

# Alabama's **TREASURED** Forests

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# STATE FORESTER'S MESSAGE

by C.W. MOODY



I have visited with you many times about TREASURE Forest and the stewardship concept. We all hold as a basic philosophy of TREASURE Forest that the work we do today will benefit both present and future generations. For this reason we plant trees, develop wildlife habitat and conserve and protect all natural resources.

The movement in Alabama has been adopted nationwide in the USDA-Forest Service's Stewardship Program. A new Stewardship Incentives Program will soon begin that will help landowners pay for multiple use forest practices. Stewardship education grants are going out to county forestry planning committees to help increase the impact of forestry in local communities.

The concept of stewardship is spreading to other aspects of resource management. The Alabama Legislature passed the Forever Wild bill which sets up a program to purchase unique and prime forestlands, which will then be managed under a long-term stewardship philosophy. The Alabama Forestry Commission is proud to be part of this program. The people of Alabama will vote on this program as a constitutional amendment next June. I urge your support of this amendment.

Another area where the concept of stewardship is growing is urban forestry. Several groups, including the Alabama Urban Forestry Association, are working to help cities plan the future of urban trees. The AFC has coordinated two grant programs that help cities plan and plant for the future. I urge all of you to work with your town's tree commission. If your town does not have one, contact your county AFC office and help set up a city tree commission. The forests in our cities need stewardship management just like a TREASURE Forest.

Sincerely,

A handwritten signature in cursive script that reads "C.W. Moody". The signature is written in black ink and is positioned above the printed name.

C.W. Moody  
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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**Cover:** This photo by Kenny Griffin was taken at the Talladega National Forest. The national forest system is celebrating its 100th anniversary. See story, page 7.

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Volume X

Fall Issue, 1991

Number 4

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Alabama's *Treasured Forests* is published quarterly by the Alabama Forestry Commission, 513 Madison Avenue, Montgomery, AL 36130. Telephone 240-9358. Bulk-rate postage paid at Montgomery, Alabama. POSTMASTER: Send address changes to: Alabama's *Treasured Forests*, 513 Madison Avenue, Montgomery, AL 36130.



*Bicolor lespedeza is one of the many wildlife foods planted on the Sellers TREASURE Forest.*

managing his forestland. Another lesson learned is the proper use of fire in managing a pine stand.

### Fire as a Management Tool

Sellers moved to Cairo, Georgia in 1953. "I saw the real way down there of how to manage a tree farm for the maximum dollar return, which in my estimation is fire," he said. In south Georgia he saw people prescribe burning to reduce the competition for young pines. "At that point and time I didn't recognize why the rolling hills here are different than the flatlands of Georgia. You've got to design your tree farming areas for the fire." Several years later, he decided he would try some prescribe burning on his own property near Troy, Alabama. The attitude about fire in that area was different, however. People were not used to the idea of purposely setting fire. In fact, the police and fire department came out several times when he was trying to prescribe burn and put the fire out.

But attitudes have changed in the 10 years since that happened. Fire is readily used as a tool in forest management these days, and Sellers is one of its proponents. This year he will prescribe burn a stand planted in the winter of 1981-82.

Sellers' property is divided up into what he calls burn and no-burn areas. The no-burn areas include bottoms where he has planted yellow poplars, sycamores, dogwoods, and sawtooth oaks.

Firelanes are designed to separate the burn and no-burn areas. Firelanes at the top of hills are made so prescribed fire can be set off the top and go down each side. From firelanes at the bottom of the hill fire will also be set, with the two fires meeting and burning out the middle. Roads double as firelanes, and firelanes run along the boundaries. Sellers has found that he gets the best results from prescribed burning in the late afternoon and early evening.

Sellers is a firm believer in the importance of going back the day after a prescribed burn to put out any remaining fire areas—such as stumps—that may still be burning. He has a tractor equipped with a 150-gallon water tank which is driven over the burned areas. "Within 100 yards of where there's fuel that it could get to, we take that water and put out that stump or that log," said Sellers. "The next day is the most important thing."

## LESSONS LEARNED

by KIM GILLILAND, Editor

A sure way to educate yourself in forest management is to learn from past mistakes. One of the things Robert Sellers has learned from first-hand experience is the difference between unimproved and improved pine seedlings. If you ask him what that difference is, he won't just tell you—he can show you. Sellers, a TREASURE Forest landowner in Pike County, has had the experience of growing both kinds of trees. Currently he is managing an

11-year-old stand of loblolly pine that was planted with unimproved seedlings. The seedlings were very susceptible to diseases, such as cronartium and annosus root rot. Forked trees are also common in the stand. It is now ready to be thinned, but nature has done a lot of the work herself, with many of the diseased trees dying out.

The importance of using improved seedlings is just one of the many lessons learned by Sellers in the years he has been

On one 40-acre tract Sellers has heavy competition from hardwoods. He would like to use herbicides to reduce the competition, but believes he can get the same results from prescribed burning at a fraction of the cost.

### Managing for the Maximum Return

The TREASURE Forest, which is just under 2,000 acres, is divided into five parcels of land. Sellers has site indexes ranging from 50 to 90 on different parts of his property, and he has experimented with growing trees on the different areas to compare their growth rate and size.

On the pine sites he has planted loblolly, longleaf, and a few slash and shortleaf. "If I'd known in 1981 what I know today, I'd have planted everything in longleaf. But at that time, we didn't think that longleaf would make it here." Sellers cites the fact that the longleaf pine is extremely fire tolerant as one reason it is an excellent species to grow. A two-year-old longleaf stand of containerized seedlings planted mechanically is currently doing quite well. Herbicides have helped their growth considerably, and some are already coming out of the grass stage.

He is trying to upgrade his natural longleaf regeneration by scattering longleaf throughout the property. Although they may need a little help at first with direct seeding, he hopes that as the loblolly are harvested, the longleaf will eventually naturally regenerate themselves.

The majority of Sellers' land has been cutover and replanted. He began taking over management of the property in 1979. When he first planted pines, no herbicides were used. He mowed down the middle of the rows, however, to keep down the competition. In the early 1980s he began to



**A power line right of way has been planted with wildlife foods.**

have more time to spend on the TREASURE Forest. He saw that many of the trees planted during the Soil Bank years were diseased and not growing properly. He also realized that most of the best trees had been cut in the past, leaving poor quality seed trees. "We decided to clearcut it and started back replanting with improved seedlings," he said.

Sellers is also interested in fertilizing trees. He has done some experimentation with slash and loblolly pines, mowing around the selected trees and fertilizing them with different combinations. After measuring the trees before, and comparing the check blocks after fertilization, he found the ones that received calcium and nitrogen grew the fastest. He hopes at some point to experiment further with this method on a larger area.

Sellers says he will start thinning some trees in 1992-93, and by 1996 will have thinned over 1,000 acres. "I'm trying to grow on a 20-25 year cycle," he said. He also wants to do some pine straw harvesting in the future. "I designed the farm layout with the roads for that purpose."

Sellers' primary objective is managing for the timber, with wildlife coming in a close second. "I think it's going to be rewarding, both in increased wildlife and monetarily."

The wildlife population has increased considerably over the past 10 years. "When we started, I don't believe we saw a deer track on the place but occasionally, and never saw a turkey track," Sellers said. "And today you find deer and turkey galore." He is also managing for quail, and expects this population to increase as well. "The food is there—all over the whole place." Tens of thousands of bicolor lespedeza have been planted. There are

also patches of corn, sericea lespedeza, millets, partridge peas, and clovers. A power line right of way is also planted with food for wildlife. Much of the property is leased to hunting clubs.

### Assistance from Others

Working with the Soil Conservation Service, Sellers has controlled all his erosion problems. Diversion terraces seeded with bahia grass (excellent for turkey poults) help the water slowly run off of the roads, allowing them to be passable even after heavy rains.

"I couldn't have asked for better cooperation out of the Soil Conservation Service and the Pike County Alabama Forestry Commission office. They've just been most supportive, and with me being an absentee landowner, they've kept their eyes open." Also keeping his eyes open and helping maintain the property was George Tolbert, a good friend who passed away last May. He worked for the Sellers' for several years, planting food plots, trees, building firelanes and overseeing the place while Helen and Robert were away.

Sellers believes that his forestland will pay off in the long run, even if he has to wait a while for the returns. "To me, I think tree farming is an excellent investment," Sellers said. "If you're ready to market, and the market is not ready for you to market, it's not like a tomato that's going to go bad—you can wait."

Of all the lessons he has learned about forest management, there's one in particular that Robert Sellers puts above all others. "A tree will pay you a return if you will just give it a little bit," he says. But Sellers has given his TREASURE Forest more than a little bit, and the returns are plentiful. ♣



**Helen and Robert Sellers**



**Herbicides have been used on a two-year-old longleaf plantation.**

# EDITOR'S UNDERSTORY

by KIM GILLILAND, Editor

When Robert Sellers moved to Cairo, Georgia in 1953, it was just supposed to be for two years. Those two years have now turned into 38 years, as his business grew and he put down roots in the southern Georgia town. He still has roots in Pike County, Alabama, though, because it was there he was born and raised.

After attending Auburn University, he came back to Troy and began a teaching career. During the transition from mules to tractors in farming, Sellers was teaching vo-ag in Pike County, but he left to serve in the Korean War. After returning, he discovered that the farming situation was not stable enough, so he found a job in Georgia and moved there.

During the Soil Bank years, Sellers talked his father into taking all the cultivatable land on the family's property and planting it in pine trees. Since then, those trees have been harvested and the acreage replanted. Over a period of years, he gradually acquired all of the family property which now makes up his TREASURE Forest, as well as some additional acreage in the county.

Robert Sellers and his wife, Helen, have three daughters and five grandchildren. He and Helen come back to Troy as often as they can, but usually manage to do so more frequently during football season. Helen is also a graduate of Auburn University and she and her husband enjoy attending the games with other family members.

Ornamental nurseries are the backbone of Sellers' business, Big Bend Agri-Services, Inc., in Cairo. Using chemical blends of plant foods, he will fill any order for these nurseries for their irrigation systems with a liquid constant feed program.

He also buys and sells grain. At one point he sold part of his business, and for about five years spent most of his free time

working on his TREASURE Forest. He has since gone back into business full-time, but manages to make the 135-mile trip to Alabama on a fairly regular basis.

Wayne Craft, with the Alabama Forestry Commission, first approached Sellers about becoming a TREASURE Forest landowner when he saw that Sellers was basically doing everything he needed to be certified. He was certified in 1981, and in 1984 his property was honored as a district Helene Mosley Memorial TREASURE Forest Award recipient.

Walnut Creek runs through the Sellers' TREASURE Forest, and at one time there was a large Indian population in the area. In 1976 some Indian remains were found by McDonald Brooms, an associate professor of anthropology at Troy State University. The past two summers Brooms has brought his students to different sites on the property and conducted digs.

Dan Shinn is a student who is participating in the digs. "There has been very little, if any, archeological work on this area," he said. Besides various pieces of pottery, Shinn said a projectile point (spear head) was recently found. It is estimated to be 10,500 years old. Another significant find during the summer was the remains of a wooden structure, believed to have been a house. The wood has rotted away, of course, but wall lines found in the soil allowed diggers to identify the structure.

Shinn said the students use shovels, trowels, small knives, and even dental tools to uncover items. Dirt is screened and sifted through to make sure nothing is missed.

Being generous people, Robert and Helen Sellers have allowed the University to conduct the digs on their property. They realize that what is found could be significant to the history of Pike County and Alabama. It's just one more way their TREASURE Forest can be of educational value to others. ♣



*Archeological digs have been conducted on the Sellers' TREASURE Forest the past two summers.*

# Centennial Year Of The National Forest System

by JOY PATTY, Public Affairs Officer, USDA-Forest Service, Montgomery

Once it was acres of cutover, burned, and eroded lands. Today the national forest system is productive and celebrating its 100th birthday.

The national forest system is administered by the Forest Service, an agency of the U.S. Department of Agriculture. The Forest Service has a truly remarkable history. Over the years it has been a driving force in forest policy-making.

Today it's a multi-functional, task-oriented agency that grew from humble beginnings. Throughout its history it has strongly influenced the management of timber and outdoor recreation resources in the United States and the rest of the world.

John Yancy, Forest Supervisor for the National Forests in Alabama, said, "The birth of the national forest system occurred on March 30, 1891 when President Harrison reserved the Yellowstone Park Timber Land Reserve for the public." This land is now part of the Shoshone and Teton National Forests in Wyoming.

"With this action, President Harrison took the first step toward conservation of America's natural resources," Yancy said.

Today, 191 million acres of National Forest System land are reserved for the public. These acres comprise 156 national forests and 19 national grasslands, spanning from Alaska to Puerto Rico.

The Forest Service first reserved public land in Alabama under the Weeks Act of 1911. In 1918, what is now called the Bankhead National Forest was proclaimed. Designation of the Talladega and Conecuh followed in 1936.

A large amount of the newly proclaimed lands was little more than forests of stumps and gullies; thus the first challenge was to reestablish forest cover. The key tasks were to replant trees and stop wildfires.

About that time, the Civilian Conservation Corps (CCC) program was initiated and thousands of acres were planted and fires were reduced in both number and size.

The Tuskegee National Forest in Macon County was formerly the Tuskegee Land Utilization Project, authorized under the Submarginal Land Program of 1935-38. It was proclaimed a national forest by President Eisenhower in 1959.

The four forests now encompass over



*Conecuh National Forest*

1.25 million acres with 652,000 in public ownership.

The forests have been nurtured and protected by succeeding generations of land managers. Because of the exceptional dedication and performance of the first generation of land managers, today's natural resource managers have inherited a forest treasure and they carry with them the responsibility to continue in the same tradition as their predecessors.

According to Forest Supervisor Yancy, the national forests have always been managed with the policy laid out by the Forest Service's first chief, Gifford Pinchot, calling for "the greatest good for the greatest number of people in the long run." Yancy said, "Forest Service policy has been underlined by laws, such as the National Forest Management Act of 1976, which mandates management of all the resources, including timber, wildlife, range, water and cultural, aesthetic, recreation, and human resources."

Yancy added that long-range planning is continuing to ensure that these resources

will be available to meet public demands of the future.

The four national forests in Alabama are productive. Last year timber harvests totaled 75 million board feet and provided an estimated 686 local jobs and \$18 million in income.

The forests contain the largest acreage of public land within the state. As private land has become more restricted to public use, the forests have become very popular for their wildlife resources. In 1990, approximately 2,700 white-tail deer and over 1,000 turkeys were harvested.

