically pleasing of all three methods, but only for a short time. However, it is simple to use and there is more control over tree density and spacing. Some stands cannot be regenerated naturally because there is not an ample seed source present. Clearcutting may be essential in this situation in order to restore the land to its full productive capacity.

The shelterwood and seed tree methods work well when there is a good supply of seed trees to choose from. The seed tree method is used for light-seeded species such as loblolly pine and the shelterwood method is used with heavier-seeded species like longleaf pine. Under the right conditions, both methods can produce a new stand of trees at lower costs than clearcutting and replanting. Although these two methods are labor intensive and require some degree of luck, the cost savings and improved aesthetic value ensure their continued use.

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A TREASURE Surrounded

by BRIAN BRADLEY, Forest Management Specialist, Alabama Forestry Commission, Huntsville

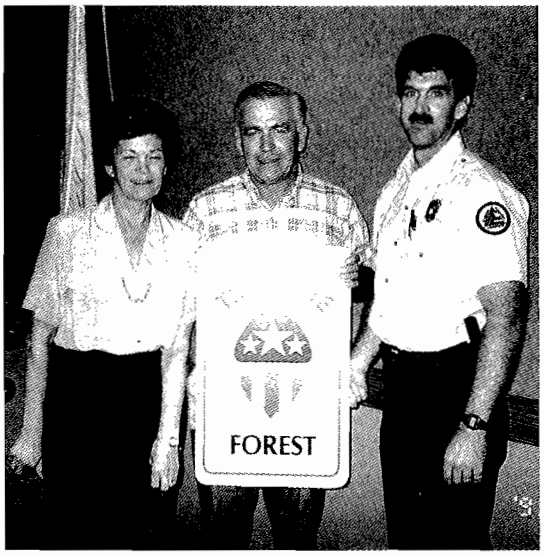
Within a two-mile radius of Ronald and Anna Ham's TREASURE Forest are a county high school, two subdivisions and two expanding communities. All of this is within one of the fastest growing counties in Alabama—Madison County.

The Ham's 40-acre ownership contains many treasures one would not expect to find so close to suburbia. A Woodmizer sawmill has been Ronald and partner Bob Henry's "toy" since 1988. As with most men's toys, this one costs a lot more than an old axe. Nevertheless, sawing logs into lumber provides both men considerable enjoyment and satisfaction. As Anna added, "We're recycling trees that otherwise would go to waste."

A retired electrical engineer from NASA, Ron now uses some of his energy to create bluebird houses rather than Saturn rockets. Anna started her career as a clerk-typist in the "bullet factory" at Huntsville Arsenal (now Redstone Arsenal). She rose to the position of budget analyst and retired after 36 years. Her attention to detail comes in handy as she and Ron annually monitor over 300 bluebird boxes while also tracking the data supplied by 50 volunteers who monitor an additional 500 boxes.

Monitoring involves checking each numbered birdhouse every three weeks March through September. Destroying nests of invading birds (primarily English sparrows), removing old bluebird nests that won't be reused, monitoring egg development and counting fledglings (young birds that leave the nest) are all parts of the effort required to track bluebird re-establishment.

In 1994 the TREASURE Forest Association of Northeast Alabama received a grant to build and distribute 375 bluebird houses. The Hams, who are active members of the group, constructed all the houses and are now at work on another 300 grant-funded boxes. In addition, Ron and Anna donated the lumber for a local Boy Scout to build and monitor 35 bluebird houses as part of earning his Eagle Scout designation.



Anna and Robert Ham receive their TREASURE Forest sign from Madison County Forester Mark Sullivan.

Success is measured in the number of fledglings over time. The past three years indicate a tremendous success from the efforts of the Hams and different volunteers: 1992—800 fledglings; 1993—975 fledglings; 1994—1,978 fledglings.

As a result of their bluebird conservation activities, the Hams were awarded the W. Kelly Mosley Environmental Achievement Award in 1993.

Although the Hams call Huntsville their home today, Anna grew up in a house that still stands on their property. There is periodic talk about moving to this land and building a new house on a hill overlooking a future pond. However, the old home place will remain and continue to be used for storage for the time being.

One of the first management activities on their property occurred in 1988 when Ron and Anna enrolled in the Conservation Reserve Program. They planted 28.5 acres of pines and then had the opportunity to find out how a dibble fit their hands when nearly 8,000 trees died and required replanting.

Wildlife such as rabbits, quail, purple martins, red-tailed hawks and honeybees are all encouraged on their TREASURE forest through various plantings and habitat manipulation. Brush piles are created for rabbits, while also providing a refuge for the rat snakes that thrive in this area. The longest snakeskin found on the property so far measured 84 inches (that's right—**seven feet**). Ron's concern for snakes was evident when he collected the eggs from a nest disturbed one day while plowing a food plot. Demonstrating true parental caring he released the baby snakes in a nearby brush pile after all 12 eggs hatched.

