



Alabama's **TREASURED** Forests

Summer 2008

An Alabama Forestry Commission Publication

INVASIVE PLANTS
Special Issue

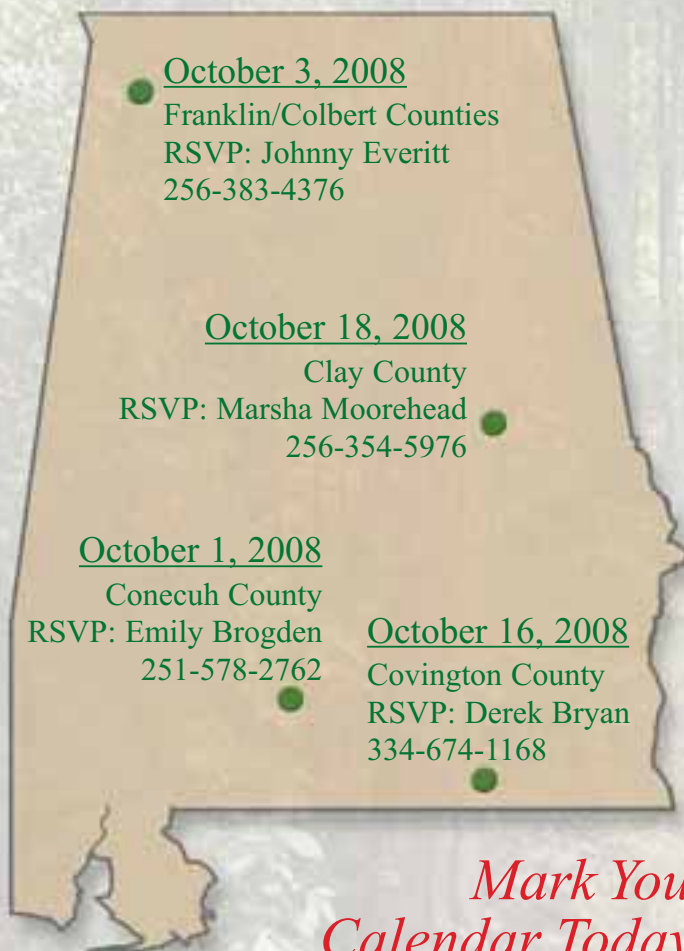
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A MESSAGE FROM THE STATE FORESTER



LINDA CASEY,
State Forester

It seems that everywhere one looks these days, along the roadside or in your own yard or forest, there's pesky non-native trees or vines choking out the desirable trees and plants. We've learned that Alabama has more invasive species than any other

Southern state, and that's not a good club in which we want to be a member, much less be the leader! Kudzu has been around a long time, along with privet and mimosa, but now's there a new kid on the block, and it seems to be even more of a bully . . . cogongrass. This one is BAD news.

Growing alarm among foresters, other natural resources professionals, and landowners has reached new heights in the past few months. Numerous government agencies are banding together as partners in the fight against a common foe. In light of the critical situation in which we find ourselves, this special issue of *Alabama's TREASURED Forests* is dedicated to invasive species. We hope to enlighten you, the forest landowner, as well as address some of your concerns on this most important issue. In the following pages, you'll find answers to these key questions . . .

- How do I know I have an invasive species on my property?
- What can I do to combat these pests?
- When do I know if I need help or other expertise?
- Where do I find and get assistance?
- What is the state doing to address the problem?

The battle against these invasives will not be easily won, but it is our sincere hope that together, all of us can stand strong to not only contain the enemy, but eventually bring about its retreat. We must arm ourselves with knowledge. Patience and persistence will be the keys to victory.

Linda Casey

Alabama's TREASURED Forests

Vol. XXVII, No. 2

Summer 2008

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DEPARTMENTS

On the Cover: One of Alabama's worst offenders, the invasive and aggressive cogongrass (*Imperata cylindrica*), is easy to recognize when blooming. *Photo by Paul Hudgins*

Background this page: Kudzu (*Pueraria Montana*). . . the vine that ate the South!
Photo by Chris Evans, River to River CWMA, Bugwood.org

Alabama's TREASURED Forests (ISSN 0894-9654) is published three times each year by the Alabama Forestry Commission, 513 Madison Avenue, Montgomery, AL 36130. Telephone (334) 240-9355. Bulk rate postage paid at Montgomery, Alabama. POSTMASTER: Send address changes to: Alabama's TREASURED Forests, P.O. Box 302550, Montgomery, AL 36130-2550. Web site: www.forestry.alabama.gov

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TURNING ADVERSITY INTO *Opportunity*

By Elishia Ballentine, Editor

Stewardship – it’s a term that Dr. Salem Saloom obviously takes to heart, on several different levels. As a retired physician, he has practiced a form of stewardship among his fellow citizens in south Alabama for several years. In addition to his local healthcare practice, he has worked through “Samaritan’s Purse,” a global medical missions organization, taking his surgical skills around the world. The Saloom family first traveled to Haiti in 2000; then Togo, West Africa in 2004; and finally to Egypt in both 2007 and 2008.

As a landowner, Salem has also practiced stewardship since 1983, when he and his wife, Dianne, purchased their first parcel of land. Both always had a desire to own property, so this quiet place in the country was a dream-come-true for them. The 158-acre tract was located in rural Conecuh County near Evergreen, less than an hour’s drive from their Brewton home. At that time, it not only provided an opportunity to get away from the hassles of city life and the stress associated with a medical practice, but also, more importantly, it was a place to teach their young son, Patrick, the value of caring for the land and appreciating nature.