The national forests are the single largest supplier of outdoor recreation in the United States. Last year Alabama's forests recorded about 700,000 visitor days use at 12 recreation areas, on 252 miles of hiking trails, in 33,476 acres of wilderness and on 61 miles of a wild and scenic river.

Twenty-five percent of revenue collected from national forests is returned to counties where national forests are located. For Fiscal Year 1990, 16 counties received a total of \$1,553,275. ♠

# TSI Methods to Help Achieve Your Goals

by THOMAS K. LANG, Forest Management Specialist, Selma

**M**ore ways and means of improving timber stands are available to forest owners today than ever before. Timber Stand Improvement, or TSI, can cover a broad range of activities. Most of these activities are geared toward improving the economic value and quality of a stand of timber. Spinoff benefits can improve and enhance secondary objectives also. For example, prescribed burning can rid a pine stand of unwanted hardwoods, while yielding low browse of herbaceous weeds and grasses.

This article will cover some TSI methods suitable for early to middle stages of stand development. TSI work can involve the use of fire, forest herbicides, mechanized equipment, or hand held equipment.

Controlling undesirable hardwoods is a goal in several TSI methods. Hundreds of thousands of acres in Alabama are stocked with predominately undesirable hardwoods. Many more acres are in mixed stands with undesirable hardwoods taking up space and competing for water and nutrients which would otherwise increase production of the pine component in the stand. Some hardwoods are desirable and may have an equal or higher value than pines growing on the same site. The goals a landowner has may decide whether a particular hardwood species is desirable in a timber stand. Economics, mast production, and aesthetics may lead a landowner's criteria for labeling a particular tree or tree species as "desirable" or "undesirable."

Other TSI goals not mentioned so far include releasing pines from herbaceous grass and weed competition; removal of overmature, wolf, suppressed, and injured trees from a stand; precommercial thinning of pines to control density and improve growth rate; and pruning to enhance the quality of a butt log on pines.

## Fire

Prescribed burning represents the cheapest form of TSI available. A pre-



*During an aerial release project, a helicopter lands on a tank truck to reload with Arsenal.*



*Premerchantable loblolly pine plantation in Autauga County that was aerially released with Arsenal in early summer 1991.*

scribed burning rotation cannot be initiated in a pine stand until pines are around 15 feet tall. This first burn is usually a winter burn requiring cool temperatures, steady winds and calm nerves. This burn can be tricky, and should be terminated if weather conditions make fire behavior unpredictable, or if too much crown scorch is occurring in pines.

After the first winter burn, summer burns can be conducted to kill most thin bark hardwoods under 4 inches in diameter at ground level. Areas with good quality hardwoods should be plowed around. Individual desirable hardwoods can be raked around with a fire rake to help protect them from the heat of a prescribed fire. Bottomland hardwoods and streamside management zones also need protection from prescribed fires.

### Herbaceous Weed Control

Herbicide treatments can control herbaceous weeds and grasses around newly planted pine seedlings. These treatments are generally done between March and May. Timing varies by the herbicide in question, whether it is used alone, or in a tank mix. Target grasses and weeds will cause timing to vary also. Some herbicides can control both woody and herbaceous plants.

Banding or spot treatments will lower herbicide costs. Four wheeler rigs are popular in banding over newly planted pines.

Some of the more common herbicides

used in herbaceous weed control are Oust, Oust+Roundup tank mix, Oust+Atrazine tank mix, Oust+Velpar tank mix, and Arsenal. A mild nonionic surfactant may be recommended in some cases. A site specific prescription should be done before deciding on a herbaceous weed control method. Costs will vary depending on herbicide used, dealer discounts, etc. Banding treatments currently average \$30 to \$40 per acre, including herbicide and application costs.

Leonard Breeman, a forester with Jim Thomas Forestry Consultants Inc. in Selma, likes to use Arsenal in many cases for herbaceous weed control. He likes the broad species control of Arsenal, and also says it is easier to apply a herbicide when you don't have to tank mix. They have also used Oust+Velpar L tank mix to control grass and weed competition over longleaf pines. Some vendors and landowners like the control of Oust and Atrazine tank mix when controlling grasses and weeds in cropland planted to loblolly pine.

### Pine Release

Several herbicides are labeled for aerial pine release. Some of these include hexazinone products such as Pronone 10G and Velpar ULW. Others are Accord, Arsenal, Arsenal+Accord tank mix, and Arsenal+ Escort tank mix.

Dean Gillespie, forester and operations manager with Resource Management Service, Inc. in Birmingham, makes a lot of pine release prescriptions. He says when



*Results of Oust+Velpar L herbaceous weed control band over longleaf pine seedlings. Photo taken 4 months after herbicide application.*

you are trying to determine if a stand needs release, you need to look at several factors. If pines will outgrow hardwoods, Gillespie says there is less need for release from a pine survival stand point. However, if hardwoods are older than pines and crowding pines out, or overtopping pines, then release may be required. Gillespie says you need to decide how many pines per acre you want to survive, and if

**Table 1**

Application methods for commonly used herbicides registered for pine release in Alabama.

Common Name	Trade Name	Application Method
Glyphosphate	Accord	Aerial and ground broadcast, backpack, and directed foliar spray
Hexazinone	Pronone 10G	Aerial and ground broadcast, individual stem
Hexazinone	Velpar L	Aerial and ground broadcast, individual stem and grid pattern
Hexazinone	Velpar ULW	Aerial broadcast
Imazapyr	Arsenal	Aerial and ground broadcast, directed sprays (backpack sprayers)
Metsulfuron Methyl	Escort	Aerial and ground broadcast, directed foliar spray
Triclopyr (amine)	Garlon 3A	Directed sprays (backpack sprayers)
Triclopyr (ester)	Garlon 4	Basal bark treatments (backpack sprayers)

hardwood competition causes pine survival to fall short of your goal, go with herbicide release, aerial or ground applied.

Gordon Armistead is area manager for Timberland Enterprises, Inc. in Auburn. He handles Alabama and northern Florida, and makes aerial herbicide prescriptions and oversees aerial application of pine release work. He says you generally look for a 70-80 percent kill of hardwoods when releasing pine stands. Armistead says the pine release spraying season in Alabama usually begins in mid August in North Alabama and begins after Labor Day in south Alabama. Aerial release can be done until signs of leaf color change—usually the beginning of October in central Alabama. Armistead says that during this time frame pines are shutting down their summer growth pattern and are more resistant to bud and needle burn from herbicides. Both Gillespie and Armistead like to recommend Arsenal+Accord tank mix for release, due to the broad hardwood control experienced. They also think Arsenal+Escort tank mix is becoming more popular, especially when control of hickory, locust, redbud, and blackberries is needed.

Pine release can also be achieved by directed foliar sprays, streamline basal sprays, and soil spots with soil active herbicides.

Streamline basal sprays can be effective in controlling hardwoods up to 2 inches DBH (diameter at breast height). Larger diameter susceptible species may be controlled also. Small diameter pines and hardwoods can be targeted to allow better growth on crop pines and high grade hardwoods. This method works well in combination with individual tree injection.

A popular streamline mixture uses 20 percent Garlon 4, 10 percent Cide-Kick or Cide-Kick II, and 70 percent diesel fuel. No water is involved in the mixture. Access is another herbicide labeled for streamline basal application.

The best timing for application is probably February and March. This also allows for quicker spraying and better visibility of hardwood stems, since foliage is not yet present. A backpack sprayer with a Model 30 Gunjet and a small diameter straight stream spray tip is recommended in streamline application. See **TABLE 1** for application methods and herbicides used in pine release.

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### Tree Injection

Tree injection is still a widely used practice in Alabama when a landowner



*Prescribed burning is an economical TSI method.*

wants to improve a species mix in a stand or release pines from hardwoods. Injecting a large amount of hardwoods per acre can become cost prohibitive, due to labor and herbicide costs. However, this method does allow you to pick and choose which stems you want to eliminate from a forest stand. Target stems should be 1 inch in diameter and up.

Some of the more common labeled herbicides for injection in Alabama include Tordon 101R, Tordon RTU, Roundup, Garlon 3A, 2,4-D(Amine), Velpar L, and Arsenal.

Jim Thomas, of Jim Thomas Forestry Consultants Inc. in Selma, likes to use Tordon 101R with his injection crews

because it is cost effective for him and the landowner. He says you need to overlap your cuts while injecting hickory species and American beech.

Injection crews commonly use a Hypo-Hatchet, Jim-Gem or Cran-Jector tabular tree injector or a small ax to cut into the sapwood, and a spray bottle to deliver the herbicide to the cup. Regardless of the injection tool, usually 1 milliliter of herbicide is applied to each cut. The cut should be made so that the herbicide stays in the cup.

The timing of tree injection varies by herbicide. Injecting during December to mid January, during heavy sap flow in spring, or during severe droughts is not recommended. Heavy rain shortly after injection can also wash the herbicide out of the cup.



*Pruning technique with pruning saw*

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### Spot Gun Application

Spot gun application of Velpar L is another pine release treatment option. A Model 30 Gunjet can also be used with a backpack sprayer to deliver Velpar L to the soil surface. Soil spots should not be applied within 36 inches of pines. Velpar L is a soil active herbicide when used with a spot gun, so less herbicide is needed in sandy soil as opposed to clay soil.

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### Herbicide Safety

Always read and follow the label before purchasing, mixing, or applying any herbicide. Also, read the label before storing or disposing of herbicide containers. Proper precautions should be taken while transporting herbicides, because some may lose their effectiveness when exposed to the sun, or may crystallize in freezing weather.

Drift and off-site movement from volatilization can damage nearby crops, trees, and other vegetation. Care should be taken to avoid runoff into streams and bodies of water.

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### Precommercial Thinning

Precommercial thinning involves reducing the density of stems in a timber stand to allow for more growing space for remaining trees. Precommercial thinning can prevent or correct a stagnant situation. Fire, chemical, mechanical, or hand methods can be used.

The basal spray herbicide treatment previously mentioned is an option. Grossly overstocked stands of pine may be precommercially thinned with fire, but results will probably be unpredictable and patchy. Mechanical thinning involves bushhogging, disking, or chopping to reduce the number of stems per acre. Mechanical precommercial thinning is usually done by chopping or mowing in 8-foot swaths leaving about a 2-foot wide row of remaining stems. Trees within this row can be hand thinned. Approximately 500-600 trees per acre can be left to grow.

Hand thinning with a bush ax, machete, or a chain saw can also provide a means of precommercial thinning. This is labor intensive and costs per acre will vary.

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### Pruning

Pruning is another TSI option which can increase the value of individual pine stems. Although southern pines prune themselves naturally when grown in well stocked stands, pruning may still be worthwhile in some cases. Since branch knots are a defect in sawtimber, controlling branch growth may increase the value of a butt log.

To obtain any economic benefit, all branches on the tree within the first 17 feet of the ground should be pruned. This can be a one stage or multiple stage operation. Wounds created by pruning live branches heal faster than those created by cutting dead branches. A 40-50 percent live crown should be left on a southern pine after pruning.

For maximum clear wood, prune in several stages, starting about head high to 8 feet. By using as many as two to three more passes, the smallest possible knotty core is left, giving more clear wood. The two-pass system is probably the most common. Long handled pruning saws are used to prune flush with the bark of the main stem.

Pruning should be done in the dormant season. Prune only in stands which are



*A typical premerchantable stand which could benefit from release.*



*Aerial release of young pine stand with Arsenal on Bibb County tract managed by TREASURE Forest landowner Bobby Bearden.*

frequently thinned to increase growth of pruned "crop" stems. Target approximately 100 trees per acre for crop trees to prune. These should be dominant, good form stems. Prune only stems between 4 and 12 inches DBH for best results. Overall economic benefit will be determined by labor costs, soil productivity for growing pines, market conditions, and other similar factors.

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### Conclusion

Your overall goal for a stand, economics, and the scale and scope of the work needed will help determine which method of TSI you will need to use. Don't hesitate to seek advice about which TSI method is the best to help you reach your goals. Cost-share funds are usually available for TSI

practices like prescribed burning, herbaceous weed control, pine release, and sometimes pruning.

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# .... Keeping Alabama Forever Wild! .....

by KATHY STILES COOLEY, Executive Director, The Nature Conservancy of Alabama

Virtually no Alabamian would deny that our state is one of the most beautiful and biologically unique states in the union. The state is famous for its hunting and fishing. It has more geologic provinces than any state except California, and ranks second only to Tennessee in the diversity of fish fauna with over 300 known species. Alabama's coastal areas provide prime resting places for thousands of migratory birds in the fall and spring. Alabama rivals any state of similar size in the number of native species of plants.

Yet, Alabama has at least 250 species of plants and animals that have been considered for inclusion on the federal endangered species list. Sixty-one of them have already been named to the list. Alabama ranks third (tied with Texas) among states with the most endangered or threatened species.

Alabama is growing—can we grow and develop and still protect Alabama's special natural areas? Can we truly protect the natural resources of a state which is home to its 4 million human

inhabitants and for thousands of species of plants and animals which make it so biologically rich?

The Alabama Department of Conservation has lost leases on thousands of acres of land formerly leased for wildlife management areas. Several state parks, especially those near our largest urban areas, are suffering from nearby development and buffers are needed to protect their natural values. Can we provide wildlife management areas for the state's hunters? Can we provide buffers for our wonderful state parks and even acquire new state park lands?

Yes—we can, if Alabama voters support a Constitutional Amendment in the June 1992 primary election establishing the Alabama Forever Wild Land Trust!

Varying efforts to establish a land acquisition program for Alabama have been made over the last 10 years. The need for such a program has been strongly documented—how to make it happen was the issue. A bill almost passed in the previous legislative session,

but did not due to problems Governor Hunt and the Alabama Department of Conservation found with that bill.

In August 1990 I attended the first meeting of the Forever Wild Committee. This committee was appointed by Governor Hunt and charged with the task of developing a consensus land acquisition bill for the Legislature to consider in 1991. The members of this committee represented environmental organizations, hunting and fishing organizations, the forestry industry, state agencies like the Alabama Department of Conservation and the Alabama Forestry Commission, state universities, ALFA, and business leaders representing the Business Council of Alabama. From my long involvement in conservation in Alabama, I wondered if this group (often on opposite sides in other environmental issues) could truly develop a consensus land acquisition bill.