Other wildlife is equally cared for by the Hams. Gourds are home to numerous purple martins who seem to come and go from year to year. Food plots of clover, peas, bicolor lespedeza and autumn olive provide meals for two coveys of quail, rabbits, non-game birds and other assorted animals. A pond stocked with catfish provides a setting for those quiet times used to contemplate life. And eight bee hives remind Anna of her first experience using a mechanical honey extractor. There was almost as much honey flung on her as was collected from the hives!

From wildlife habitat to buzzing sawmill, this TREASURE is a gem amid the encroaching development of Madison County. With Ronald and Anna Ham's exemplary stewardship, the gem will continue to shine for years to come.

Proving It's Never Too Late

by TILDA MIMS, Information Specialist, Alabama Forestry Commission, Tuscaloosa

In the mid-1970s, the land that would become Hamiter-Shanner Farms was barren. Overhunting and poaching had eliminated nearly all the wildlife years earlier and a recent harvesting offered little hope of successful natural regeneration.

Today the 140-acre TREASURE Forest in Tuscaloosa County is alive with healthy pine and hardwood stands. Deer and turkey tracks are abundant and the sounds of songbirds again fill the air.

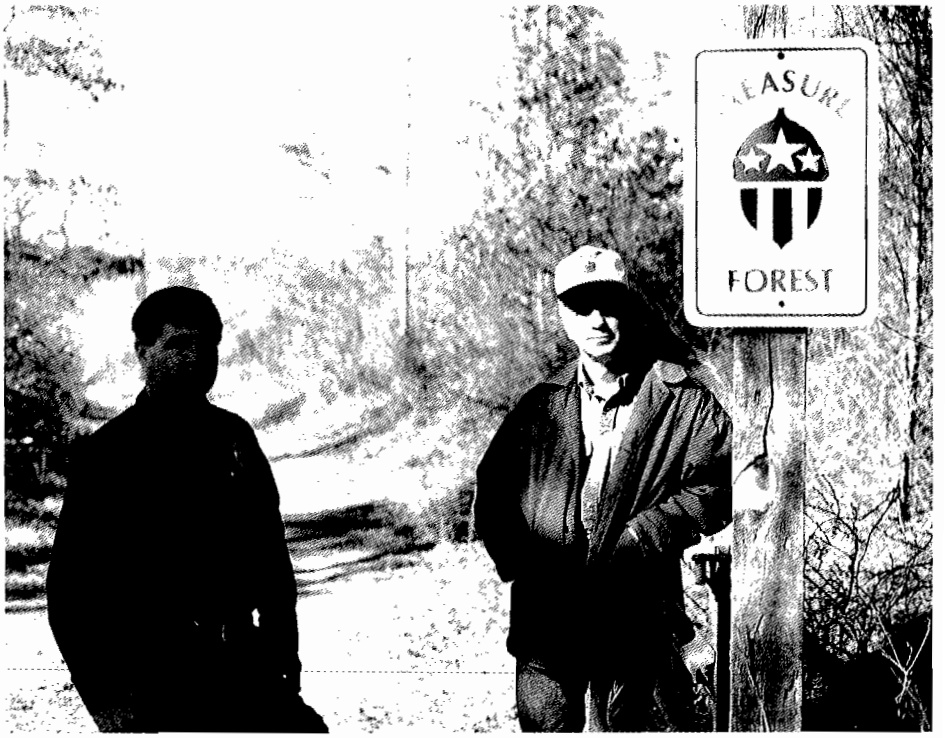
What made the difference? According to Frank Hamiter, the difference is hard work, good forest management and the availability of cost-share assistance. "The cost-share program has helped to make this possible. It's the only way I could have done this much this soon."

"Since all the timber had been sold off the property before we got it, we started with a negative balance. Anything we did would be of benefit to the land but everything we did was out of our pocket. The cost-share program made it possible for us to get started." In a few years, Frank and co-owner Rex Shanner expect to get their first financial return through the first thinning of a pine plantation.

Wildlife management is the primary objective of Hamiter-Shanner Farms. Several half-acre food plots offering winter wheat, chufas, Australian winter peas and rye grass help supplement the wildlife during the winter. Seeded road beds, hardwood areas including newly planted sawtooth oaks and a prescribed burning program have helped attract wildlife back to the area.

"The wildlife population has increased dramatically since we got this property, especially the turkey population," Hamiter said. "We don't kill does and haven't killed any deer at all in four years or turkey in one year because we're trying to build the population."

Sisters Bobbie Hamiter and Kathy Shanner inherited the original 70 acres from their father in the late 1970s. The families agreed to share the expenses, although Frank makes the day-to-day decisions on management.



Tuscaloosa County Forester Hank McKinley and Frank Hamiter

After 20 years as a procurement forester for local industry, Frank has enjoyed the chance to manage his own land. He says, however, it is a different feeling to hunt or think about harvesting at their farm.