Even with the Salooms’ busy professional schedule, they managed to make several visits to the farm each month. Much of that time was spent maintaining and improving the mostly untouched property. Almost immediately they began planting loblolly pines, building a pond, and making improvements on the road system. At Saloom Properties, LLC, it’s definitely been a family affair. With their “hands on” approach, Salem and Dianne have done a lot of the work themselves. Patrick, now 24

and a recent graduate from the University of West Florida with a degree in Maritime Studies, has also contributed.

Certified as a TREASURE Forest in 1985, just two years after purchasing the land, their primary objectives are timber and wildlife. The 2007 Southwest Region winner of the Helene Mosley Memorial Award, the Saloom property now consists of over 1,762 acres. With the adjacent 644 acres they lease for hunting, Dr. Saloom manages 2,400 acres total.

One of his major tasks has been the ongoing battle with invasive species. “The main three culprits are kudzu, privet, and the absolute worst . . . cogongrass. Nothing will grow where it exists!” Salem exclaimed.

Noting that August is the best time to spray for both cogongrass and kudzu, and that each invasive species requires a different prescription, he applies his herbicidal sprayings using a 50-gallon tractor-mounted sprayer and a 25-gallon sprayer on a four-wheeler. He stated that they feel very blessed to be able to partake in several cost-share programs for invasive species – such as WHIP & EQIP – and he encourages other landowners to seek out these helpful programs.

Although previously experiencing relative good luck in suppressing the pesky plants using a three-year rotation of herbicidal spraying – keeping them contained to about 50 acres – he noticed a change after Hurricane Ivan. In opening up the understory in cleanup after the storm, there was more sunlight on the ground, and consequently more cogongrass. For the past three consecutive years, he’s applied Arsenal and glyphosate with good results. Dr. Saloom says that the main lesson about

invasives is that, “Even when you see progress, you can’t stop there. You have to be persistent.”

Over the years, Salem has discovered some very innovative ways to address stream crossings such as using discarded bridge panels from the Bookers Mill Bridge demolition, as well as acquiring steel bailey bridges from the local National Guard armory. Equipped with his own dozer and backhoe, he has constructed fences, roads, turnouts, and water bars, as well as established permanent fire lanes. When it comes to site prepping, Dr. Saloom performs his own prescribed burns, having completed the certified burn manager’s course in 2006. He also became a Master Tree Farmer earlier that same year.

Since retiring, Salem and Dianne have devoted most all of their time to managing their property and their list of accomplishments is almost endless. However, the journey has not been without heartache. As did many other Alabama landowners, the Salooms dealt with the devastating effects of Hurricane Ivan.

Practicing what he preaches . . . “You’ve got to be positive and proactive, and just move on,” the day after Ivan hit, he got a commitment from a logger. They spent the next five months in logging operations: clearcutting, thinning, and taking down leaning trees. Then, after several months of clean-up, Dr. Saloom started replanting trees. With his growing interest in longleaf pines and the property being a natural longleaf site, he saw the storm damage as an opportunity for reforestation in longleaf.

“In the aftermath of Ivan, there were places where I couldn’t even walk it was so badly damaged,” Salem said. “You think to yourself, this will never be as nice as it was. But, you have to move away from those thoughts. It became my motivation to make it better than it had ever been. The hurricane just gave me another opportunity to do that.”

Today the Conecuh County property contains over 440 acres of longleaf, with more plantings scheduled in the future. There are also 250 acres of hardwoods, and most of the remaining property is planted in different-aged stands of loblolly pines. In January of 2007, they planted 49 live oak seedlings that line the main drive.

Dr. Saloom, an avid turkey hunter, used some of the areas damaged by the storm to help with his wildlife management practices. Prior to Ivan, the property had about 1 to 2% open land. Salem’s goal was to increase this to about 5% for turkey and quail. He says the hurricane devastation gave him the opportunity to create much larger food plots and wildlife openings. Today, there are over 46 acres of permanent food plots.



Photo by Kelvin Daniels

Also for the wildlife, he planted several fruit-bearing trees such as shumard and sawtooth oaks, gobbler oaks, chestnut, crabapples, persimmon, Asian pears, and 575 Chickasaw plum trees.

The Salooms found yet another way to make the best of a bad situation . . . the damage to trees was not limited to the Conecuh property. Following the wrath of Ivan, there were nine large longleaf pines down in the yard at their home in Brewton, with three of them actually falling on the house! Contracting a portable sawmill, they cut 6,800 board feet of lumber from these. Additionally, after harvesting 60 logs from a downed cedar tree from the farm, they had it milled into 2,800 board feet, dry kilned, planed, and tongue & grooved. All of this wood was used to add an additional room on the cabin at the farm. This cabin is not only a get-away for their immediate family, but it is also enjoyed when friends and extended family visit the farm for recreation and hunting as well.

There have been other major setbacks as well. Because of the drought in 2006, followed by the even more severe drought in

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Photo by Kelvin Daniels



Summer 2008

Standing in a patch of cogongrass, one of Salem’s major tasks has been the ongoing battle with invasive species.