Over the next nine months, under the guidance of Dr. Doug Phillips, who acted as facilitator, and Conservation Commissioner Jim Martin, who served as Chairman, the Forever Wild Committee

## Public Lands Owned by Southeastern States for Conservational or Recreational Uses

### Total Acreage Protected as Percentage of Total State Area

### Total Acreage Protected per 1,000 Population

State	Rank	Percentage	Rank	Per 1,000 Population
Alabama	9	0.30	9	24.11
Arkansas	5	0.99	2	142.50
Georgia	6	0.83	6	50.98
Kentucky	7	0.52	8	36.26
Louisiana	1	2.18	1	148.13
Mississippi	8	0.35	7	40.67
North Carolina	4	1.06	5	56.58
South Carolina	3	1.12	4	65.88
Tennessee	2	1.71	3	95.77

**Note:** "Public lands owned by Southeastern states for conservational or recreational uses" are the combined total of game management lands, state parks, natural areas, and state forests owned by each state.

**Sources:** The Nature Conservancy, various state agencies, U.S. Department of Commerce.

**Public Lands Owned by  
Southeastern States for  
Conservational or Recreational  
Uses**

Louisiana 666,747

Tennessee 460,000

N. Carolina 358,301

Arkansas 338,000

Georgia 311,205

S. Carolina 222,464

Kentucky 135,202

**STATES**

Mississippi 106,763

Alabama 97,686

**ACRES**

came together in a real spirit of cooperation. They donated their time (meeting for several full-day meetings) and energy to hammer out consensus agreements on how the program would work. Surprisingly, we found in many cases that our concerns about a land acquisition program were very similar. Chief among those concerns was that the decisions on what lands to acquire should be made by a board, which would include representatives of the same diverse interests as were making up the Forever Wild Committee.

After general consensus was reached by the full committee on the major points of the bill, a drafting sub-committee was formed. After weekly meetings, the drafting sub-committee presented a draft of the Forever Wild Land Trust bill to the Forever Wild Committee. The drafting committee felt they did a good job since no one on the Forever Wild Committee was 100 percent happy with it, but the committee did vote to send it on to the governor for his consideration. Speaker pro tem Jim Campbell and Senator Doug Ghee agreed to sponsor the bill and did an outstanding job in ironing out differ-

ences of opinion and problems expressed by various interested parties once the bill was filed.

Finally, on June 20, the House approved the bill on a 94-3 vote, and on July 12 the Senate approved that draft (with no amendments) on a 29-1 vote. This was a resounding tribute to the spirit of cooperation that made Forever Wild happen.

The Forever Wild program is a modest one—considering what our neighboring states have set up—but it is a definite step in the right direction. Once approved by the state's voters, it will begin receiving \$2 million annually and will gradually increase over the next 8-10 years to as much as \$15 million annually. This will come from a small amount of the interest being earned now on the investment of the sale of Alabama's natural gas. No new taxes are being assessed and it does not impact the General Fund of the state.

I am a lifelong native Alabamian and am proud of the natural beauty of our state. In my work with The Nature Conservancy, I often travel to other states and have learned that many people outside Alabama don't know how beautiful and varied Alabama is. One of the personal rewards to me of this land acquisition effort is that it makes a positive statement about Alabama which will be heard everywhere. It says that

**Public Lands Owned by the  
State of Alabama for Conservational  
or  
Recreational Uses**

Alabama's Total Area 33,091,200 acres

**Acreage of Lands Protected**

Game Management ..... 34,051

State Parks ..... 50,000

Natural Areas ..... 35

State Forests ..... 13,600

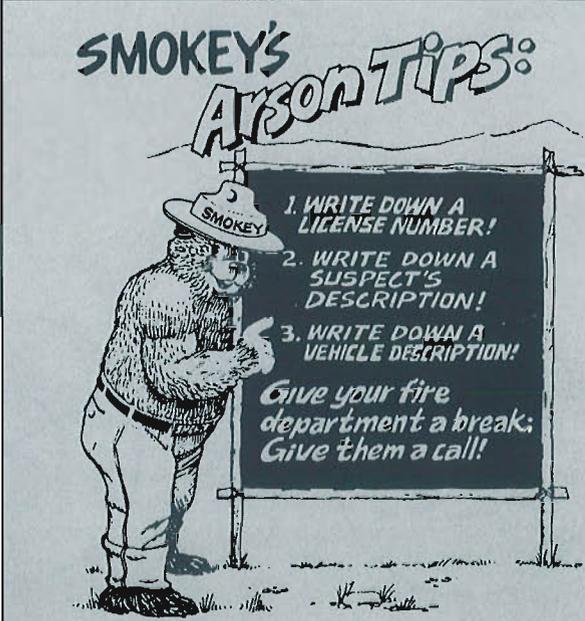
**Total Acreage Protected..97,686 acres**

(or 3/10 of 1% of Alabama's total area)

Alabama has natural wealth in abundance and that the state cares about its natural resources enough to make a major commitment to protect them for present and future generations.

The next step must be taken by you, the Alabama voter. Since it is a Constitutional Amendment, the Alabama Forever Wild Land Trust must be approved by the state's voters in the primary elections in June 1992.

Do something really wild—go the polls in 1992 and vote for the Alabama Forever Wild Land Trust! ♣



**SMOKEY'S  
Arson TIPS:**

1. WRITE DOWN A LICENSE NUMBER!
2. WRITE DOWN A SUSPECT'S DESCRIPTION!
3. WRITE DOWN A VEHICLE DESCRIPTION!

*Give your fire department a break. Give them a call!*

**A public service in wildfire prevention from the Alabama Forestry Commission**



# Forest Health Monitoring in Alabama

by JIM HYLAND, Chief, Forest Health, Alabama Forestry Commission

The Eastern Forest Health Monitoring project is the second block in building a national network of permanent inventory plots to monitor the health of the nation's forests. The first phase last summer encompassed the New England states with data collected on 263 plots. For the 1991 phase, similar plots will be established in Alabama, Georgia, Virginia, New Jersey, Delaware, and Maryland with New England plots being remeasured for monitoring purposes. Additional states will be phased in yearly.

The Forest Service's Forest Health Monitoring (FHM) Project is a cooperative venture with the Environmental Protection Agency (EPA), state forestry departments, the USDA-Forest Service Forest Inventory and Analysis (FIA), Forest Pest Management (FPM), experiment stations and national forests, and a broad spectrum of government, research, and private interests. The objective is to develop a national baseline on the health and condition of forests. This baseline will be used to yearly monitor forest health, detect deviations and direct research to explain the deviations.

authorized the Forest Service to undertake monitoring to track long-term trends in the health and productivity of U.S. forest ecosystems. The amended Clean Air Act (1990) directed the Forest Service and EPA to research the short-term and long-term effects of air pollution on forests. The Forest Service began initial forest health monitoring work in the mid-1980s, and initiated FHM as an outgrowth of its Global Change Research Program and its Forest Response Program.

## FHM Program

Forest Health Monitoring encompasses three areas:

1. *Detection Monitoring* will establish a National network of permanent plots. Data from these plots will be linked to work assessing pest, fire, wind, flood, pollutants, and other damage. The Eastern FHM Project is part of the Detection effort.
2. *Evaluation Monitoring* will be triggered when Detection identifies major forest health problems. FPM pest surveys, along with a series of tests from different scientific disciplines, will better identify the problems and possible causes.
3. *Ecological Monitoring* will support long-term research to find out what's really

happening with forest health—how ecosystems work, and whether outside sources or the systems themselves are causing changes. It will also support research on better ways to assess forest health. Several permanent ecological monitoring sites across the country will be identified and funded.

Forest Health Monitoring is intended to be a long-term effort with a major emphasis in detecting unexpected changes from established baseline forest conditions. Specific objectives of FHM are to:

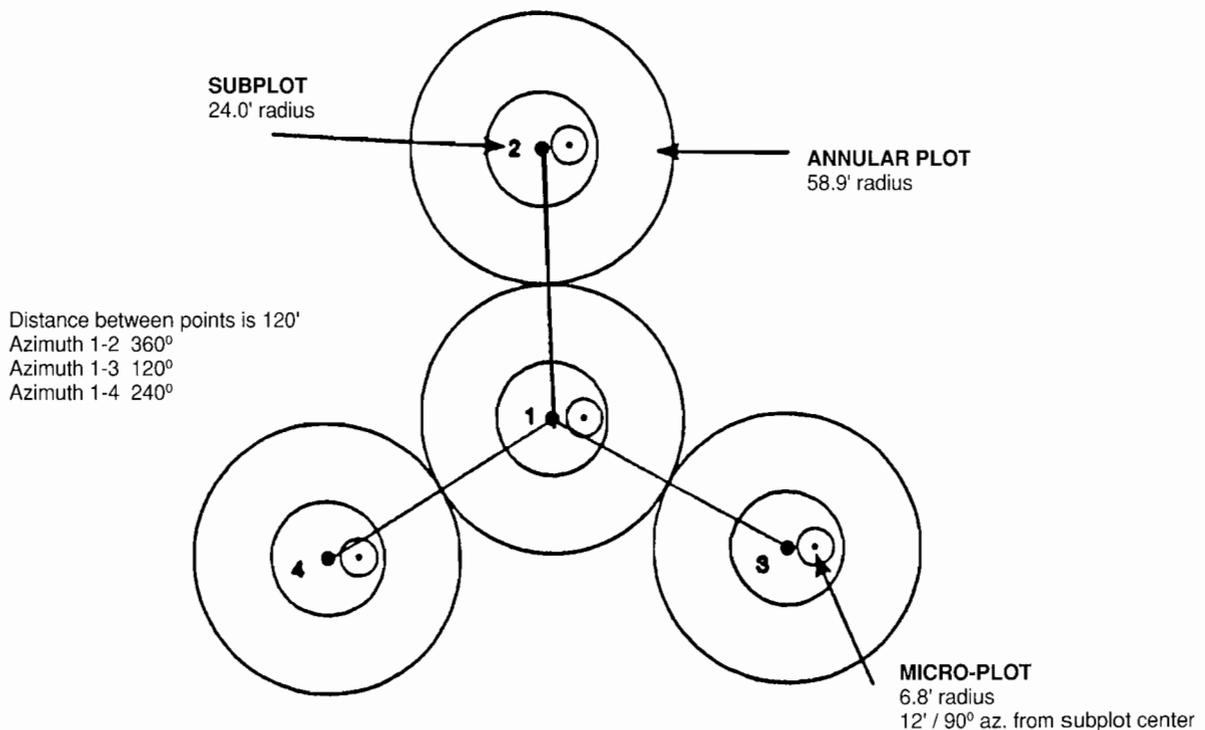
1. Characterize forest conditions.
2. Characterize the major potential forest stressors.
3. Quantify changes in forest conditions.
4. Analyze the relationships between changes in forest conditions and potential forest stresses.

Forest conditions will be described by the measurement and reporting of data from several "health" indicators. Five indicator groups have been measured: growth, foliage symptomatology, soil chemistry, foliar chemistry, and landscape characterization. Individual measurements may support one or more indicators. Measurements will be made and indicators

## Authority and Origins

The 1988 Forest Ecosystems and Atmospheric Pollution Research Act

Figure 1



characterized on a periodic basis: annually for those that change frequently (for example, foliar symptomatology), and on a 4-year or greater cycle for those that change less frequently (for example, soil chemistry).

Each location consists of a cluster of four plots (see **FIGURE 1**). All trees, including seedlings and saplings, are located, marked, and measured. On, or adjacent to the FHM location, openings in the forest are searched for indicator plant species known to be sensitive to ozone, sulfur dioxide, and hydrogen fluoride.

At each location, data are collected on the geographic and topographic position and physiographic description of the location; tree species, diameter, crown position, crown condition, and damage; other vegetation; and foliar symptoms on indicator plants. Data quality standards are specified in the field data collection manual and explained during field crew training. These standards were monitored by the remeasurement of a subset of locations and trees.

### Tree Crown Ratings

Each sampled tree is rated for three crown characteristics: crown dieback, foliage transparency, and discoloration. The ratings are reported only for upper-canopy trees (trees with crowns directly exposed to the atmosphere), though the data were collected for all live trees.

**Crown dieback**—Crown dieback is defined as branch mortality beginning at the outside tip of the branch and proceeding inward toward the trunk. This pattern of mortality is an indicator of premature branch death. Dead branches in the lower crown are assumed to have died of suppression or natural shedding due to tree growth and are not included in this measurement.

**Foliage transparency**—Foliage transparency is defined as the amount of skylight visible through the foliated portion of a tree crown and accounts for foliage reductions due to insect damage, pathogens, or environmental stress. The degree of foliage transparency differs by species and depends on branching and leafing patterns. Foliage transparency serves as an estimator of defoliation.

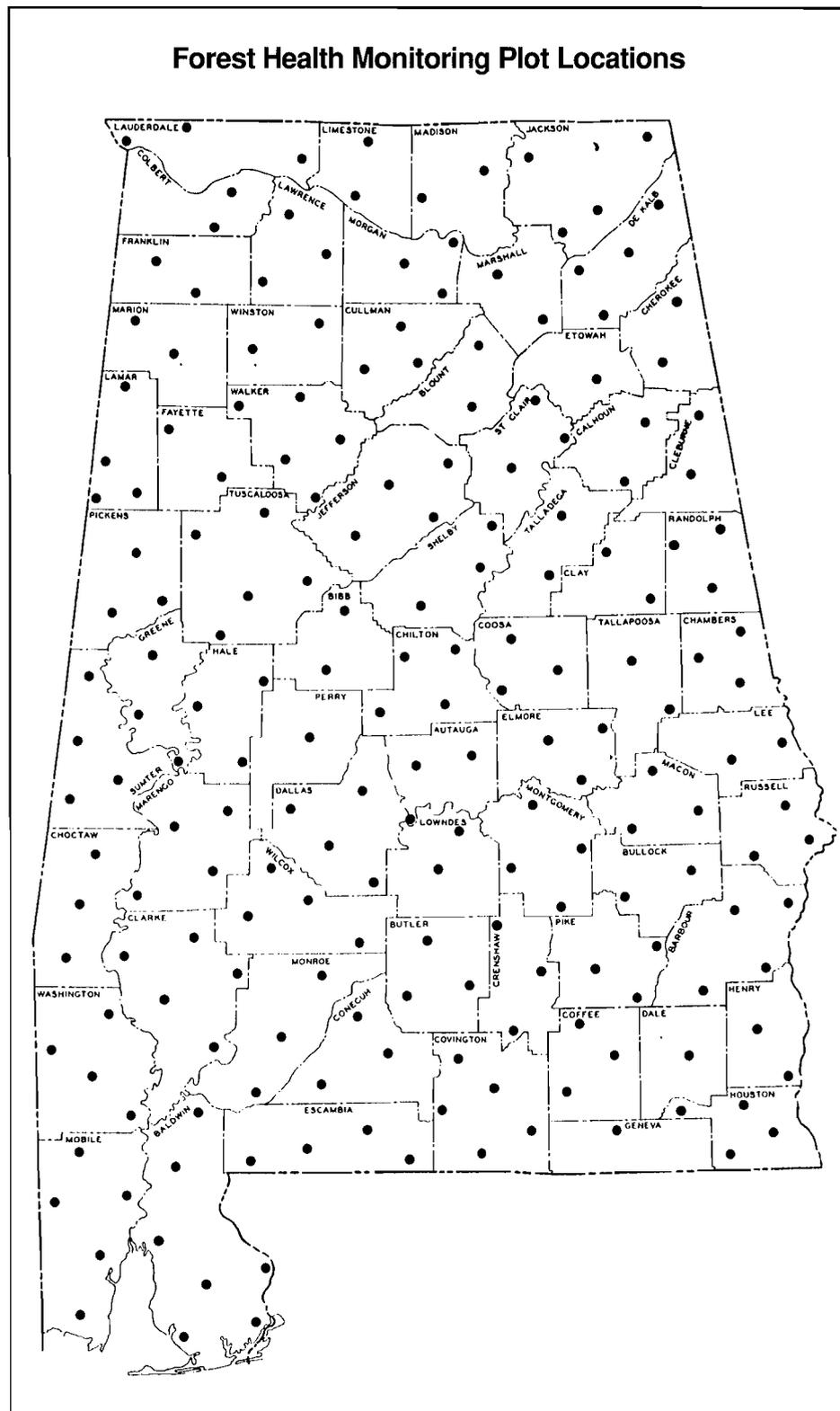
**Foliage discoloration**—Foliage is considered discolored when the overall appearance is noticeably yellow, red, or brown. More than 50 percent of a leaf or needle must be discolored for discoloration to be tallied. The occurrence of trace amounts of discoloration is expected for any tree.