"It's hard to describe, but having the opportunity to hunt on my own property is different from hunting at my hunting club. If I shoot a deer out here, it won't be there to look at next week. If it's an eight-point buck now, I won't get to see it as a ten-point later. Right now we are just enjoying watching them."

Although they are at least five years from seeing any cash profit, the farm is paying rich dividends to both families daily. "I think this land will always be in the family because all of our children love it as much as we do," he said. The area is a popular family retreat for hikes, camping and simply getting away from it all.

Almost 15 years after work began in earnest to return the land to productivity, Hamiter-Shanner Farms proves that it is never too late to practice good forest management. After all, isn't that the difference between being a good steward of the land and simply owning the land? An eye toward the future rather than a quick profit. An unselfish love of the land rather than what it can provide. A willingness to delay financial rewards over the needs of the land itself. All of these qualities are the heart of Hamiter-Shanner Farms and the spirit of TREASURE Forest.

MANAGING UPLAND HARDWOODS

by JACQUELINE L. HAYMOND, Ph.D., Associate Professor of Forest Resources, Clemson University

Some of the most beautiful upland hardwood forests in the world are found in the South, where hundreds of different species of forest plants grow. In this area, where climate and topography vary greatly, each plant can find a site suitable for its particular needs. Mosses and ferns, grasses and shrubs, understory trees and the dominating overstory pine and hardwood trees all have a place. How can this forestland be managed for maximum benefits to our people? Can we make it better than it is?

Hardwood Types

The oak-pine type is growing on 15 percent of the South's forestland—27 million acres. But over half of the timberland in the South, 93 million acres, is classified as predominantly hardwood forestland. And, about one-third of all the South's timberland is in upland hardwoods.

Many kinds of forest trees are found in this region—more than 50 commercial species of hardwood trees, as well as shortleaf, Virginia and loblolly pines. The land changes rapidly from flat fields and stream bottoms to steep slopes and hilltops. Soils vary from the very fertile to highly eroded, from sites where black walnut trees could thrive, to areas where even grasses cannot.

The oak-hickory-pine type is the most common forest tree association in this area. Pines and hardwoods occupy the overstory and a variety of shrubs, vines, and trees are found in the understory. Yellow-poplar trees are very common. Some land in the region is occupied by pine stands, most of which have seeded in on abandoned agricultural fields.

Which trees grow where? In stream bottoms and terraces, labeled good sites because of moisture, we find yellow-poplar, mixed hardwoods, red, white, and black oaks, white pine at higher elevations and loblolly pine at lower elevations. These same species may be found on moist sites on north and east-facing slopes and in coves. On the south and west-facing slopes and ridges—the drier sites—we find Virginia and shortleaf pine, depending on elevation, and scarlet oak, white oak, and hickories (see Figure 1).

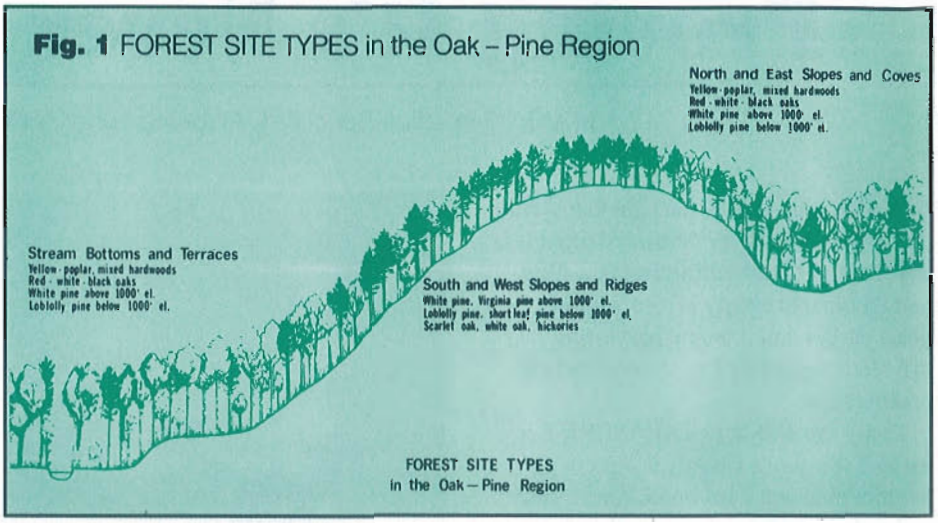


Fig. 1 FOREST SITE TYPES in the Oak – Pine Region

Many trees that now make up these forests began developing in the 1930s. During the last 60 years, the major forces that have affected the forests are the prevention or control of wildfires, the establishment of pines on abandoned cropland, the planting of pines during the Soil Bank program, and the lack of planned regeneration on lands as they were harvested—which let the hardwoods take over. Much of this harvesting has occurred on small, isolated, privately-owned tracts where marketable trees were cut out, leaving behind small, poor-quality trees.