2007, they lost 90,000 longleaf pines. However, once again, Salem has persevered. In December of last year, they completed several months of “supplemental” planting of 90,000 containerized longleaf seedlings. Although there has traditionally not been much problem with Southern Pine Beetle on the property, they are currently experiencing Ips beetle infestations . . . another gift from the drought that keeps on giving. And now, another result of the stress caused by the drought has surfaced . . . this year, several oaks are dying from a fungus. They’ve had to cut several of them, but they’re utilizing this wood as an “opportunity,” once again, this summer building a hay barn, stables, and fencing 2,500 feet of pasture for Dianne’s two horses.

The Salooms have utilized their TREASURE Forest to help educate other landowners and students about good stewardship, which includes hosting the forestry tour for the National Tree Farmers Convention in October of 2006, and the Conecuh County field trip for the “Forest in the Classroom/Classroom in the Forest” program for the last couple years. This past spring, approximately 100 fifth grade students from Sparta Academy, Marshall, and Repton schools attended.

As this story was being written, the Salooms were busy in preparation of another upcoming event. On October 1, they will



Diane and Salem Saloom welcome students to their property for the Classroom in the Forest program in April of 2008.

Courtesy of the Evergreen Courier

host Alabama’s 2008 Regional Forestry Field Day tour for the Southwest Region.

Even with all the challenges and setbacks over the last few years, Salem reiterated that his family has certainly been blessed to be able to do all that they do. If ever anyone has turned adversity into opportunity, it would be the Salooms . . . true practitioners of stewardship. 🌲

In spite of devastating losses from Hurricane Ivan (background) and two consecutive years of drought (inset left), the Saloom family have persevered, replanting as necessary. Dr. Saloom inspects young longleaf with Victor Howell, Alabama Forestry Commission Conecuh County Manager (inset right).





Invaders from the Urban Forest

By Neil Letson, State Urban Forestry Coordinator, Alabama Forestry Commission

Over the years, much has been written and even more said about invasive plant species. This is good. Invasive plants are a real problem that deserves our full attention, because they pose such a threat to Alabama's forests. Landowners and forest managers who neglect invasive plants do so at their own risk. That's why the more we talk about this problem, the better Alabama's forests will be. It's as simple as that.

Much of what we've learned about invasive plants is from a decidedly rural approach – and rightly so. It's the Alabama forest landowner who is on the front lines face-to-face with these aggressors. It makes sense to attack this problem in the battlefields of our forests. But one wonders if this approach will ever result in an acceptable victory, especially when we consider that almost all invasive plants have an urban origin.

Take for example the Chinese tallowtree (*Sapium sebiferum*). Its history over time gives us useful clues about the nature of invasive plants that hold true today. Reportedly, Benjamin Franklin himself in 1776 brought this exotic Asian tree to Colonial America. It's claimed that he saw the tree's seed oil as a potential source for candle and soap making. That was the first mistake. We often look at a plant's single attribute as a reason for experimentation, without being aware of its many unknown features that can come back to haunt us. In this case it did.

Over a two-century period, the Chinese tallowtree quickly naturalized and spread along the Atlantic and Gulf Coast regions. We've now learned that this "introduced" tree species is a highly successful colonizer that can squeeze out entire native plant ecosystems during regeneration. This is one Asian import that everyone wishes we could send back home.

To add insult to injury, the Chinese tallowtree's brilliant fall color made it a favorite urban tree. At one time, you could even

buy it at local nurseries! Ironically, homeowners in many Southern cities still plant and maintain Chinese tallowtrees, while landowners and forest managers struggle to eradicate the invader.

Unfortunately, there are other cases of good intentions gone awry. And the list is growing. Numbers of exotic plants brought to this country for good purposes have now become invaders of our forests. These include Tree-of-heaven, princess-tree, chinaberry, and Russian olive. With a legacy of our past deeds contributing to today's invasive plant problem, one can only imagine what other exotics we are planting in our urban landscape now that will become tomorrow's invasive plant.

So, what does all this mean for Alabama's landowner and forest manager? Simply put, it means you may win a battle against invasive plants, but you can still lose the war. Ultimate success will depend on attacking the invasive plant problem at multiple fronts, including the urban forest. So far, an effective urban forest approach has not been taken. The good news is that it is not too late.

Opening an Urban Front

Taking the invasive plant fight to urban Alabama will not happen unless there is a change in public attitude. Landowners and forest managers are essential in helping communities see that invasive plants are a problem for Alabama's rural and urban forest. By making invasive plants a common enemy, an opportunity occurs for better coordination of rural and urban resources. This could make a genuine difference.

The key is education. Most Alabama homeowners simply are not aware that this is a problem. And if they don't know it's a problem, then we can't count on their support. That's why the message must help urban audiences see invasive plants as a

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Many of today's invasive trees were once popularly planted in Alabama cities. Educational activities can help citizens plant tree species that will not become tomorrow's invasive plant.



In Alabama, 46 communities employ city foresters to manage their urban forests. These professionals have the expertise to make invasive plants a part of their urban forest management program.

problem that affects them, and gives them a reason to join the fight. This will require landowners, forest managers, researchers, and other natural resource experts to take the invasive plant message to Alabama's cities and towns. What they already know about the problem in Alabama's rural forest has application in the urban forest.

Luckily, conditions are ripe to make this happen. A 2003 Auburn University study found that a high percentage of Alabama urban adults want trees in their communities *and* are receptive to information that will help them better care for their trees. This finding supports a strategy to educate urban homeowners about invasive plants.