### Signs and Symptoms

Signs and symptoms indicative of previous injury, disease, or insects are recorded to provide an explanation of adverse growth effects or mortality. The occurrence of a sign or symptom is recorded only when significant and when it is likely to result in the eventual decline and death of the tree. A list of common signs and symptoms had been provided and

their occurrence was recorded when observed.

In Alabama there are 204 plot locations scattered throughout the state. Five two-man crews started the first week in June to establish the individual plots (see map). In early 1992, a summary of the health of Alabama's forest will be written. The annual remeasuring of these plots will act as an early warning system of the health of the forest. ♣



# LANDDO



## NATIONAL

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

With the approach of the new fiscal year, Congress is treating forestry programs reasonably well in the appropriations process—although not as generously as seemed likely earlier in the year.

Of immediate interest to Alabama timberland owners are funding increases for several new forestry programs authorized in the 1990 Farm Act—namely the stewardship and community forestry programs. For the stewardship programs, Congress is likely to finalize approximately \$50-55 million for the fiscal year beginning October 1 (the administration recommended \$110 million), including about \$30 million for the Stewardship Incentives Program (SIP).

### SIP

If not used by the end of September, \$20 million available for SIP could have been carried over to the next fiscal year. The first sign-up is expected to be announced this fall in anticipation of the winter planting season. A sign-up was delayed because of administrative difficulties in starting up a new program.

SIP will pay landowners up to 75 percent of the cost establishing approved practices aimed at assisting non-industrial private landowners to improve their forest resources. A landowner must have an approved multiple-resource plan (i.e. meet state Stewardship criteria) to be eligible for SIP cost-share assistance.

### Urban and Community Forestry

Funding to assist community and urban areas plant and maintain trees is a bright picture. This program has grown from a \$3.5 million program to a \$28 million one in only three years. Funding should also be available directly to communities through the national non-profit Tree Trust Foundation by late fall or early next year. The Tree Trust Foundation was established by **President Bush** to help meet his goal of planting an additional 40 million trees a year throughout the nation's towns and cities.

### Other Programs

Despite a major national effort by rural volunteer fire departments and state foresters, additional funding is not going to be available this year for the new Fire Mobilization Initiative authorized in the 1990 Farm Act. This program would provide assistance to rural volunteer fire departments and state forestry agencies to better mobilize their fire protection resources. Funding for the existing cooperative fire program, which provides about \$15 million annually to the 50 states, will be continued at current levels.

Other forestry programs received consistent attention from Congress. The Forestry Incentives Program (FIP), Agricultural Conservation Program (ACP) and Conservation Reserve Program (CRP) will be continued at their current levels. However, Congress is divided on funding the new Wetlands Reserve Program. The House provided no funds for the next fiscal year (the administration recommended \$125 million), but the Senate has recom-

mended \$90 million for the purchase of 30-year easements on valuable wetland areas that are currently being cropped.

### Wetlands

Wetlands protection continued to be a contentious issue in Washington throughout the summer. Debate on a manual delineating wetland boundaries for federal regulation had been stalled through the end of July due to internal administration disputes. However, by early August an interagency agreement had been reached that is expected to result in release of the revised manual for public comments.

The manual has been under fire since its initial release in early 1989 because it threatens to bring millions of acres of prime forest and agricultural land under regulation by using new criteria to define wetlands. Agriculture/developer and environmental groups managed to pit administration officials against one another in seeking to establish how far the wetlands criteria should reach. Adding fuel to the fire is President Bush's 1988 campaign pledge to achieve no net loss of wetlands. Bending towards conservation interests, EPA Administrator **William K. Reilly** appeared to favor a broader definition that would have come closer to upholding that pledge. In doing so he appeared to find himself at odds with White House officials who opposed that approach.

The pivotal issue on which the White House reached a compromise was the length of time and level of depth land must be inundated with water to be defined as a wetland. The current (1989) manual stipulates that saturation must be at least 12 inches deep for at least seven consecutive days. Agriculture and developer interests support a criterion of 21 days of surface saturation. The White House compromise: 15 consecutive days of standing water and 21 consecutive days of surface saturation.

The manual will be open for a minimum 60-day public comment period when published in the *Federal Register*. ♣



# WINNERS



by FRANK SEGO, Legislative Liaison, Alabama Forestry Commission

Oink! Oink! Where's the "Pork"? At the time we were preparing this column for you, it was Governor **Guy Hunt** who obviously found the "pork" when he refused to sign the \$805 million General Fund budget handed him by the House and Senate on the final night of the 1991 Regular Session.

Not only did he fail to sign the state's General Fund budget, allowing it to die via the pocket veto, but he sharpened his red pencil and line-vetoed dozens of items in the \$2.4 billion Special Education Trust Fund budget. Both moves were unprecedented for an Alabama governor.

The governor had urged the legislature to refrain from sending him a budget loaded with pork barrel projects. He wanted sufficient funding to keep criminals in jail and troopers on the highways; however, he did not want cuts in the mental health program or a reduction in his own contingency fund. It was his opinion that they did just the opposite—and he wasn't about to let that little piggy go to market.

"Pork" is a traditional legislative term that refers to money in the General Fund budget for special projects of individual legislators to use in their respective districts. It is a practice as old as the legislature itself.

When the governor laid down his red pen on the night of August 8, he calmly called for the first Special Session to convene on September 9 and commence action to bring him a pair of budgets with some of the squeal taken out of the pork.

While the governor was turning thumbs down on the budgets, other legislation followed a more successful path for the Forestry Commission and forestry-related measures.

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## Forever Wild

One bill endorsed by the forest community was destined to become known as the "Forever Wild" bill. It proposed a constitutional amendment enabling the people of Alabama to vote on a funding mechanism that would allow the state to acquire lands

for recreational purposes. It would create the Alabama Forever Wild Land Trust for the acquisition, protection and preservation of these lands.

This was the third consecutive attempt to pass legislation that would establish a program allowing the purchase of lands for preservation of nature areas, public hunting and parks. It was estimated that Alabama owned the fewest number of acres of this kind of land than any other southern state.

Governor Hunt, being cognizant of the need for such legislation, formed the Forever Wild Committee representing every group that needed to be involved. After working throughout the winter, the committee was still not in total agreement on a number of points. One of the foremost arguments was focused on who would be appointed to a governing body or a group of trustees. Also, how would the program be established without sudden future change at the whim of a politician?

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## Multiple Use Included

As a result, five bills were introduced, but Calhoun County Rep. **Jim Campbell's HB-301** and Calhoun County Senator **Doug Ghee's SB-445** got the most attention. One assurance the Forestry Commission wanted, and eventually got after weeks of lobbying efforts, was that all lands would be managed under the multiple use concept. It was also to be imperative that the state forester be a member of the oversight, or governing body, when lands are being considered for acquisition.

On July 11, the Senate, on a 29-1 vote, gave final passage to HB-301 with the above mentioned provisions. Alabama voters are expected to give their approval when the amendment appears on the next statewide ballot (*Act No. 91-219*).

Other legislation sponsored by the Forestry Commission included a bill to allow retired law enforcement officers of the Commission to receive their badge and pistol without cost. Rep. **John Beasley** of Columbia introduced this bill with 47

members of the House as co-sponsors. The bill went to the Senate, where Senator **Wendell Mitchell** of Luverne guided it through on a unanimous vote (*Act No. 91-568*).

The AFC was also responsible for a bill that would prevent several counties from a duplication in collection of the forest acreage assessment. The act (*Act No. 91-670*) was necessary because these 14 counties already had special acts in place prior to passage of the statewide 10 cents per acre assessment act of 1989.

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## AFC Commissioners Confirmed

In other action on Day 30 of the Regular Session, the Senate Committee on Confirmations recommended approval of Governor Hunt's appointments of **John Barfield** of Killen and **Guice Slawson** of Louisville, each to a five year term on the Alabama Forestry Commission. The Senate gave swift confirmation to both.

Two Alabamians deeply rooted in the state's forestry program were honored in joint resolutions by the House and Senate. **James Hughes** of Cottonwood was recognized for his leadership as a TREASURE Forest landowner. **Wayne Roberts**, retiring AFC supervisor in Coffee County, received recognition for his 20 years of service with the Forestry Commission.

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## Rep. Max Newman (1927-1991)

We were all saddened by the death of Rep. **Max "Spider" Newman** of Millport following adjournment of the Regular Session. Rep. Newman had complained of not feeling well during the final day and went straight to University Hospital in Birmingham for open heart surgery where he passed away. He was 64. Newman was serving his third term from District 16 which includes Fayette, Lamar and Marion counties. He was truly a friend of forestry, always cooperative with this columnist and all of our Commission people. He will be missed. ♠



# Hidden TREASURES



*Spring Valley Beach*

## Blount County's Secret TREASURE

by COLEEN VANSANT, Information Specialist, Birmingham District

It's nestled in the foothills of Blount County, an area where tribes of Indians once roamed the hills and forestland. Later, pioneers from Tennessee, north Georgia and the Carolinas trekked there in search of new homes and a new life. Spring Valley Beach, Blount County's best kept secret, was recently honored as Alabama's 799th TREASURE Forest.

Located just north of the city of Blountsville off of Highway 231, the 135-acre facility has been a haven to locals for decades. Folks who were looking for a getaway from summer's heat; a place to take the family, to enjoy the scenic countryside, and to take advantage of the large variety of entertainment and recreation that Spring Valley Beach offers.

Owned and operated by Allen Gilliland and his family, Spring Valley Beach is one of the state's most unique TREASURE Forests. Around 37,000 people enjoy the facility each year. Last summer was the 20th season the Gillilands have owned the park, which has also been known as Allen's Lake and Burgess Lake in years past.

Managed for recreation and aesthetics, the Gilliland's property includes approximately 117.5 acres of forestland. Most of the acreage is 50-60 year old pine/upland hardwood mix. These trees instigate the spectrum of fall color that the area supplies visitors, as well as provide a forest full of beautiful and delicate blossoms in the spring. Allen Gilliland's management practices are geared primarily toward the preservation of the hardwood trees. The only trees that are removed are the dead, dying, and hazard trees.

Approximately 35 acres of land is currently leased to a local Christmas tree farm and is planted in Virginia pine.

Although 7.5 acres include a lake and ponds, the main drawing card for the facility is the 1.5-acre natural spring-fed lake which gives the place its name. Around 500 feet long and 150 feet wide,



*Although quiet now, thousands enjoy Spring Valley Beach during the summer months.*

the lake is the daytime home away from home for dozens of families in the area.

A man-made sandy beach, gazebos and picnic shelters provide a backdrop for some of the coldest and most refreshing water in the country. There are slides, a low diving board, and a high dive to tempt the most courageous of visitors.

Because it is located at the base of a mountain ridge, the topography is perfect for the big, blue winding water slide that races down the hillside. Gilliland built the slide himself, after visiting several other water slides to learn how they are designed and constructed.

Two fishing ponds are available for those who love the great outdoors but don't particularly care for activities that actually involve getting wet.

Allen Gilliland continues to make improvements to the facility each year. A new 80-foot pier over the swimming lake is the latest addition.

The Gilliland family home is located on a 10-acre tract of land near the lake. Just outside the front door you can step back in time almost 200 years with two old log dwellings that have been moved to the site. One is a dove-tail notched log, crib-type

structure that was moved to the Gilliland front yard from Hanceville, around 15 miles away. The small crude home is believed to be the first house built in Hanceville.

The second structure is much larger and was originally located in the Walter Community of Cullman County. The 160-year-old log house contains two rooms and a loft. It was purchased by the Gillilands, disassembled, numbered, moved, and reassembled adjacent to their home. Allen's wife Jean, an antique collector, has filled the cabin with rope beds, dolls, and other furniture. The log home was featured in the July 1987 issue of *Redbook* magazine.

Completing the tour of this TREASURE Forest is Gilliland Manufacturing Company. Unlike the park, Allen Gilliland operates this business year-round. If you've ever purchased a "tater" or onion box from Service Merchandise or Fingerhut, you've more than likely purchased a Gilliland product. Specializing in wood products, the company also makes wooden lawn furniture.

As you can see, Blount County's best kept secret has something for everyone. ♣

# Retirement Enjoyable at a TREASURE Forest

by EVERETTE BROWN and TILDA MIMS, Alabama Forestry Commission, Tuscaloosa

Although J.B. Dollar officially retired in 1982, he says that's when he "really went to work." It was then that he was free to spend more time on his 850-acre TREASURE Forest in the Sterling community in Tuscaloosa County.

Dollar had lived in Montgomery and worked with his forestland only on weekends and holidays since the early 1950s.

The first step toward moving to Sterling was securing a place to spend the night. Dollar began evaluating the resources on his land, and decided to make wise use of trees damaged by pine beetles and storm damage. He determined he would build his house out of his own lumber.