Harvesting and Regeneration

Most harvesting has been the "diameter-limit" type, which means that only trees larger than a certain size are harvested. It was believed that the small trees left behind would grow well. Some did, but most did not. Usually, those trees in the understory which have not had their crowns exposed to sunlight for many years will not respond to opening. This is why we have the so-called low-quality hardwood stands that we have today. The sites may not be poor, but the existing stand is poor. The trees that make up the stand were left behind at harvest time because they were too small, they were an undesirable hardwood species, or they were crooked or rotten. Only the pines were harvested. Despite the years of trying to eradicate hardwoods and favor pines, hardwoods have consistently gained ground on southern pines and are projected to continue doing so.

Many hardwood forests have some potentially productive timber species but have been high-graded (cutting out the best and leaving the poorest trees) for so many years that the potential of the site is not evident. A wise forester may suggest clearcutting patches of about an acre for young hardwoods to become established, and in other areas leaving some carefully chosen crop trees to continue growing.

Even though there are many forest situations in the upland hardwoods, we can group them into three categories according to the quality of the trees on the site: excellent, good, or poor.

An excellent stand contains sawlog and veneer trees at least 12-15 inches in diameter at breast height. A good stand contains pole-size trees about 10 inches in diameter, 30 to 40 years old. Commercial thinning is a good idea, removing merchantable small trees, particularly those whose crowns are competing with other crop trees, leaving better, larger trees to grow to sawlogs.

If many, desirable pole-size trees are growing well, a carefully selected thinning cut may increase wood production on the crop trees to be left. Thinning probably should be delayed until the stand is about 25 years old. Up until that time, the crowded condition keeps the lower portion of the trunks of the trees shaded and prevents development of epi-

Yellow-poplar, a common hardwood in Alabama, has large, tulip-shaped flowers.

cormic sprouts. The point is, wait until the trees are tall enough for the first log to be relatively clear of branches. Careful thinning could begin at that stage.

A poor stand contains a few trees which might respond to thinning or release, and other trees which can be used for fuel wood. Clean cut to regenerate this stand, letting young hardwoods resprout.

Sprouts from stumps less than 12 inches in diameter, cut low to the ground, will result in better quality trees than sprouts from very large, high stumps. Trees that have sprouted from high stumps often develop rot as the stump decays.

In most cases, a clear felling of all trees over 4-1/2 feet tall will assure a good, naturally regenerated hardwood stand. The new trees will originate from seeds and sprouts, with each species having an even start. The species most suited to the particular site will grow best. In coves, where moisture is high, yellow-poplar will dominate. On the slopes, and higher up on ridges, southern red oak, black oak, and scarlet oak will probably be dominant species in the new stand, especially if there is adequate advance regeneration of oaks in the understory. Even though some undesirable trees, such as red maple, may make up a large part of the early stand, the more desirable species will finally win out and occupy the overstory.

When harvesting stands with no desirable young seedlings or sprouts, and with poor sprouting potential, it may be necessary to plant pines or hardwoods to obtain full stocking. Planting hardwoods usually is not recommended for two reasons. One, cultivation often required for successful establishment is very expensive. And two, a good hardwood stand will usually develop from natural sprouting following clean felling of all standing trees.

Although there are hundreds of species of hardwoods, they can be grouped into either light or heavy-seeded species. For successful regeneration of hardwood stands, these differences and the species' tolerance to shade must be kept in mind.

Trees of the heavy-seeded species, such as oaks, usually develop from sprouts which have become established in the shade of the overstory trees before harvest. The root systems of these oaks may be very old, even 50 years old. Although the tops are repeatedly destroyed by animals or fire, the root systems live, and when they resprout, as following a fire or harvest, many vigorously growing young stems quickly restock the area. Acorns are preferred food for over a hundred different kinds of birds and animals. Even large crops can be eaten by wildlife, so regenerating oaks from seeds is unreliable. Many oak trees of the upland hardwood forests developed from sprouts.

Light-seeded species, such as yellow-poplar, originate from both sprouts and seeds and are usually faster-growing in open sunlight than the oaks. Often after a clearcut, yellow-poplar seedlings develop from seeds which have been lying dormant in the forest litter for as long as 10 years.

Improving Hardwood Stands

One problem with managing hardwood forests is that the most undesirable species are sometimes the most persistent. They develop in the shade of more desirable trees and then, when given an opening, grow rapidly and may take over the site. The species which will tolerate shade are not desirable for timber production—dogwood, sourwood, and hornbeam, for example.

(Continued on page 26)

LANDOWNER
Referral Network Established

Stewards Partnership of Alabama has announced the formation of the Landowner Education and Referral Network (LEARN). The network will assist landowners with questions about environmental issues, economic concerns, conservation, and property rights. Stewards of Family Farms, Ranches and Forests, a non-profit, educational organization, serves as the point of contact for the network. They will link landowners with appropriate agencies and organizations to answer their questions.