However, an educational campaign targeting Alabama's urban public will need to go beyond just awareness. It must also give homeowners tools they can use to fight the problem, such as removing invasive trees from their home landscape. With enough time, there would be an almost immediate impact on the statewide effort. It would bring into action thousands of individual citizens actively working to reduce invasive plants on their own. It would also create a network of on-the-ground eyes ready to spot new and emerging exotic plants before they become problems for the forest.

Alabama local governments make up the second audience in this important educational strategy, because they make decisions and adopt policies that influence a much larger landscape than single homeowners. Fortunately, most Alabama towns and cities are building programs to better manage their urban forests. Communities are hiring urban foresters, budgeting money, implementing sophisticated management programs, and

working with large numbers of volunteer citizens. These municipal resources and capacities could have a huge impact on the invasive plant problem if effectively directed at the urban forest front.

There will be a key difference in an invasive plant message targeting local governments. Unlike for homeowners, this message will need to be more technical and highly developed. That's because there are great similarities in how local governments would address invasive plants as compared with traditional forest landowners. Both approaches involve a professional forest management perspective. A good invasive plant message will help local governments adapt their urban forest management programs to effectively complement rural initiatives.

What Can I Do?

If Alabama is to succeed in its battle with invasive plants, there must be an urban forest component. But with most things, nothing just happens. It takes people with vision, purpose, and a cause to work with others toward a common goal. In this case, that duty will fall on Alabama's landowners, forest managers, researchers, and other natural resource professionals. They will need to see that it is in their interest to go into Alabama communities and build relationships around solving the invasive plant issue. The good news is that Alabama communities are receptive to this message. 🌳



Alabama citizens and communities have great pride in their urban forests. Tapping into this personal value can broaden the invasive species fight to our cities and towns.



ALABAMA'S 10 WORST INVASIVE WEEDS



COGONGRASS

Imperata cylindrica

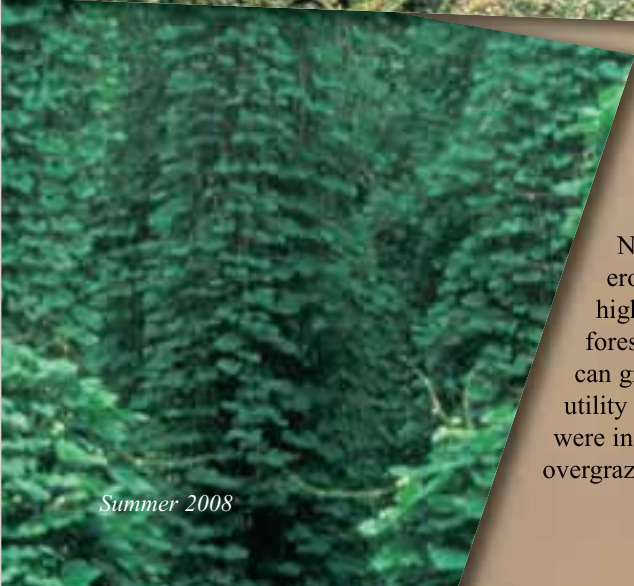
Native to Asia and introduced into the Mobile area in the early 1900s. This tall perennial grass with yellowish foliage forms dense circular infestations that exclude all native species and has no known uses. It is highly flammable and poses a severe fire hazard. Over half of Alabama's counties have cogongrass infestations with the most severe being in the southern tier of counties. Cogongrass is steadily spreading northward by windblown seeds, movement of contaminated fill dirt, and probably through horticultural plantings (commercial red variety) as well as hay, pinestraw, and straw sells from infested areas. This is a federal- and state-listed noxious weed. Successful eradication is achieved with multiple herbicide treatments over several years.



CHINESE PRIVET

Ligustrum sinense

Native to China and first introduced into the US as an ornamental shrub in 1853. This mostly evergreen shrub has been a traditional ornamental hedge species and continues to be sold and planted principally as the variegated variety. It spreads across the landscape by abundant seeds carried by birds and water, while infestations grow by prolific root-suckering. Chinese privet is just one of several species of privet invading Alabama's fencerows, forested creek bottoms, and upland forests. The dense stemmy infestations reaching 30 feet tall displace most native species and prevent regeneration of bottomland hardwood and upland pine forests. Chinese privet has some value as an ornamental, deer browse, and bird habitat. Plants are controlled by application of herbicides to foliage, stems, and cut stumps.



KUDZU

Pueraria montana var. lobata

Native to China and introduced into the South in the 1930s to 50s for forage and erosion control, but it was finally realized that it could not be used or contained. This highly-recognized perennial "Vine that Ate the South," continues to spread along edges of forests, pastures, and rights-of-way and around cities and towns. During spring, kudzu vines can grow up to a foot a day, covering trees, buildings, fences, road signs, and telephone and utility poles. In the late 1980s, a county agent survey estimated about 250 thousand acres were infested by kudzu in Alabama. Control treatments have been successful using herbicides, overgrazing, and mechanical root removal.