Doing most of the work himself, he felled the damaged trees and hauled most of them by wagon and log truck to nearby mills. About halfway through the project he met a man with a portable sawmill who would mill on site.

"All of the lumber in my house and storage sheds came from my trees. The subflooring, decking—everything," he says proudly. The exterior of the house is treated



**J.B. Dollar and Tuscaloosa County Ranger Everett Brown examine pruned pine trees.**

with a mixture of used motor oil and red paint colorant as a preservative.

The "camphouse" he had planned to build became an attractive home place. His comfortable house is surrounded by massive white oaks, beautiful flowers and fruit trees. Two storage sheds housing

vehicles and farm equipment feature large beams hand-hewn by Dollar. He is already collecting a supply of salvage wood for lumber to build an additional bedroom and bath in the future.

This year Dollar began an experiment of  
*(Continued on page 20)*

## Racks Are Getting Bigger and the Quail Are Coming Back

by JOHN TYSON, JR., Alabama Forestry Commission, Dadeville

Earl Manning of Randolph County says that when he bought 1,040 acres of forestland between Wildcat and Corn House Creeks, he didn't plan to cut a tree. "It gradually dawned on me, though, that those old rough trees that I had were not doing anything, so I started to harvest trees and plant wildlife food plots," Earl said. His current management program calls for harvesting and regenerating about 40 acres of timber each year and planting all roads, firebreaks and logging landings in wildlife food plots. He believes that since he has started this work that the habitat improvement and increase in deer food is causing his bucks to grow bigger racks, as well as increasing the quail population on his land.

Mr. Manning uses natural regeneration where he can, but he replants harvested upland stands with pine seedlings in areas where he doesn't have adequate desirable seed trees. He still has about 150 acres of

the low quality stands that covered the tract when he bought it, but is converting them to pine as they are harvested. Earl says that by the time he is through with this conversion work he will be able to begin cutting in the plantations that he first established. His long-range plans call for a policy of cutting and regenerating about 40 acres of timber a year.

Fire is not a major problem on most of the Manning land. Earl has a network of permanent firebreaks and prescribe burns on a rotated basis; this reduces the danger of fire, as well as improving wildlife habitat. He has about 40 acres across a county road from the rest of the property that have been burned several times since he bought the land in 1966. There are some problem areas even on the best managed forests.

There are several streams on the Manning land and Earl leaves a Streamside



**Earl Manning**

Management Zone along each. He cuts no timber along the streams but maintains the forest stands to protect the water and stream banks. "This place is something worthwhile," he says, "and it will be something worthwhile for my son and grandsons." His striving to create something worthwhile is evident when you look at his land.

Good forest management does not just  
*(Continued on page 20)*

## Retirement Enjoyable

(Continued from page 19)

pruning young pines. The Tuscaloosa County Forestry Planning Committee held a forestry field day featuring a program on pruning pines to enhance the overall quality of pine timber, and Dollar decided to give it a try.

He admits the project of pruning with loping shears was very tiresome, but he is pleased with the results. About three acres of trees around a large food plot have limbs removed to about 6 feet.

"I am pruning primarily to increase visibility around the food plot. Pruning also opened up the ground for wildlife browse. If you're doing it strictly for timber, you only prune about every fifth tree because the rest will be removed for pulpwood when you thin," he said.

A buffer strip of unpruned pines will provide a basis for comparison through the years. It also screens the food plot from a nearby county road to help restrict illegal hunting.

When Dollar retired to Sterling, he truly came home. Born in a nearby farmhouse, he helped his family farm some of the same land he now owns.

J.B. Dollar has worked hard all of his life. As a young man on the farm, a soldier, a college student and later as an accountant, he knew the value of hard work.

Why does he work so hard after his retirement? Perhaps the answer lies in a quotation by Mark Twain, "Work consists of what a body is obliged to do . . . Play consists of whatever a body is not obliged to do." ♠

## Racks Are Getting Bigger

(Continued from page 19)

happen, however. Mr. Manning gets help in planning his forestry activities from Kimberly-Clark's landowner assistance program foresters. He says that Terry Darby and other Kimberly-Clark foresters supply him with extremely valuable information about his forestland. He knows how much timber is in every stand, and when each stand will need a prescribed fire or other cultural activity. A good plan is essential to making the hard decisions that land management requires. Sometimes hard decisions do have to be made, though. "The first time I did any prescribed burning it was scary—real scary," Earl says. He was pleased with the outcome, though, and now uses prescribed fire on a regular basis. Earl Manning is a resident of Roanoke, Alabama. He is a retired radio station and cable TV company owner. ♠

# Stream Crossings

by DR. BOBBY L. LANFORD, Associate Professor, Auburn School of Forestry and DON BURDETTE, Environmental Forester, Alabama Forestry Commission

Alabama is blessed with an abundance of waterways; it is unusual to find 20 acres without some type of "water of the state" (defined under **Legal Requirements**). Most forestry operations like timber harvesting require stream crossings to access the different parts of a forest tract. Each time that a stream is crossed, the potential to pollute that stream exists. As responsible citizens, we want to make minimal impacts to our water resources during our forestry activities, whether we are harvesting timber or just taking a Sunday drive through a forest. Our purpose here is to examine the legal requirements and discuss proper ways to cross streams.

### Legal Requirements

The Alabama Environmental Management Act of 1982 was enacted to ensure that the resources of the state would be managed in a manner that is compatible with the environment and the health and welfare of the citizens of the state. The Act also authorized the Alabama Department of Environmental Management (ADEM) as the regulatory agency to administer the Alabama Water Pollution Control Act. This Act was established to protect, maintain and improve waters of the state. The legal definition for waters of the state includes every watercourse, stream, river, ground or surface water, wholly or partially in the state, natural or artificial, which is not entirely confined and retained on the property of a single landowner.

The ADEM Administrative Code prohibits the discharge of pollutants into waters of the state without having first obtained a National Pollution Discharge Elimination System (NPDES) permit. Forestry operations are exempt from having to obtain this permit for stream crossings if they demonstrate a good faith

effort to minimize pollution by following *Alabama's Best Management Practices (BMPs) for Forestry*. Silvicultural "pollutants" include dredge spoil, solid waste (including tree tops, limbs and brush), chemical waste, discarded equipment, rock and sand. Stiff penalties and restoration costs can result from violation of these codes.

In addition to Alabama's water pollution laws, the Corps of Engineers administers federal regulations which pertain to wetlands under Section 404 of the Clean Water Act. Stream crossings for forestry operations are exempt from the Corps' permitting requirements if their baseline BMPs are followed.

### Voluntary Guidelines

The following guidelines for stream crossings have been developed with cooperation from forest landowners, forest industry, fish and wildlife experts, university faculty and state and federal agencies in Alabama. Following these recommendations will help landowners, loggers, and foresters achieve their forest management objectives and still be in compliance with water quality standards mandated by state and federal law. The recommendations themselves are not laws or regulations that carry fines or other penalties if you choose not to follow these suggested guidelines.

No one should expect these guidelines to keep water pristine or clear. However, they can be effective in keeping immediate impacts on water quality as minimal and temporary as we know how to do at this time.

### Stream Crossings in General

The crossing of streams by roads, skid trails or firebreaks should be avoided if there are any other reasonable alternatives.

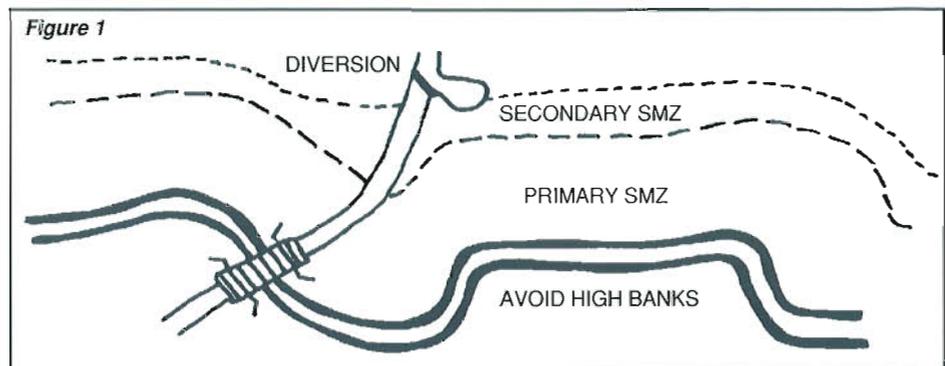
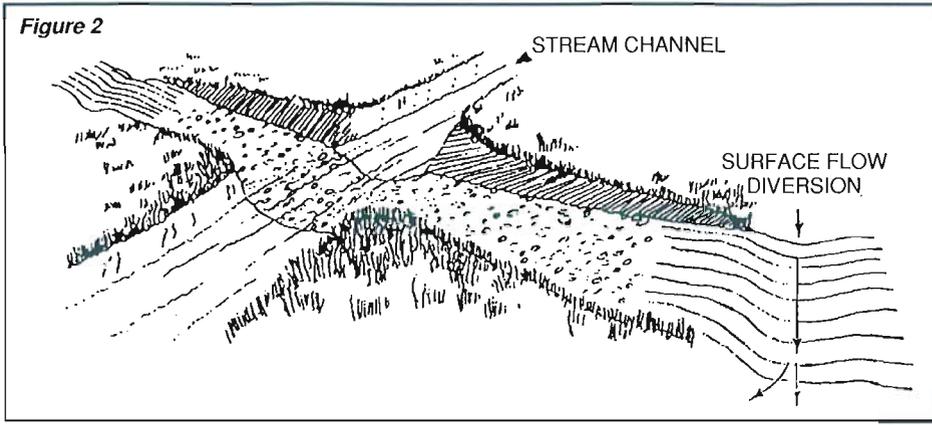


Figure 2



Stream crossings can result in destabilization of soil, organic matter and vegetation on the banks and beds. The best way to avoid pollution of a stream is to stay out of it, if possible.

If stream crossings are unavoidable, use the fewest number possible, cross the stream by the least disruptive manner, and control sediment and other pollutants during installation, use, and retirement.

Stream crossings should be located where the least bank disturbance is required. It is best to enter and leave the crossings at right angles to a straight section of the stream (FIGURE 1).

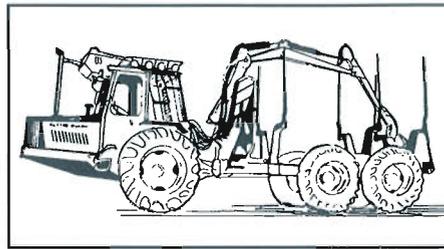
Roads or trails leading to stream crossings will naturally slope into the stream. Grades of about 3 percent are best. Water diversion devices, such as water bars, should be installed to move sediment-laden runoff off the trail and disperse it onto a relatively undisturbed forest floor for filtering. Entry and exit trails to the stream often get rutted. Rock that is with or without geotextile fabric can protect the approaches from excessive erosion and reduce the rutting. Removal of some trees along entry and exit trails may help keep them dry by reducing shading and is recommended if crossings are permanent.

Stream crossing should provide a way for normal passage of water or aquatic animals within the channel. Dredge and fill operations which will alter the reach or

flow of wetland hydrology may require a permit from the Corps of Engineers.

### Fords

Fords can be used where the stream bed is firm, the banks are low and the stream is shallow (FIGURE 2). During construction, bank material should be pushed away from the water and used to improve the approaches. Exposed soil on cut banks may need stabilizing with seeding and/or mulch.

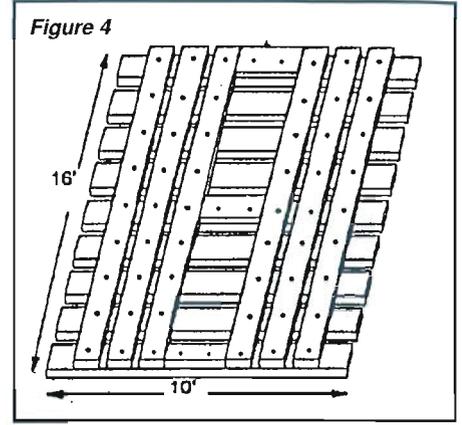


Forwarder

Potential erosion and sedimentation can also be controlled by minimizing the number of trips across the stream.

Forwarders and trucks would require fewer trips than skidders because they are capable of carrying substantially more wood on each trip. The wood is also carried rather than dragged across (as with a skidder). Ground conditions at the ford must be able to support the loads which will cross. A solid rock crossing will support the heaviest trucks. Sand bottom

Figure 4



fords, common to south Alabama, will support heavy logging traffic also. Common sense tells us that a muddy alluvial soil would provide poor fording conditions.

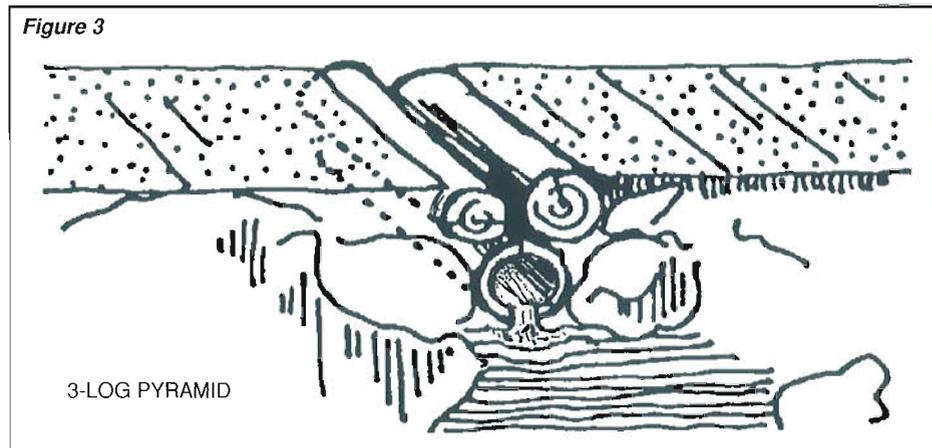
### Log Crossings

Log crossings involve placing hollow or solid logs into the channel (FIGURE 3). Green and/or small diameter tops, limbs and brush should not be used for this purpose. These types of materials are more prone to stop water flow, restrict movement of aquatic animals and contribute to oxygen depletion than do larger materials. Log crossings are very common but are not recommended if a covering of fill dirt is needed to improve trafficability. Crossings covered with fill dirt frequently deposit sediment directly into the stream during construction, use and removal. The function of fill dirt can be effectively replaced with secured decking or portable logging mats (FIGURE 4). The logs provide support for the mats. This method of crossing is finding increasing acceptance and use across the southeastern states.