Organizations which comprise Stewards Partnership of Alabama include the Alabama Cattlemen's Association, the Alabama Forestry Association, the Alabama Poultry and Egg Association, ALFA Farmers, and the Alabama Association of Conservation Districts. Also cooperating in the effort are several state agencies, including the Alabama Forestry Commission, the Alabama Soil and Water Conservation Committee, the Alabama Department of Conservation and Natural Resources, the Alabama Department of Agriculture and Industries, the Cooperative Extension Service and the Alabama Department of Environmental Management. LEARN is also fully endorsed by Governor Fob James.

Landowners are encouraged to continue to contact appropriate agencies and organizations for answers to their questions, but when those attempts have been exhausted without satisfaction they should contact LEARN. This free service is available to Alabama landowners every business day by calling 334-26-LEARN (334-265-3276). Or write to LEARN, P.O. Box 70424, Montgomery, AL 36107.

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Managing Upland Hardwoods

Continued from page 25

Some of these are not completely undesirable, of course. We all like to have some dogwoods to add beauty to our forests in the springtime. And, the red color of the sourwood leaves early in the fall is a welcome sight announcing the coming of cooler weather. The flowers of many of our hardwood trees together are the main source of nectar and pollen for honeybees. Many private landowners consider a jar of honey an important product of their hardwoods.

High-quality hardwood stands are relatively easy to manage. But most of our upland hardwoods forests may not be. How do we make ours better? Timber stand improvement work can upgrade many low-quality hardwood stands. When upgrading stands, a good rule is to "SAVE THE BEST."

Cut out dead, diseased, crooked trees, and trees with indications of poor growth. A few dead trees might be left behind for wildlife den or nesting trees.

When harvesting a hardwood stand, clean cut all the trees close to ground level, even the small trees, which have the best sprouting potential. The result will usually be a stand of vigorously-growing young hardwoods from sprouts or seeds or both.

If clearcutting large acreages is not aesthetically acceptable, clean cut areas of at least one or two acres in size to provide enough light for good hardwood regeneration to grow rapidly. In better-quality stands we can consider using crop tree release programs or development of two-aged stands.

Upland hardwood forests are as varied as the people who own them. There can be something for every person and some place for every kind of tree. The wise forest owner understands and applies the correct practices to satisfy his needs and to grow better trees for the use of all of our people. We use hardwoods for houses, fine furniture and flooring, kitchen cabinets, and many other wood products, in addition to wildlife, camping and picnicking, fishing, beautiful scenery, and that occasional but very important human need—isolation. The South's upland hardwood forests can supply all of that and more.

Help for Loggers in the '90s

Professional Logging Manager Course

by DR. RICHARD BRINKER, Extension Timber Harvesting Specialist,
Alabama Cooperative Extension Service

Relative to many other lines of work, only a small percentage of the U.S. work force is employed today in the logging business. Logging is a traditional and essential part of the lives of many Alabamians. To those who make their living in the woods, the satisfaction of hard work in an outdoor environment is appealing and satisfying. However, over the years, the life of a logger has become more complex. As always, today's logger must be knowledgeable of the woods and how to most efficiently harvest timber. A logger must also be a good businessperson, safety manager and operations planner and must be knowledgeable of current forestry practices.

The modern logger usually has many business problems to coordinate and solve. The capital investment in logging equipment for a single, modest-sized operation can approach $2 million. The logger's employees expect to have the opportunity to work enough to provide an income for their family. The local petroleum distributor, parts store, repair shops, and friendly banker all want the logger to do a good job managing his business so that they continue to get paid on time.

Loggers have to make complex financial decisions. They must decide what type of equipment is best for their operations. A successful logger must know the operating cost for each piece of equipment on his job, and accurately estimate the cost to log each tract of timber. All logging jobs are different, and a poor cost estimate can put a logger out of business.

Loggers must also have knowledge of forestry practices. Besides understanding harvesting prescriptions formulated by foresters, loggers must understand how environmentally sensitive operating guidelines such as Best Management Practices, threatened and endangered species, and other societal concerns affect them and their business.

Finally, safety management is probably the most pressing and difficult problem that most loggers have to handle. Recent studies have revealed a rate of 142 fatalities per 100,000 workers in the logging industry. This gives the logger the dubious distinction of working in the most dangerous occupation in the U.S. Does such a statistic have any effect on the average logger? You bet it does! Lost production, injured co-workers, and skyrocketing workers compensation insurance rates are the side effects of the logging industry's poor safety performance.

Loggers must also deal with numerous state and federal regulatory agencies. The Department of Transportation, Occupational Safety and Health Administration (OSHA), Environmental Protection Agency, and Bureau of Labor all establish regulations that affect the logger and his business. Ignorance of these regulations is no excuse for violations, and the possibility of substantial fines can bring financial ruin to the average logger.