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TALLOWTREE

Triadica sebifera or *Sapium sebiferum*

Native to Eastern Asia and first introduced into South Carolina in the 1700s and then spread wider by federally-sponsored plantings in the Gulf Coast during the early 1900s for a failed seed oil industry. This deciduous tree's colorful fall foliage and rapid growth has made it a popular landscape tree. Prolific seed production and dispersal by birds and water has resulted in increasingly infested stream banks, riverbanks, and wet areas as well as upland forests, especially in southern Alabama. This aggressive species is replacing valuable bottomland forests and has limited value for honey production. Several southern states have banned or are in the process of banning sales of this species. Plants are controlled by application of herbicides to foliage, stems, or cut stumps.



JAPANESE CLIMBING FERN

Lygodium japonicum

Native to Asia and Australia and introduced into the US in the 1930s. This perennial viney fern is rapidly spreading by windblown and water-carried spores and shipments of contaminated pine straw, and now is increasingly found scattered throughout Alabama. Although dying back each winter, prior year's vines provide a trellis for expansive new growth that eventually covers shrubs and trees. Native species of plants are displaced, wildlife habitat is destroyed, and access to lands is denied by this species. Range expansion could now be stopped or slowed by control of scattered infestations. Careful prescribed burns can reduce vines and applications of herbicides to foliage can control underground stems.



INVASIVE ROSES

*multiflora rose (Rosa multiflora),
Cherokee rose (R. laevigata), and
Macartney rose (R. bracteata)*

Native to Asia and introduced into the US in early times as ornamentals, livestock containment, and wildlife habitat plantings. These roses are increasingly invading pastures, forest edges, rights-of-way, and wetland habitats, displacing native species. Cherokee and Macartney roses are evergreen and multiflora is deciduous, but all form impenetrable entanglements that stop land use and management. Cherokee rose is a major plant pest in the Blackbelt, while multiflora and Macartney roses occur throughout Alabama. Effective eradication can be achieved with repeated herbicide applications, while biocontrol agents will weaken plants.



TROPICAL SODA APPLE

Solanum viarum

Native to Brazil and Argentina; first found in Florida in 1988 and Alabama in 1994. This thorny perennial shrub invaded an estimated one million acres in five southern states within seven years after its arrival. Over 15,000 acres are currently infested in Alabama with extremely rapid spread underway. Entire pastures are occupied following an initial plant. It migrates by interstate movement of cattle, hay, and composted manure from infested areas, while local spread by wildlife is now suspected. This is a federal- and state-listed noxious weed. Eradication requires multi-year application of herbicides.





HYDRILLA

Hydrilla verticillata

Native to Asia or Africa and first introduced into Florida in the 1950s or early 1960s. This is a submersed herbaceous plant that infests freshwater ponds, rivers, and lakes. Like many invasive aquatic plants, hydrilla was introduced by the aquarium trade and now spreads by plant parts hitch-hiking on boats and trailers. Dense surface mats of hydrilla crowd out native plants and cause reduced oxygen conditions unsuitable for fish. The mats interfere with water flow, drainage, navigation, and often harbor mosquitoes. This is a federal- and state-listed noxious weed. Carefully applied herbicide applications can reduce infestations.



EURASIAN WATER MILFOIL

Myriophyllum spicatum

Native to Eurasia and introduced into the US in the 1940s as an aquarium plant. This submersed, mat-forming perennial remains green during winter and occurs throughout Alabama in both fresh and brackish waters. It is an aggressive invader of reservoirs, rivers, and lakes. It forms dense mats that replace native plants and prevent light penetration causing fish habitat destruction. It spreads by plant fragments hitch-hiking on boats and trailers, but also produces seeds. Carefully planned herbicide applications can reduce infestations in some cases.



ALLIGATOR WEED

Alternanthera philoxeroides

Native to South America and introduced into the US in the 1890s in ship ballast water. This herbaceous freshwater perennial invader forms dense mats in water bodies, wetlands, and low-lying as well as upland areas. The thick mats in water replace native species and can result in fish kills and prevent recreational use as well as slow drainage that may cause flooding. Dense upland infestations make the land useless for any type of production. A South American flea beetle introduced in the 1980s in Florida for biological control of alligator weed has reduced the spread but is less effective in central and northern Alabama because of low overwinter survival. Several herbicides are available for effective treatment of alligatorweed. Eradication requires multi-year applications.



The Alabama Invasive Plant Council was established in 2003 as a non-profit state-wide organization. Council partners are:



Alabama Forestry Commission
Alabama Department of Agriculture and Industries
Alabama Department of Transportation
Auburn University Cooperative Extension
The Nature Conservancy
USDA Animal and Plant Health Inspection Service
USDA Natural Resources Conservation Service

US Fish and Wildlife Service
Alabama Wildflower Watch
Alabama Farmers Federation
Alabama Nursery & Landscape Association
Alabama Forestry Association
Alabama Power
Alabama Crop Management Association
The John D. Freeman Herbarium, Auburn University

Paradise Lost

The Productivity and Richness of Alabama's Forests Overtaken by Hostile Invasion of Alien Plants

By *Nancy J. Loewenstein, Ph.D.*, School of Forestry and Wildlife Sciences, Auburn University; *James H. Miller, Ph.D* and *Erwin Chambliss*, USDA Forest Service R&D, Auburn University