Forwarders can cross over bare logs (without a fill dirt covering) with little stream disturbance. Using the forwarder's loader, merchantable logs can be easily placed in a crossing and removed in the same manner during the last trip out of an area.

Care should be used to remove mats and logs immediately after an area has been logged. Log crossings are always temporary; either the logger takes them out or nature will do it for him during the next heavy rain storm. Blow outs by high water commonly create problems with down stream pollution by sediment and organic debris which are violations of Alabama water quality standards.

Figure 3



### Culverts

If properly sized and permanently installed, culverts can be used on watersheds up to 200 acres (see TABLE 1 and FIGURE 5). Although culverts are commonly used as temporary crossings, they

Table 1

Recommended Diameters For Pipe Culverts

Drainage Area (Acres)	Lower Coastal Plain	Upper Coastal Plain	Piedmont	Mountains
10	12"	12"	12"	18"
50	30"	18"	30"	36"
100	48"	30"	42"	48"
200	60"	42"	54"	48" (2)

Figure 5

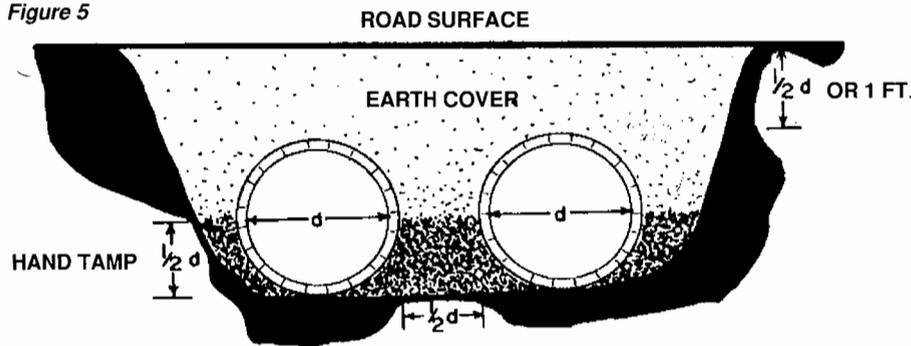


Figure 6



are often improperly installed or maintained so that blockages often result in road washouts during or immediately after major rain storms. Culverts are not recommended unless they can be properly installed and maintained.

It is best to use one large culvert rather than several small ones. The length should be adequate enough to extend at least one foot beyond each side of the road fill. It should be covered with a minimum of 12 inches of earth fill or to a depth of at least  $\frac{1}{2}$  of the culvert diameter, whichever is greater. The bottom half of fill material should be compacted; the rest can be applied loosely. The road should be built up or arched over the culverts so that any stream overflow will cross the road at a point away from the culvert. All temporary culverts must be removed along with all fill dirt. Permanent installations require fill to be stabilized with rock, sand bags, concrete, mulch and/or vegetation.

**Bridges**

Bridges usually create the least disruption to stream flow and, in general, should be used on watersheds greater than 200 acres (FIGURE 6). According to Corps of Engineers regulations for roads, all banks and fill materials *must be* stabilized and protected from erosion by bulkheads. Spans *must also* be installed to permit passage of all expected high flow. Reusable, portable bridges may not require bulkhead construction under suitable conditions and therefore minimize costs.

**Conclusion**

After operations are completed, all temporary stream crossings must be completely removed and the banks restored to their original elevation according to ADEM and Corps of Engineers regulations. Permanent crossings should be repaired if necessary and all fill material stabilized. Periodic inspection and maintenance of permanent crossings assure that the crossings are functioning as planned.

Most of these recommendations are common operating procedures within the Southeast. Planning and careful installation can prevent most stream crossing problems. As citizens of a great state and country, it is our privilege and responsibility to protect our streams and other water ways. Protecting these resources will make them available for enjoyment and use during our lifetime and that of our children and grandchildren. ♣



National Forest Products Week  
October 20-26, 1991

# Perceptions of the Forest

by L. LOUIS HYMAN, Chief, Information and Education, Alabama Forestry Commission

A wise man once said that for many people “perception is reality.” What we think is real is real. This concept has a major implication for forestry and all of us who work with the natural environment. What people think about the environment and environmental impacts is their reality and affects the way they act and vote.

The TREASURE Forest concept is one of the best examples of environmentally responsible forest management. The stewardship idea is a tremendous leap forward from the old “cut out and get out” policies of the past. The problem is that the general public does not know or understand what a TREASURE Forest is or how it helps the forest environment.

The Alabama Forestry Commission, the Alabama Forestry Association and several other southern forestry groups have run a series of public opinion surveys to find the attitude of the general public about forestry topics. Some of these findings have been discussed before. (see “Using Marketing Research,” *Alabama's TREASURED Forests*, Winter 1990 and “Not In It For The Money,” Summer 1990)

## What the Public Thinks

Generally speaking, the majority of Alabama citizens (50.5 percent) have a favorable opinion of the forest products industry. They believe that the industry does a good job planting trees, protecting wildlife, and growing and harvesting trees in an environmentally sound way. However, the public also feels that, “We will run out of trees, even though a new one is planted when an old one is cut.” Many people are especially concerned about the future of hardwood trees in Alabama.

Only 47 percent of the public knew that there was a state agency responsible for the forestland in the state. Only one in six people (16 percent) knew that this agency is the Alabama Forestry Commission.

Less than one-fifth of the people had



ever heard of TREASURE Forest. A separate study in Georgia showed that the vast majority of people felt that forests should be managed to provide environmental and recreational benefits while growing trees for pulp and lumber. The public thinks this is not being done now—that landowners are converting their lands into sterile monocultures.

## So What?

Why does it matter what the public thinks about forestry? What impact could they have on Alabama forests and Alabama landowners?

The biggest problem is that if they do not know the truth, they act on the misinformation that they have. Generally, people take what they know about one situation and apply it to a different set of circumstances. Much of the media has focused on the forest resource controversies in the Pacific Northwest and the tropical rain forest. Many of our friends pick up on these concerns and ask if cutting trees in Alabama will hurt the spotted owl, and isn't clearcutting in Alabama the same as tropical deforestation?

The truth is that cutting a tree in Alabama has no impact on an animal that only lives in old growth forests in the Pacific Northwest. Cutting trees in Alabama does not lead to deforestation, but to reforestation. With our good soils and growing season, lands that have been cut will regenerate a new forest and the forest will look like the preharvest stand in 30 to 60 years.

People are concerned about how the forest is used. But they want to take a system of restrictions based on government owned land, as is the case in the Northwest, and impose them in an area where the vast majority of the land is privately owned. One group has publicly stated that the state must have laws restricting timber harvesting, because if the government does not stop them, landowners will destroy the world.

## What Can We Do About It?

When misconceptions are so deep, how can we, as forest owners and resource professionals, get the truth out? We need to use every opportunity to spread the word about TREASURE Forest and how responsible, stewardship-based forest management improves the forest and enhances ALL the resources.

All parts of the forestry community need to give a coherent message to the public. The American Forestry Council suggests we use the following statement: “We work with the natural cycle of the forest to produce goods for the American people. These goods include lumber, paper, clean water, clean air, prime wildlife habitat, recreation and enhanced scenic beauty.”

Each component of the forestry community has a different perspective on the forest and emphasizes different products: pine or hardwood, pulpwood or sawtimber, deer or turkey or songbirds, active recreation or scenic enjoyment. All of these different “products” can be found through TREASURE Forest.

So, tell the story. Share your truth with your friends and neighbors. Visit civic clubs and talk about how good management can make a great resource better. Offer to show others how your land has been improved. Let's get our light out from under the bushel basket and help the public understand the importance of stewardship to our state's environment. ♣

# CALENDAR

**October**—Clarke County is the 1991 Forestry Capital of Alabama. Many events will be taking place during the month-long celebration. Call 1-800-562-AFRC for more information.

**Oct. 6-12**—Fire Prevention Week.

**Oct. 10-11**—Eufaula, AL. Eighth Alabama Landowner and TREASURE Forest Conference, Lakepoint State Resort. For more information call 240-9364.

**Oct. 17**—Clarke County. Forestry landowner tour near Coffeetown. Timber management and wildlife damage control among the topics to be discussed. Call 275-3121.

**Oct. 22**—Clarke County. Best Management Practices Seminar. Discussion will be held on how BMPs affect landowners and loggers. Call 275-3121.

**Oct. 20-26**—Forest Products Week.

**Oct. 28-29**—Athens, GA. "Faster Point Samples," a Univ. of Ga. short course. Call 404/542-3063 for more information.

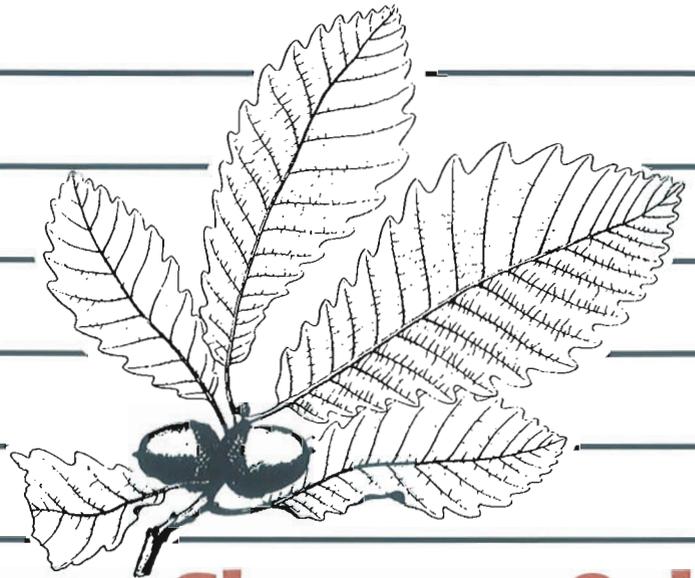
**Oct. 29-30**—Jackson, AL. Alabama Forest Resources Center Annual Meeting. For information call Regina Miller at 1-800-562-AFRC.

**Nov. 1-2**—Jackson, AL. Forestry and Wildlife Festival celebrating the importance of forestry and wildlife to southwest Alabama. Call 246-3251.

**Nov. 11-13**—Lincoln, Neb. First National Fuelwood Conference. This conference is to promote broader public understanding and to increase the rate of adoption of existing technologies for planting, harvesting and cleanly burning wood for energy. For more information write the Arbor Day Foundation, P.O. Box 81415, Lincoln, Neb. 68501-1415.

**Nov. 18-22**—Huntsville, AL. The Technical Arborist: An Advanced Training Workshop sponsored by the Arbor Day Institute. This five-day, hands-on workshop focuses on both the biological and managerial aspects of tree care. Call 402-474-5655.

# HARDWOODS OF ALABAMA



## Swamp Chestnut Oak

by TOM CAMBRE, Hardwood Specialist, Alabama Forestry Commission

The swamp chestnut oak (*Quercus michauxii*) is often called the basket oak, cow oak or swamp white oak. This tree is massive and often attains a height of 100 feet and can be 3 to 7 feet in diameter. The form of this tree is good with little taper. Many times the bole is free of limbs for the first 40 feet. This tree has a minimum seed-bearing age of 20 years and the interval between seed crops is usually three to five years. Seed dissemination is from September through December.

The swamp chestnut oak's range is in the coastal plains from New Jersey to central Florida, west to eastern Texas, north in the Mississippi Valley to central Illinois and Indiana. The soil types for best growth are moderately well drained, silty clays and loams along stream borders, swamps and bottomlands, often covered with water. The growth rate of this tree is medium to good, depending upon site. The wood is used for many purposes, from high quality face

veneer and tight cooperage, to ties and timber. Also, many times baskets were woven from fibers and splints obtained by splitting the wood of this tree. These strong containers were used to carry cotton from the fields.

The wildlife benefit of this tree is excellent for deer, turkey and other species that feed on nuts. The acorns have a sweet taste and do not have to be boiled before eating. This tree obtained the name cow oak because many cattle would graze underneath eating the nuts. The shape and appearance of the swamp chestnut oak places it as a very prized urban tree within the landscape of the city. This tree possesses a beautiful appearance and provides much shade.

The Alabama Forestry Commission will be producing the swamp chestnut oak in its nurseries in the future so that the citizens of Alabama can enjoy this tree more fully. ♣



Barred owl

Kenny Griffin

entrance hole away from the direct blow of wind. Most owl lovers find facing the entrance hole south or toward the tree trunk helps. Also, place some holes in the floor to insure drainage.

The Northern Saw-Whet owl's breeding period ranges from March until about the middle of July. There are usually five or six white eggs. It takes from 26 to 28 days for the female to incubate them. Rarely do you find a male helping sit on the eggs.

Usually there is only one brood a year, but occasionally there are two. That is the magic of nature. When you say one, she surprises you and produces two.

Eastern and Western screech owls breed from March until about the middle of July also. The number of eggs varies from four to six, and they are also white. Only the female incubates them for 27 to 30 days.

It takes from six to eight weeks before the owls can fly. Both the Eastern and Western screech owls produce only one brood each season. Also, they usually remain in their home range all year bypassing migration.

An interesting point about screech owl babies is that they are tree climbers. They usually leave the nest before they can fly. To reach a suitable perch, they climb up the tree trunk. They use beaks, talons and wings during this crawling stage to climb.

Also, if they fall out of a tree, they can climb back up to safety. Usually they are not orphans when people find them on the ground. Most are just out investigating their new world.

Screech owls in the city may be found visiting street light areas since they enjoy feeding on night-flying insects.

Barn and barred owls are very beneficial, eating mice, rats and moles. An adult barn owl can easily rid a structure of from 15 to 20 mice each day, especially when feeding a brood.

Barn owls breed from March into July. Unique about this particular owl is that only the territory immediately around the nest is considered defendable. The nest is usually lined with leaves, roots, and grasses. There are four to five white buff colored eggs.

Incubation is longer for this owl, ranging 30 to 34 days. Both the male and female sit on the eggs. Depending on the availability of food, there may be one to two broods each season. The barn owl migrates only slightly southward from extreme northern areas.

Barn owls will accept artificial nest boxes, and are interesting and useful to have around. They live and hunt in open farmland. Placing the nest box from 10 to 20 feet up a tree, a barn or out-building should attract a curious bird.

The barred owl is a large light grey

colored owl with dark grey bars and stripes on its body. Also, the eyes appear to be all dark. Both male and females look alike.

The barred owl breeds from March into August. It covers about one square mile in hunting territory. From two to three white eggs are laid and the female incubates them for 28 to 33 days. Only one brood is raised each season.