Such a variety of problems and challenges can overwhelm many loggers. How can they improve their knowledge of what it takes to be a better professional logger? One approach being used by educators from the Auburn University School of Forestry and the Alabama Cooperative Extension Service is the development and offering of the Professional Logging Manager (PLM) Course. This is a 5-day course offered to loggers over a 6- to 10-week period. Instruction includes the following major topics.

Day 1—Logger Safety Training. Presentation of general logging safety precepts that are applicable to all logging workers, and training on specific job task safety principles for workers according to their particular jobs in the woods.

Day 2—First Aid for Loggers. Based on the Red Cross Basic First Aid program, loggers learn basic lifesaving techniques, with special emphasis given to those injuries that occur in the woods. Completion of this program satisfies the OSHA first aid requirement and provides the participant with Red Cross Basic First Aid and CPR certification.

Day 3—Harvesting Systems. A comprehensive overview of economical and environmentally sound harvesting techniques. Various types of timber harvesting systems are discussed, to include harvest planning and analysis.

Day 4—Forest Management and Silviculture. An overview of modern forest management concepts and how these concepts affect the performance of the logger. Forest biology, silviculture prescriptions, management plans, and the environmental concerns of Best Management Practices, endangered species and biodiversity are presented.

Day 5—Logging Business Management. Business skills such as basic accounting and bookkeeping, cost analysis, record keeping, and decision making are addressed.

The PLM Course has been conducted in six locations throughout the state, and 60 logging contractors have completed the entire course. During the past year, PLM Courses were conducted in Scottsboro, Lafayette, Tuscaloosa, Monroeville, Butler and New Brockton. You'll see the PLM graduate loggers wearing a white cap with the PLM logo. They are also recognized in the Alabama Forestry Commission's *Timber Seller's Guide and Directory of Timber Buyers* for having completed the course. These loggers should be recognized for having shown a great deal of interest in improving their knowledge of forestry, safety, logging, and protection of the environment.

This course also fulfills the training and education requirements for loggers as mandated by the American Forest and Paper Association. In conjunction with the Alabama Loggers Council, this course will be offered in 10 locations throughout the state in 1995. If you are interested in signing up for the PLM Course, contact your county agent, or call Dick Brinker at the Auburn University School of Forestry (334) 844-1038.

Yellow Lady's Slipper
(Cypripedium calceolus)

Mitchell Marks

Go Wild!

by COLEEN VANSANT, Forest Education Specialist,
Alabama Forestry Commission, Gardendale

Spring through fall, it's virtually impossible to go anywhere in Alabama without witnessing a show of Alabama wildflowers in bloom.

Wildflowers in Alabama come in all shapes, sizes and colors. They are found from the craggy mountains of North Alabama, through the rich fertile soil of the Blackbelt, southward to the Wiregrass and on to the sandy beaches of the Gulf Coast.

There are over 3,000 different species of native or naturalized flowering plants in Alabama. Our state is blessed with a native flora that is virtually incomparable with any other state.

Becoming acquainted with Alabama's smorgasbord of wild plants will not only give you a greater appreciation of flowering plants, but it will make it a lot easier for you to "go wild" with wildflowers.

According to several wildflower experts and enthusiasts, one of the first and most important things needed to be successful in growing and maintaining wildflowers is to acquire an appreciation for them through education. Understanding the different types of flowering plants and their habitats will get you well on the road as a successful wild plant gardener.

(Continued on page 30)

Coleen Vansant

Skullcap (Scutellaria integrifolia L.)

Coleen Vansant

Fire Pink (Silene virginica)

Celebrating *Wildflowers*

"Celebrating Wildflowers" is the theme for this year's observance of Wildflowers Week set for April 9-15, 1995, on the National Forests in Alabama. This week is set aside to celebrate the diversity of plants and plant habitats found on Alabama's public lands.

"Wildflowers are often taken for granted," said Gwen Lewis, biological technician for the National Forests in Alabama. "So we are taking this week in April to call attention to the importance and beauty of wildflowers native to Alabama.

Plants have great aesthetic value and provide a spiritual link with nature and our nation's diverse cultural history. Botanists and biologists on the national forests will be available during Wildflower Week to give talks and provide information relative to native plants in Alabama.

Celebrating Wildflowers is a program created and launched by the Forest Service in 1992 in response to public interest in education and involvement in the conservation and management of native plants. This year the effort continues to expand by adding several partners of the new federal Native Plant Conservation initiative. Educational efforts emphasize the aesthetic, recreational, biological, medicinal, and economic value of plants and their role in ecosystems.