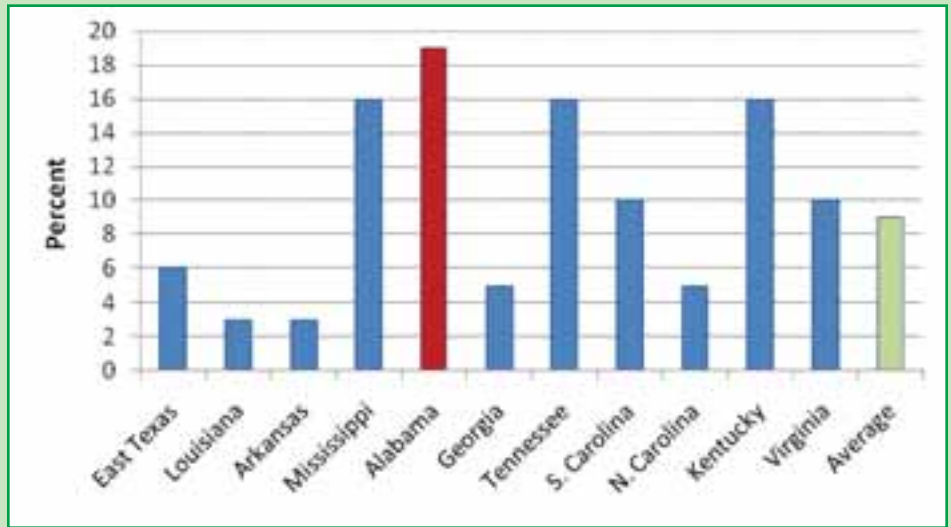
Kudzu and Chinese privet along Alabama roadways are a familiar sight, and Japanese honeysuckle is so commonplace it has practically become a part of Southern culture. But are these and other invasive plants really having a negative impact on Alabama forests? Just how bad is the invasive plant problem in Alabama? What are the most effective ways to combat invasive plants?

A picture of the severity of the invasive plant problem throughout the Southeast is beginning to emerge from the USDA Forest Service Forest Inventory Analysis (FIA) data. The Forest Service, in partnership with state forestry agencies, began collecting FIA data in the 1930s from plots on all forest ownerships. Each state surveyed timber and growing stock every ten years – like the population census. In the 1990s, state forestry leaders realized that invasive plants were having an increasingly negative impact on forest use and productivity . . . and that more timely information was critically needed. They requested that the Southern Research Station's FIA start adding invasive plants and other forest health threats to their inventory and to also shorten the cycle of survey.

In 2001, FIA state and federal surveyors were trained to identify 40 invasive plants shown in *Nonnative Invasive Plants of Southern Forests*, a publication of the Forest Service. They began collecting data on the presence and cover of these species, along with the usual FIA timber and disturbance data. To shorten the cycle, one-fifth of all plots are now being surveyed on an annual basis (barring critical demands like wildfires), which mean that it takes about five years to complete a state. Alabama is now in its second cycle of FIA data collection. Data analysis from the first cycle is underway, and the results are disturbing.

It's hard to imagine, but the FIA data indicate that over 4 million acres of Alabama's 22.7 million acres of forest lands are covered by one or more invasive plant species. That is to say that 19%, or nearly one-fifth, of our forests are occupied and impacted in multiple ways by invasive plants. According to the current preliminary data summaries, more forest acres are infested in Alabama than in any other southern state. Tennessee, Mississippi, and Kentucky are not far behind, with 16% (two to three million acres) infested; while 5% of Georgia forests are

Figure 1. Nineteen percent of Alabama's forest land is occupied by invasive species, more than any other state in the South. (2001-2006 FIA data)



covered by invasive plants. The average across all southern states is 9% (Figure 1).

These summaries are preliminary because not all states have finished their first complete cycle and extensive data checks are still underway. Also, survey crews vary by states and even with continued training, the identification of invasive plants is new to them, so accuracy may vary. In Alabama alone, 15,500 subplots were surveyed – a heroic effort by the Alabama Forestry Commission associates in partnership with the Forest Service FIA. However, even with this number of plots, the sample is too small to give an accurate picture of species densities for individual counties or for invasive species that are widely scattered.

Invasive Species of Concern

Beyond a doubt, Japanese honeysuckle (*Lonicera japonica*) is the most widespread and pervasive invasive plant in Southeastern forests (Figure 2). In Alabama alone, nearly three million acres of forest lands have this vine as part of the stand or on edges. Fortunately, it rarely forms exclusive infestations and then only temporarily. It is also an important year-round browse for white-tailed deer and eastern cottontails, and is also eaten by wild turkey, northern bobwhite, and song birds. Thus, this invasive has positive wildlife values unlike most of the other invasive plants. If it were not a preferred winter browse for white-tailed deer, we might very well be up to our ears in honeysuckle!

Chinese privet (*Ligustrum sinense*) and the closely related Japanese and glossy privets (*L. japonicum* and *L. lucidum*, respectively) occupy over one million acres of Alabama's forests (Figure 3). They both do provide fruit and cover for some song

birds and turkey, and limited browse for white-tail deer, but at the high cost of the loss of much of our bottomland hardwood and upland forests. Kudzu (*Pueraria montana*), which typically is confined to forest edges, can be found on over 60,000 acres of forest edges, openings, and along forest roads. This acreage does not include the countless acres of kudzu along highways, abandoned fields, and city lots and edges.