Barred owls hunt deep in the woods and around swamps. Place the box 10 to 20 feet up in a tree. Remember to turn the entrance hole away from the direct line of wind. With man's ever increasing encroachment on habitats, our sentinels of the forest need help if they will accept it. ♣

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# Attracting Owls to Your Property

None of the 13 species of North American owls build nests, and only five of them nest in cavities.

Most cavity nesters seem to enjoy a helping hand, and they like boxes with nests.

Eight owl species do not accept birdhouses. The snowy owl and short-eared owl nest on the ground, shunning all cavities. The burrowing owl usually adapts an old mammal hole and burrow for a nest.

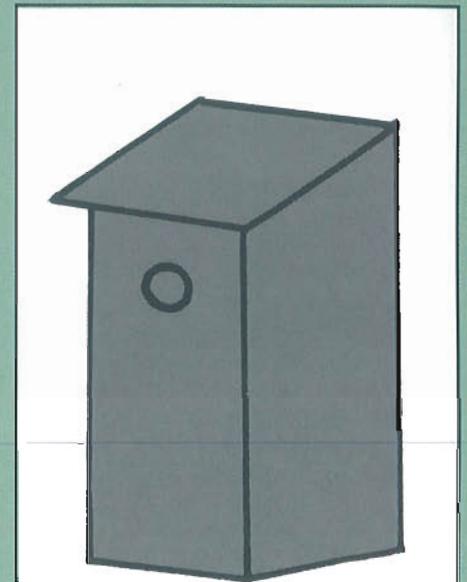
Great gray, great horned, and long-eared owls favor the abandoned open nests of hawks, squirrels and crows. Don't expect any of these to visit your nest boxes.

Artificial owl houses vary with the species that you intend to help. For the Northern Saw-Whet owl, Eastern and Western owls, a man-made nest is attractive.

Remember the natural habitat requirements of owls when positioning the artificial box. Screech owls roam the edges of the woods in both rural and urban areas. The Saw-Whet owl hunts and lives deep in the woods. It also likes swampy areas.

Secure the owl nest box a minimum of 5 feet and no more than 20 feet on a tree, a post, or even a building.

When positioning the owl nest, turn the



## Barn Owl Nest Box Dimensions

Entrance-hole: 6" to 8"  
 Hole above floor: 4"  
 Floor Dimensions: 16" wide, 22" deep  
 Total height of box: 16"  
 Positioning Height: 10' to 20'

## Barred Owl Nest Box Dimensions

Entrance-hole diameter 6" to 8"  
 Hole above floor: 14" to 18"  
 Floor Dimensions: 13" x 13" to 14" x 14"  
 Total Height of nest box: 22" to 28"  
 Positioning Height: 10' to 20'

## Eastern and Western Screech Owl and Northern Saw-Whet Owl

Entrance-hole diameter: 2 1/2" to 4"  
 Hole above floor: 10" to 12"  
 Floor Dimensions: 6" x 6" to 8" x 8"  
 Total height of nest box: 15" to 18"  
 Positioning Height: 5' to 20'

# Clearing Muddy Ponds

by CHRIS K. HYDE, Extension Aquaculturist, Auburn University

Muddy ponds are unattractive and not very productive as sportfish ponds. Sunlight penetration is poor, which drastically limits the growth of the phytoplankton (microscopic plants), which form the base of the food chain in sportfish ponds. Also, bass are not able to see their prey very well, which slows their growth. In catfish ponds, muddy water can lead to problems with depressed oxygen levels due to the limited amount of oxygen-producing phytoplankton.

## Determine the Source

The first step toward permanent removal of muddiness from pond water is determining the source. Once the source of the problem is found and corrected, steps can be taken to eliminate the suspended clay from the pond.

In many cases a pond will become temporarily muddy after a heavy rain but will clear up within a few days. This type of turbidity is caused by heavy loads of silt and clay particles washing into the pond. The silt settles out quickly but the tiny clay particles will often remain suspended in the water column. If the pond doesn't clear up quickly, you should first examine the

watershed supplying the pond.

Is it adequately vegetated? Are there any erosion problems that need correcting? Unfortunately, many new pond owners tend to forget about the final step of good pond construction—installing vegetation. Seeding and mulching, or sodding, to provide a good cover of sod-farming grasses on the pond dam and watershed will eliminate the source of most muddy pond problems.

Another cause for muddiness can be the presence of common carp and/or bullhead catfish. These fish have a tendency to stir up sediments on the pond bottom while feeding. Removal of these undesirable fish can be accomplished by pond draining and/or treating the pond with a fish toxicant such as rotenone.

The use of ponds by livestock is a common source of pond muddiness. If you use your pond for watering livestock, try to confine their access to one small area of the pond.

## Using Compounds

Once the source(s) of the muddiness has been determined and the problem corrected, there are several compounds which can be used to settle the suspended clay

particles out of the water column. One is agricultural limestone. Since many ponds need regular liming to be productive, an agricultural lime application of 2 tons per surface acre may be a good place to start.

Gypsum (calcium sulfate) can be used to clear ponds. The material is applied like lime, broadcast from a boat as evenly as possible over the pond surface. A treatment rate of 250 ppm or 680 pounds per acre-foot is usually sufficient to clear most ponds.

Alum (aluminum sulfate) is another compound used to precipitate clay particles. Alum is a very strong flocculent and is used at about a tenth of the rate of gypsum. Although alum is more expensive per pound than gypsum, an alum treatment costs about half of the equivalent gypsum treatment because you use so much less alum. However, alum is dangerous to use in ponds with fish because it is highly acidic. In acid ponds hydrated lime should be added to counter the acidity of alum.

Organic matter such as hay or manure has been used successfully for clearing ponds. Spread hay at rates of 1/2 to 1 ton per surface acre on calm days to assure even distribution. It has been reported that two or three applications of barnyard manure applied at the rate of 2,200 pounds per acre

Table 2

### Alum

Mix 1 level tablespoon (use a standard measuring spoon) of alum in 1 gallon of clear water. Stir until alum is in a slurry. The lowest concentration that will precipitate the colloidal clay in 12 hours should be used to treat the pond. Remember to add hydrated lime as indicated if alum is used for treatments. Be sure to consider the economics between gypsum and alum/hydrated lime.

Number of Tablespoons slurry added to 1 gallon pond water samples	Rate of alum to apply to pond if sample clears in 12 hours (pounds/acre-foot)	For acidic ponds, also add hydrated lime at the rate of (pounds/acre-foot)	For other ponds, also add hydrated lime at the rate of (pounds/acre-foot)
1	30	13	0
2	60	26	0
3	90	39	13
4	120	52	17

# Managing Aquatic Weeds in Ponds

by CHRIS K. HYDE, Extension Aquaculturist, Auburn University

**Table 1**

## Gypsum

Mix 2 level tablespoons (use a standard measuring spoon) of gypsum in 1 gallon of clear water. Stir until gypsum is in a slurry.

Number of tablespoons slurry added to 1 gallon pond water samples	Rate of gypsum pond if sample clears in 12 hours (pounds/acre-foot)
1	80
2	160
3	240
4	320
5	400
6	480
7	560
8	640
9	720
10	800
11	880
12	960

of cottonseed meal and 23 pounds per acre of superphosphate at two to three week intervals has been used to remove clay turbidity. Use caution when applying large amounts of organic matter to ponds. Decomposing hay can cause oxygen depletions, particularly in warm water.

You can perform a simple testing procedure on your pond water to determine the proper rates for a gypsum or alum treatment. Use five clear 1-gallon containers. One sample is used as a control. A second jug is needed to prepare a slurry of the compound. Then prepare three other samples at various rates to determine which is adequate for your pond (see tables). ♣

*Tables from Clearing Muddy Ponds, D. Steinbach and B. Higginbotham, Texas Agricultural Extension Service*

Whether you manage a pond for sportfishing or for commercial fish farming, keeping the water clean of harmful aquatic weeds is necessary for the best use and enjoyment of the pond. Heavy infestations of aquatic weeds can either ruin a fishing trip or turn a catfish pond harvest into a nightmarish experience.

As with most pond problems, the best plan for managing aquatic weeds is prevention. Starting with proper pond design and construction, many conditions favoring the growth of aquatic plants can be eliminated. Most weed problems start in shallow water where sunlight easily reaches the pond bottom. So construct your ponds with steep edges, sloping quickly to a minimum water depth of 3 feet.

Clear water can be an invitation to plant problems because sunlight penetrates deeper into the water, stimulating weed growth from the bottom. If you have a watershed pond that overflows heavily in the spring, it may be necessary to dig a ditch around the pond to keep the excess runoff from removing nutrients from the pond. Nutrients are necessary to stimulate growth of microscopic plankton algae. The algae will "shade" the water, limiting sunlight penetration needed for weed growth from the bottom.

## Fertilization

Nutrients can enter the pond water either through the addition of fertilizer or as a result of waste products released from the feeding of fish. Nutrients will help stimulate a "bloom" of the desirable plankton algae. A healthy population of plankton algae will help prevent weed problems by shading them out and competing against them for available nutrients.

In sportfish ponds a regular fertilization program can prevent undesirable vegetation and increase fish production. Fertilization can be started in late winter or early spring, before the weeds start active growth. The idea is to stimulate the growth of the plankton algae so that it will out-compete the weeds for nutrients and sunlight. Do not add fertilizer to a pond with an existing aquatic weed problem. Once weeds are well established, adding fertilizer just "adds fuel to the fire," stimulating even greater weed growth.

## Grass Carp

The grass carp is an excellent tool for preventing unwanted aquatic vegetation. Stocked at proper rates, grass carp will not interfere with other fish in the pond and helps control many of the tender weeds such as filamentous algae (pond scum), hydrilla, duckweed and pondweed. Grass carp are capable of eating two to three times their body weight daily and have been known to grow at a rate of over two pounds per month. Grass carp should be stocked at a minimum size of 8 to 10 inches when bass are present in the pond. They will not reproduce in ponds.

In sportfish ponds with little or no aquatic weed problem, stock three to five grass carp per surface acre as a preventive measure. In commercial catfish ponds, stocking 20 per acre will help prevent weeds from becoming a problem.

Grass carp can be stocked at higher densities than those mentioned previously to help bring many aquatic weed problems under control. Up to 20 per acre can be stocked in sportfish ponds with no long-term adverse effects. Higher rates can be used for severe weed problems if you have a way to remove some of the grass carp after the problem is brought under control. In catfish production ponds, grass carp are routinely stocked at 40 to 50 per acre for weed problems. Higher rates can be used if needed and the grass carp can be removed later during catfish harvests.

Grass carp are legal to use in Alabama; however, many states regulate their use. If outside Alabama, contact your state's Department of Natural Resources for regulations regarding the stocking of grass carp.

## Herbicides and Other Methods

Although not very practical on a large scale, manual removal of small weed problems by raking or seining can sometimes be effective in preventing a major infestation.

Lowering the pond water level in the fall to expose shallow weed infested areas until early spring can help decrease certain weed problems.

Drawdown is not effective against cattail and may actually spread hydrilla to other areas of the pond.

Some aquatic weeds can be controlled effectively with herbicides. It is important

to first identify the weed in order to determine which herbicide will give the most effective control. Aquatic weeds can be classified into four major categories:

1. Algae are the microscopic plants suspended in the water column or the filamentous type (pond scum) found on the bottom or floating in mats on the surface.
2. Floating weeds have leaves and stems above the water and roots below.
3. Submergent weeds are rooted on the bottom and extend up to the water's surface.
4. Emergent vegetation is rooted in the bottom with leaves and stems above water level; usually found on or near shore.

If you need help in identifying the type(s) of weed causing the problem, you may take a sample to your county Extension agent. Place the weed sample in a plastic bag with no added water. Keep the sample in a cool, dark place until mailed or transported to the Extension office.

When chemically treating an aquatic weed problem, make sure you choose a herbicide approved for pond use. Also, several approved herbicides have water use restrictions regarding drinking, fishing, stockwatering, swimming and irrigation after usage.

The best time for most herbicide applications is when water temperatures are in the range of 70 to 80 degrees Fahrenheit. Herbicides can be tricky to use when water temperatures are over 80 degrees Fahrenheit. Large amounts of quickly decaying plant matter can remove oxygen from a pond, resulting in a fish kill. If you have to treat a heavy weed coverage during hot weather, be prepared to aerate the pond. Treat only one-fourth of the surface acreage of the pond at one time to minimize the chances of oxygen removal from decaying plants.

Often the best management plan for aquatic weed prevention and control is a combination of several of the methods discussed. To receive more detailed information on aquatic weed management, contact your local county Extension office or Chris K. Hyde, Extension Aquaculturist, Alabama Cooperative Extension Service, P.O. Box 1904, Decatur, Alabama 35602. You may want to request any of the following related publications: Circular ANR-48, Controlling Weeds in Lakes and Farm Ponds; Circular ANR-232, Liming Fish Ponds; Circular ANR-249, Fertilizing Fish Ponds; Circular ANR-452, Using Grass Carp for Controlling Weeds in Alabama Ponds (and supplier list); SRAC Pub. #360, Aquatic Weed Management—Control Methods; SRAC Pub. #361, Aquatic Weed Management—Herbicides. ♣

## Shiitake —

# Gourmet Mushroom

by NORMAN L. BURTON, ALA-TOM RC&D Coordinator, Grove Hill, and  
HOSEA M. NALL, Extension Specialist, Alabama A&M University



*After colonization, the logs are stacked outdoors in a shaded area.*

Alabama is well known for its many agricultural products—timber, broilers, peanuts and cotton, just to name a few. But perhaps the most unusual of these products is the shiitake mushroom. These exotic mushrooms are being grown in several Alabama counties as a rural economic development project. The mushrooms are grown on small oak, sweetgum and other hardwood logs outdoors, unlike the common white mushroom grown in caves. Shiitake (pronounced shee-tay-kee) are native to Japan, and are produced on the shii tree, a tree similar to the oak.

Shiitake mushrooms have been highly valued in Japan for centuries for their flavor and use in folk medicines. Japanese scientists developed a method of cultivating the mushrooms in 1943, and since then Japan has become the world's major producer. Worldwide, shiitake mushrooms are a \$2.5 billion industry; the United States imported \$500 million worth of dried shiitake in 1986, representing about 200 times the domestic production.

Shiitake mushrooms are used primarily in Oriental and gourmet restaurants, and are known for their strong flavor and

ability to enhance the taste of other foods. Evaluation studies have found that consumers compare the taste of shiitake mushrooms to meat and vegetables. Sautéed or fried, the texture is similar to that of lobster.