During this year, the Forest Service, the Bureau of Land Management, the U.S. Fish and Wildlife Service, the National Park Service and others will join many public groups to celebrate a season-long festival highlighting wildflower education, interpretation and restoration activities on the 640-million acres of land managed by these four agencies. Celebrating Wildflowers builds on the expertise and creativity already being exhibited by the agencies' personnel.

For more information on this year's schedule of activities planned for Celebrating Wildflowers, call the National Forests in Alabama Supervisor's Office at 334-832-4470 or visit your nearest ranger district.

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Choosing a Guidebook

A good identification book is essential. Most large bookstores carry a comprehensive selection of books on wildflowers from around the world. Local wildflower experts agree that a book listing species of the Southeast region is the most helpful. There are also several books available on wildflowers of Alabama, and even specific regions such as the northern or southern areas of the state. A book with color photographs or color illustrations of plants is the most highly recommended. It should include useful and easily understood information about the plant. The information you need will be the common and scientific names, descriptions of the plant and its habitat, blooming periods, propagation, as well as diagnostic terms, features, and definitions.

Remember when purchasing your book that it will need to be durable, compact and easy to use. Most of the time you will be carrying the book to the plant, not the plant to the book.

Planting

Several experts agree that understanding habitat is very important. Whether planting wild seed or wild plants, knowing the plant and what habitat it requires is essential. Planting the wrong plant on the wrong site is usually fatal to the plant, as well as being frustrating to the gardener.

When planting seed, follow the supplier's recommendations on the package regarding habitat requirements. Seed recommended for sunny, dry, well-drained areas will not do well in a moist, shady environment. Also plant seed recommended for this specific geographic region. Those flowers you saw along the roadside out west last summer were indeed beautiful, but they will probably not be suitable in Alabama.

The same guidelines are to be used when transplanting existing plants. A good rule to remember is if your shoes got muddy when you rescued it, then they should get muddy when you replant it. Always try to match the environment where the plant originally grew.

Seed and Plant Sources

IN ALABAMA

Montgomery Seed & Supply Co.
1641 Federal Dr.
Montgomery, AL 36130
334-271-7182

Magnolia Nursery & Display Gardens
12625 Roberts Rd.
Chunchula, AL 36521
334-675-4696

Village Arbors
1804 Saugahatchee Rd.
Auburn, AL 36830
334-826-3490
1-800-288-5033

Humphries Farm Turf Supplies
P.O. Box 39
Joppa, AL 35087
205-586-3211

IN THE SOUTH

Pennington Seeds
P.O. Box 290
Madison, GA 30650
706-342-1234

Flowerplace Plant Farm
P.O. Box 4865
Meridian, MS 39304
601-482-5686

Gardens of the Blue Ridge
P.O. Box 10
Pineola, NC 28662
704-733-2417

Wildseed, Inc.
P.O. Box 308
Eagle Lake, TX 77434
1-800-848-0078

The last—but not the least—thing to consider is your seed and plant source. Purchase seeds and plants from a reputable dealer. Experts recommend dealers and nurseries who produce their own seed and plants instead of collecting them from the wild. Purchasing seed and plants from nurseries in your own geographic region is also a wise decision.

When collecting plants from the wild, wildflower lovers highly recommend taking those that "need to be rescued." This means collecting plants from areas such as construction sites, where timber has been harvested, or any other place where land clearing has or will take place.

These few tips should help even the most amateur wildflower lover in establishing a healthy and beautiful garden.

Suggested Resource Material

Dean, Blanche E., A. Mason, and J.L. Thomas. **Wildflowers of Alabama and Adjoining States**. Tuscaloosa, AL: University of Alabama Press, 1973.

Dickens, Ray. "Wildflowers for Alabama." *Alabama's TREASURED Forests*, Spring, 1989.

Letson, Neil. "Wildflowers, Getting Acquainted with One of the Smaller Treasures." *Alabama's TREASURED Forests*, Spring, 1987.

McGinty, Dr. Douglas T. "Wildflower Treasures." *Alabama's TREASURED Forests*, Fall, 1989.

Neiring, William A. **The Audubon Society Field Guide to North American Wildflowers, Eastern Region**. New York, 1979.

Phillips, Harry R. **Growing and Propagating Wild Flowers**. North Carolina: The University of North Carolina Press, 1985.

"Wildflowers in Alabama Landscapes." Alabama Cooperative Extension Service, Circular ANR-623.

Management Opportunities in Mid-Rotation Plantations

by MARSHALL THOMAS, President, F&W Forestry Services, Inc.

Over the last 20 years, almost 7 million acres of pine plantations have been established by non-industrial private landowners across Alabama, Florida, Georgia, and South Carolina. Of this acreage, over 500,000 acres are now in the 15 to 19 year age group; 1,120,000 in the 10 to 14 year age group; 3,486,000 acres are in the 5 to 9 year age group (composed of a lot of CRP plantations); and 1,600,000 in the 1 to 4 year age group. Stands in the 10 to 20 year age group are referred to as mid-rotation plantations.