Cogongrass (*Imperata cylindrica*) is an extremely aggressive grass which has quickly become one of the most threatening invasive species in the state because it forms dense and exclusive infestations that are very difficult to control (Figure 4). It has consumed over 43,000 acres of our forest land and continues to spread rapidly - reducing forest productivity, destroying wildlife habitat, presenting a fire danger, and affecting rights-of-way. Based on preliminary data, it is estimated that the spread north from its introduction point near Mobile is at a rate of 2,000 acres a year. This is a conservative estimate of the actual rate of spread of this species, given that these acreage values do not include those along highway rights-of-way and pastures where cogongrass is often found. The cogongrass crisis can be studied in more detail by reading the Cogongrass Conference Proceedings, also known as "A Cogongrass Management Guide," and other articles at www.cogongrass.org.

(Continued on page 14)

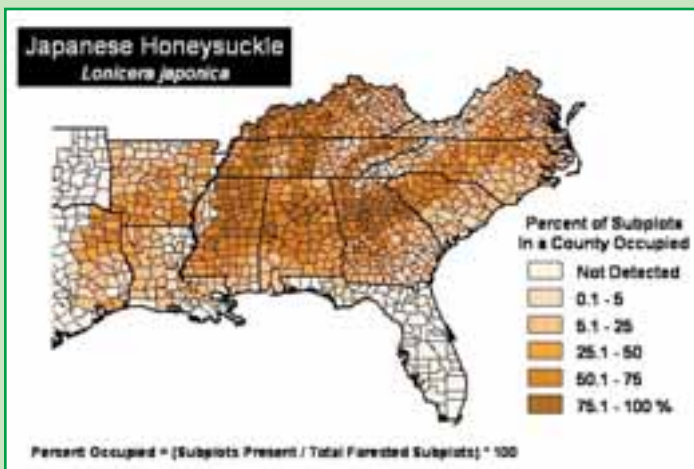


Figure 2. Japanese honeysuckle is the most widespread and pervasive invasive species in forests across Alabama and the Southeast. (2001-2006 FIA data)

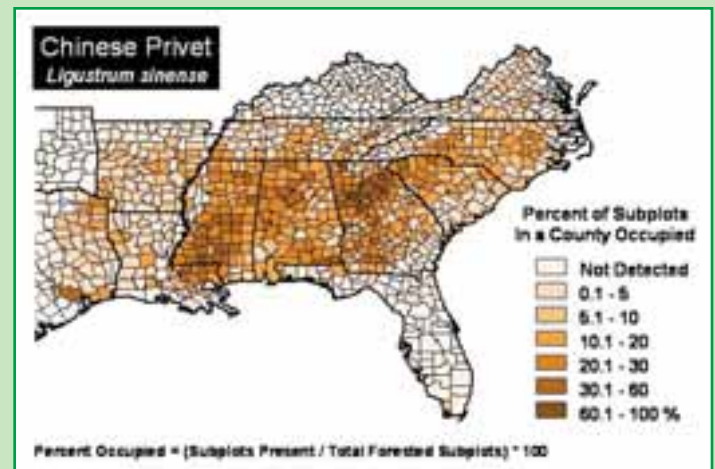


Figure 3. Chinese privet occupies nearly one million acres of Alabama forestland, occurring in every county of the state. (2001-2006 FIA data)

Japanese climbing fern (*Lygodium japonicum*), found on 43,000 acres of Alabama forestland, is another species spreading northward (Figure 5). This perennial fern vine, with distinctive frilly fronds, grows along stream banks and road sides, and often in open woods and pine plantations (Figure 6). An unfortunate result of Japanese climbing fern infestations in pine plantations is that the spores of this plant are often transported in pine straw to homeowners far and wide. Now Japanese climbing fern is becoming common in urban flower beds where the wind-blown spores can easily spread to nearby forests.

Other species of concern in Alabama forests are Chinese tallowtree (popcorn tree), bush honeysuckles, Japanese stiltgrass, Chinese and Japanese wisterias, Chinese and shrubby lespedezas, mimosa, and chinaberry (Table 1).

To view all of the FIA invasive species summaries, visit srsfia2.fs.fed.us/data_center/index.shtml and click on “Nonnative Invasive Plant data tool.”

Impacts, Prevention, and Control of Invasive Species

This invasion of our forests is of concern because many non-native invasive plants can literally overrun native species, reducing numbers and biodiversity of native plants and the insects, birds and animals that depend on them. Infestations of many invaders can also change the way ecosystems work – altering fire regimes, water and nutrient cycles, soil characteristics, and the regeneration of forests and other natural areas. The economic costs resulting from the loss of forest productivity, wildlife habitat, recreational opportunities, and aesthetic appeal are difficult to estimate, but the final bottom line will certainly be large and the damage rapidly compounding. For example, a simple estimate of reforestation costs for the lands currently



Figure 5. Spreading northward, Japanese climbing fern currently occupies an estimated 43,000 acres of Alabama forestland.

infested with tallowtree, privets, kudzu, wisterias, and cogon-grass – assuming a conservative \$250 per acre for control and planting – would be a staggering quarter of a billion dollars! Furthermore, this economic evaluation does not begin to consider the losses in wildlife habitat and recreational opportunities and other impacts on ecosystem services and the environment.