Research has shown that shiitake mushrooms have medicinal effects. Japanese scientists have found that shiitakes can lower blood cholesterol levels and have enzymes that have been identified as a possible treatment of cancer tumors and the HIV virus.

The Alabama A&M University Cooperative Extension Program began research on shiitake mushroom production for north Alabama in 1987. Experiments and demonstrations were designed to determine variations in microclimates, production methodology, and the viability of shiitake production as an alternative enterprise. The shiitake research project provides an additional use for the vast acreage of underutilized small hardwood timber in Alabama.

The ALA-TOM Resource Conservation and Development (RC&D) Council, representing a nine-county region in southwest Alabama, initiated a project to

# From Alabama's Forests

use shiitake mushrooms as an alternative agricultural enterprise for rural economic development. The ALA-TOM RC&D Council, in conjunction with the Alabama A&M University Cooperative Extension Program, the Poarch Band of Creek Indians, and the Gulf Coast RC&D Council, received a U.S. Forest Service Rural Development Program grant to promote shiitake mushroom production in Southwest Alabama. The grant, administered by the Alabama Forestry Commission, provided funds to establish three demonstration producers in each of the 12 counties represented by the ALA-TOM and Gulf Coast RC&D Areas.

The demonstrators provided 40 logs of the same tree species, which were subsequently inoculated with 10 different spawn strains and numbered. The producers will keep records of the number and weight of mushrooms harvested from each log. The yield information obtained will provide data to producers on the most productive tree species and spawn strains for the production of shiitake in their area.

## Growing Mushrooms

Growing shiitake mushrooms as an alternative agricultural enterprise requires attention to production techniques. Most important is selecting and cutting the substrate during the dormant season from species of trees suitable for shiitake cultivation. The trees selected should be healthy, vigorous, and insect and disease free. Conifers and most softwoods should be avoided.

Proper inoculation techniques to assure rapid colonization and mycelium run depend on log size, internal moisture levels, and drilling pattern. The inoculation sites are drilled holes 5/16 inch in diameter and 1 inch deep for dowel spawn and 7/16 inch, or 12 millimeters, and 1 inch deep for sawdust spawn. Sites are drilled 2 inches from the end of the logs for the first hole, and then proceed at 6 to 8 inch intervals to the other end. The second row of holes are drilled 6 to 8 inches apart with 2 to 4 inches between rows by mismatching, creating a diamond pattern. This pattern is continuous around the logs. Holes are inoculated, sealed with wax and the fungus is allowed to invade the log.

Log production of shiitake mushrooms

is not a rapid process. It is important to understand the effects of variations in microclimates, spawn strain interactions on substrates, and strain temperature ranges for fruiting in order to achieve optimum yields. Moisture is essential to the shiitake fungus because it cannot invade the log or produce mushrooms without it. A serious producer should strongly consider providing a nearby source of water for maintaining log moisture. Optimally, moisture levels of logs should be maintained at 40 to 45 percent.

If all the management and environmental factors are favorable, the shiitake mycelium will colonize the log and fruiting will occur. After colonization, the logs are stacked outdoors in an area with at least 76 percent shade cover, preferably from pines. Shiitake logs will produce for three to five years depending on the wood substrate; sweetgum produces for about three years, while white oak—a much harder wood—will produce for five years.

## The Market for Shiitake

To enhance the participation of landowners and small and part-time farmers,



*Shiitake mushrooms*

research priorities include increasing consumer awareness and developing marketing strategies. Producers have begun to implement production methodologies established by model demonstrations, seminars and workshops. More marketing information relative to market conditions, drying technology, pricing and packaging, is being generated. Currently, a producer's marketing outlets are farmer's markets, health food stores, Oriental restaurants, and food store chains.

Recently, producers have organized to form growers co-ops and associations in several states and regions including Ohio and Virginia. These associations are dedicated to increasing public awareness, developing promotional programs for marketing shiitake in their area, and to stabilize competition among a large number of growers. These united growers sponsor programs on production and marketing strategies for their members. An association is being planned for Alabama.

Fresh shiitake mushrooms sold for \$9.50 to \$12.50 a pound at retail markets in North Alabama in 1989-1990, and the trend is expected to continue through 1991. Shiitake mushrooms commonly sell for \$6 to \$12 per pound fresh and \$28 to \$56 per pound dried, depending upon availability and consumer demand.

Shiitake mushroom production has been determined to be a viable alternative agricultural enterprise and contributes to economic rural development. Forest surveys indicate an abundant number of appropriate species of oaks as well as unproductive species such as gum, willow and ironwood that are suitable for shiitake production in Alabama.

All programs and services are offered on a nondiscriminatory basis, without regard to race, color, national origin, religion, sex, age, marital status, or handicap.

## Reference

Leatham, Gary F. "Cultivation of shiitake, the Japanese forest mushroom, on logs: a potential industry for the United States." **Forest Products Journal**, Vol. 32, No. 8. ♣

# Where There's Smoke There's Ire

by ROBERT WIGGINS, Chief, Fire Control, Alabama Forestry Commission

*“These are the days of  
falling leaves,  
The days of hazy weather,  
Smelling of gold  
chrysanthemums  
And gray wood smoke  
together . . .”*

—Elizabeth-Ellen Long

There was a time not long ago when old men in their rocking chairs whiled away the evening hours puffing pipes and reminiscing. Winter meant conventions round the wood stove in the local country store, and nobody minded smoke. Then, and in some memories still, misty woods smoke heralded good times—harvests in, Thanksgiving and the hunting season at hand.

There's always been fire and there's always been smoke. Fire in skillful hands was as it remains—nature's help to men and women who keep homes warm and make the land produce.

But now we know the pipe smoke caused granddad cancer. Anyway, there's little time for smoking pipes. Half of the retired folks have jobs. The rural South is almost empty, with nearly every one of us dream-chasers zooming from city to suburb or from hometown to worktown. There isn't much room for the old ways nowadays. Smoke from open burning, including prescribed fires, is causing real problems in the South today.

## Highway Tragedy

A survey by former AFC Fire Control Chief Hugh Mobley revealed that smoke from prescribed fires in the Southeastern states from 1979-1988 allegedly caused at least 28 highway accidents resulting in **28 fatalities!** Six of the accidents and three of the fatalities occurred in Alabama. These accidents also resulted in 60 or more serious injuries and many minor injuries. There are surely other incidents that were unknown to the state forestry agencies surveyed. During the fall of 1989 and the spring of 1990, at least three accidents involving four fatalities occurred in the South from prescribed burning (none in Alabama). At least six people were seriously injured.

Many lawsuits have been filed as the

result of these accidents, variously naming landowners and land managers, motorists, and state government agencies as defendants. Settlements are in the millions of dollars, with much litigation still pending.

## Greenhouse Gases

Carbon dioxide, a major gas produced in any burning process, has been identified as the major greenhouse gas. Oxides of nitrogen and certain hydrocarbons that are components of forest fire smoke also have a role in the global warming drama.

## Air Pollution

The greatest concern in smoke management is particulates—those microscopic particles that combine with water vapor to produce what we see as smoke, reducing visibility and causing traffic accidents. Besides the visibility problem, many of these particulates are health hazards. In fact, recent research is indicating that particulates may be a much greater health hazard than previously thought.

Smoke from burning woody vegetation produces varying quantities of five of the seven “criteria pollutants” identified by the Environmental Protection Agency as potentially causing health problems. These five trouble-makers are carbon monoxide, particulates, nitrogen dioxide, ozone, and hydrocarbon.

## What is the Solution?

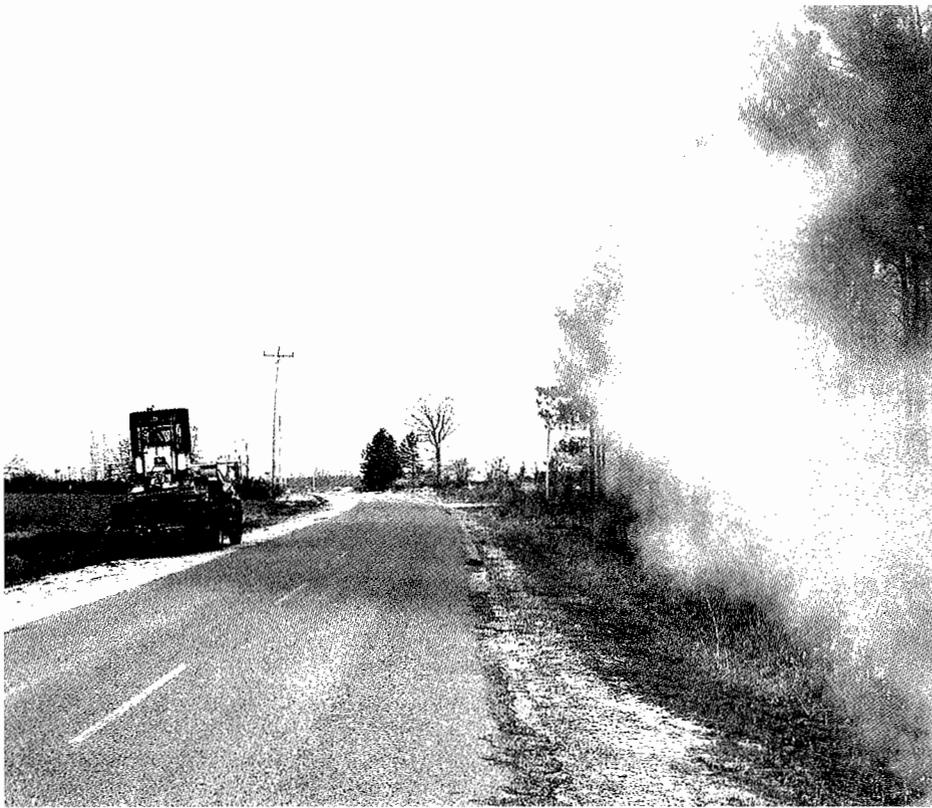
As the '90s unfold, the outlook for prescribed burning is actually very good. The scientific community, the media, and many environmental activists in recent years have come to appreciate the natural and essential role of fire in perpetuating certain plant and animal communities. If negative pressures are brought to bear on the forestry community concerning prescribed burning, it will probably be only because of smoke-related issues.

The Forestry Commission's position is two-fold on the prescribed burning issue: We promote, defend and encourage the use of prescribed burning by qualified people, and feel we must all work together to promote its legitimate uses.

Equally important, we urge the forestry community to govern its own actions to ensure the highest professional standards in using prescribed burning. Today that means managing our fires to meet both



*Smoke reduces visibility and can cause traffic accidents.*



will not only reduce the amount of smoke being produced, but is potentially profitable.

A number of corporate forest landowners are developing their own smoke management guidelines. The Alabama Cooperative Extension Service has published a list of smoke reduction strategies developed by the Alabama Forestry Association. This list should be available at county Extension offices.

### Smoke Management Guidelines

In addition to reducing the amount of smoke, something must be done to control the smoke which is produced. Even a small amount of smoke in the wrong place at times can spell trouble.

**By using available smoke management information and a little planning, much can be done to control where the smoke goes and how much of it "goes away" or settles out in an unwelcome place.**

The Alabama Forestry Commission has been working for several years to develop a set of voluntary "Smoke Management Guidelines" effective in reducing adverse smoke impacts, but still simple and easy to use. These guidelines should be available to the public within the next few months. Whether you are responsible for managing prescribed burning on thousands of acres or just maintain a burning program on a small tract, these Smoke Management Guidelines can help you avoid the "ire" that increasingly follows smoke! ♣

silvicultural and environmental objectives. Meeting environmental objectives, for all practical purposes, will mean:

1. Reducing the production of smoke.
2. Minimizing the impact of the smoke we do produce.

In this matter of smoke, we have to clean up our act.

### Smoking Less

How can we reduce smoke production? In the long run, by developing alternatives to non-essential burning. The most effective thing we can do is to eliminate the burning of most heavy fuels, which produce most of the smoke. Burned wood fiber is obviously wood fiber wasted, from the economic viewpoint. Closer utilization

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# The Secret of Fall Colors



COLEEN VANSANT

Few sights satisfy the soul like the brilliant colors splashed across our nation's hardwood forests each fall. Refusing to slip quietly into winter, nature marches out with great fanfare, trumpeting the bright oranges and yellows of sugar maples across New England, blaring the gold of aspens across the Rockies, and blowing sultry notes across the South in the deep scarlet of red oaks and deep purple of black gums.

But what determines which color tone is assigned to a particular tree? And how is the color change triggered? According to the American Forest Council, the secret is in the sap. The chemical composition of each tree's sap provides "instructions" on what fall color its leaves should turn.

The amount of iron, magnesium, phosphorus or sodium in the tree, and the acidity of the chemicals in the leaves, determines whether the tree turns amber, gold, red, orange, purple, or just fades from green to brown. For example, scarlet oaks, red maples, and sumacs have a slightly acidic sap which causes their leaves to turn bright red. On the other hand, the leaves of some varieties of ash, growing in areas where limestone (alkaline) is present, will turn a regal purplish-blue.

What triggers the change? Popular myth credits Jack Frost with orchestrating the color transformation, but in reality, the thermometer has little to do with it. The answer lies in the shifting rhythm of day and night. As the days grow shorter and the

nights longer, a chemical clock inside the trees starts up, releasing a hormone which restricts the flow of sap to each leaf. As autumn progresses, the sap flow slows and chlorophyll, the chemical that gives leaves their green color in the spring and summer, disappears. The residual sap becomes more concentrated as it dries, creating the colors of fall.

Autumn leaves are not merely pretty. As leaves die and fall to earth, minerals that were taken up into the tree return back to the soil. Mammals, insects, fungi, and bacteria on the forest floor help decompose the leaves, releasing their nutrients to growing plants and trees, and adding organic material to the soil. And even as this year's leaves fall, next spring's leaves are tightly wrapped in buds. When they unfurl, they will replenish the air as they absorb carbon dioxide and "exhale" oxygen.

Far less dramatic than hardwoods, most conifers also lose their three-year-old "leaves," or needles, in the fall. And every spring, tender green shoots grow at the end of pine, spruce, and fir limbs in a cycle of renewal.

The renewal of fall's color mirrors the renewal of our forests. Just as trees prepare themselves for spring by putting forth buds, people prepare for future generations by planting forests. Last year, more than 1.9 billion tree seedlings were planted, some eight trees for every man, woman and child in the United States. As long as this concern for the nation's forests flourishes, Americans will have ample forestland for their recreation and timber needs, and plenty of opportunities to enjoy the glorious colors of autumn. ♣



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