As these stands grow from seedlings to saplings to pulpwood size trees, numerous management opportunities exist, depending on the owners' objectives. Some forests are owned as investments, some are owned partly for investment and partly for recreation, some solely for recreation, and others for sheer enjoyment.

If income is the principal or secondary objective, it can be realized from mid-rotation plantations through thinnings, pine straw sales, and fertilization. Mid-rotation thinnings can produce a one-time income ranging from $75 to $800 an acre, depending on the quality of the land, the stocking of the stand, and the local price structure. Thinnings are used by owners who want to produce a greater proportion of solid wood products on a longer rotation. Cutting a stand back to around 200 trees per acre leaves it in good growing shape for a 28 to 35 year rotation. If an owner chooses not to thin, the optimum rotation length is probably somewhere around 23 years.

Pine straw is an additional potential income source during the mid-rotation period, particularly on old field sites. We have seen prices range from $30 to $70 an acre per year within a plantation for pine straw harvesting rights. However, fertilization is essential to replace nutrients removed by straw harvest at approximately five year intervals at a cost of about $60 an acre.

Mid-rotation plantations are those in the 10 to 20 year age group.

Fertilization, with or without pine straw harvest, is another way to increase income from mid-rotation plantations, but results are not immediate. As crowns close on mid-rotation stands, nitrogen deficiencies frequently develop. At a cost of about $50 to $60 an acre, enough nitrogen can be added to stimulate future growth and is best applied after the initial thinning and approximately eight years before a second thinning or clearcut. Yield response varies widely, but on responsive sites it is possible to realize about 6/10 of a cord per acre per year additional growth, or about 5 cords over the eight-year response period. Assuming you fertilize after a thinning and that most of the additional wood is chip-n-saw at $80 a cord, a $60 investment can lead to a $400 return in eight years, a yield of 27 percent per year. However, before making the investment make sure you have a suitable stand on a soil type that will respond to fertilization.

For owners whose main objective is enjoyment of the forest, management of mid-rotation stands should be aimed at enhancing wildlife habitat and improving aesthetic qualities.

If the desired wildlife are game animals, thinning is usually appropriate. If you are interested in deer or quail, the stands should be thinned fairly heavily. The main goal is to create a density that favors the development of the food the desired species likes. For example, quail like annual and perennial weeds that grow close to the ground. Heavy thinnings followed by frequent burns produce this environment.

Deer prefer shrubs and small trees. Medium thins followed by burns at three to five year intervals favor this type of food. Young turkeys need open areas similar to those that quail favor, because insects are their favorite food. Older turkeys like denser stands for cover.

Beauty is in the eye of the beholder, so it is hard to say what kind of look will please a particular owner. However, people generally find fairly open stands that they can see through attractive. They also generally favor the dominant large crown trees in a stand. Fairly heavy thins for aesthetic improvement, followed by frequent burns, lead to open stands that can be seen through and big-crowned, large-stemmed trees.

In summary, there are over 1.6 million acres in the mid-rotation age group currently in the Southeast, and another 3.5 million will reach that stage in the next five years. These stands are approaching the fastest growing period of their life and are achieving their highest yield. At the same time, they have reached an age where any management activities undertaken frequently determine the productivity, the appearance, and the use of the stand for a large portion of the rotation. Before taking actions on these stands, carefully identify your objectives and make sure the management activities you choose will lead you there.

HARDWOODS OF ALABAMA

SAWTOOTH OAK

Quercus acutissima

by TOM CAMBRE, Statewide Hardwood Specialist, Alabama Forestry Commission

Although sawtooth oak is not a tree native to Alabama, or even native to the United States, it has been planted throughout Alabama and the South by forest landowners wishing to benefit wildlife.

The sawtooth oak (*Quercus acutissima*) is native to Japan, Korea, China and the Himalayan area. In its native range it often reaches a height of 80 feet. In Alabama the height may reach as much as 50 feet at maturity. The Soil Conservation Service first introduced this species into the United States over 90 years ago and for many years it didn't receive much attention. In recent years it has become very popular due to its rapid growth and prolific acorn production.

The sawtooth oak is a member of the white oak family; therefore, its acorns require two years to mature and the size is similar to the white oak. Acorn production begins as early as age 5 years in the sawtooth, compared to 20 to 25 years in our native oaks. The interval between seed crops is one year for sawtooth compared to 4 to 10 years for white oak, *Quercus alba*. It has been noted that when planting takes place a wider spacing usually provides for a larger crown, therefore producing more mast for wildlife.

This tree has shown promise in adapting to a wide variety of sites, thus becoming more versatile than many of our natural oaks that are site sensitive. The sawtooth oak can be grown on sites considerably more severe than those normally considered adequate for hardwood production. The rapid growth rate of this exotic species could have fiber possibilities in forest management concepts along with providing an additional food supply for certain wildlife.

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