Given the high costs associated with invasive plants, the best long-term and cost-effective control strategy is to prevent the introduction and establishment of invasive plants in the first place. The initial step in this process is to learn which species are invasive and how to identify them. A list of invasive plants in Alabama can be found on the Alabama Invasive Plant Council webpage (www.se-eppc.org/alabama). The book developed for use by the FIA surveyors, *Nonnative Invasive Plants of Southern Forests*, is also free to the public and is an excellent resource for identification and control of invasive species. Order a copy at (828) 257-4830 or pubrequest@fs.fed.us. The website www.invasive.org is another valuable resource, with photographs and links to a wealth of additional information.

Armed with knowledge of which species are invasive, strive to avoid the introduction and establishment of these species on your property. Invasive plants can be introduced in several ways. Many invasive species are escaped ornamentals, so be mindful of this when introducing plants to your yard and wildlife plantings. The more rapid invaders arrive by wind-blown seeds or spores. Some are widely scattered by bird- and animal-dispersed seeds. Many invasive plants also migrate along rights-of-way and stream margins. Arrival on infested clothing, equipment, and vehicles is also common. We will have to change our habits to be aware of seeds and roots that might lodge on our vehicles, equipment, dogs, and ourselves, and clean up before leaving infested areas. A number of invasive species continue to be planted by landowners and land managers, as some of these alien plants are still heavily relied upon for cattle forages, hay crops, wildlife plantings, and roadside stabilization. It is important that we begin to use and develop additional non-invasive alternatives for use in these situations.

The first line of defense against infestations is *constant surveillance* of rights-of-way, stream banks, internal roads and trails, and other disturbed areas for any new arrivals. With the



Figure 4. Cogon grass, easily identified when blooming in the spring, has quickly become one of the most threatening invasive plants in Alabama.

Chris Evans, River CWMA, Bugwood.org

SPECIES (common name)	ALABAMA ACRES
Japanese honeysuckle	2,922,547
Chinese privet	902,215
Glossy privet	144,094
Kudzu	61,295
Cogongrass	43,889
Japanese climbing fern	43,709
Mimosa (silktree)	34,945
Chinese tallowtree (popcorn tree)	22,505
Non-native roses	20,837
Japanese stiltgrass (Nepalese browntop)	15,482
Chinese and shrubby lespedezas	13,257
Chinese and Japanese wisterias	12,380

Table 1. Summary data from the 2001-2006 Forest Inventory Analysis (FIA) reveals acres of Alabama forestland occupied by various invasive species.

first sign of an unwelcome plant, effective control measures should be started, or spread is inevitable. Early detection and treatment on your forestlands will minimize the effort and cost that comes with treating well-established plants or full-blown infestations.

Most exotic invasive plants are perennials, having extensive tough roots and runners. This means that effective herbicide applications offer the best means of containment or eradication, because herbicides can kill roots and do so without exposing the soil to erosion.

To be successful, the most effective herbicide for the species should be used. It should be applied using a correct method, and applied during an optimum time period.

Read and thoroughly understand the herbicide label and its prohibitions before and during use. Many herbicides and some target plants require the addition of a non-ionic surfactant to the spray tank to be effective. Other important points are to always use clean water and mix your spray solution thoroughly before applying. If possible, forgo applications during periods of severe drought as herbicide effectiveness can be greatly reduced during these times. And, always wear the personal protective equipment prescribed on the label or in supplementary materials.

Mechanical treatments and prescribed burning can assist eradication measures, but are limited in effectiveness. Intensive grazing is one way to reduce the vigor of palatable alien plants like kudzu, but this rarely yields eradication and may spread seeds (now occurring with tropical soda apple). Prescribed burning does not control roots or runners and usually only kills the small shoots, providing only temporary above-ground control. Mechanical root raking and disking can actually spread or

aggravate a problem when dealing with plants having runners, by chopping these into re-sprouting segments. However, root raking, piling, and burning may be the only way to start controlling dense infestations of multiple woody invasive species. Small infestations may be handled by hand pulling, grubbing with a stout hoe, or by using the newly-introduced weed wrenches.

Although generally ineffective by themselves, both mechanical and burning treatments have a place in integrated pest management programs. Invasive shrubs and vines that are top-killed by burning will re-grow and can be more easily reached by herbicide foliar sprays, the most cost-effective way to use herbicides. It is critical, however, that herbicide applications following burning or disking be delayed to permit adequate re-sprouting of target plants for maximum herbicide uptake and effectiveness. Prescribed burning can also stimulate seed germination of troublesome plants, permitting effective herbicide control of germinants. Burning can be used to prepare the site for effective herbicide applications by clearing debris and revealing application hazards, such as old wells and pits. Additionally, mechanical and burning treatments can boost the effectiveness of herbicide treatments by killing herbicide-weakened plants. Disking and root raking can dislodge herbicide-damaged woody roots and large runners, leaving them to dry and rot.

When using mechanical and burning treatments, it is important to take steps to prevent erosion. For example, burning in late winter or during spring leaf-out minimizes the period of bare soil. It should also be recognized that because prescribed burning can expose soils, burning can actually facilitate establishment and spread of some invasive species like cogongrass and Japanese climbing fern.

An eradication program for infestations of troublesome plants usually takes several years, followed by years of surveillance to watch for re-growth or new invasions – a potentially daunting task. However, through a combination of prevention, regular monitoring, and persistent control efforts, you can protect your lands and the lands you manage from being choked out by alien plants. In this way, forest productivity, wildlife habitat, native plants, and Alabama’s natural heritage can be safeguarded from the threat of invasive plants and our children will not inherit a legacy of degraded lands and forests. 🌳

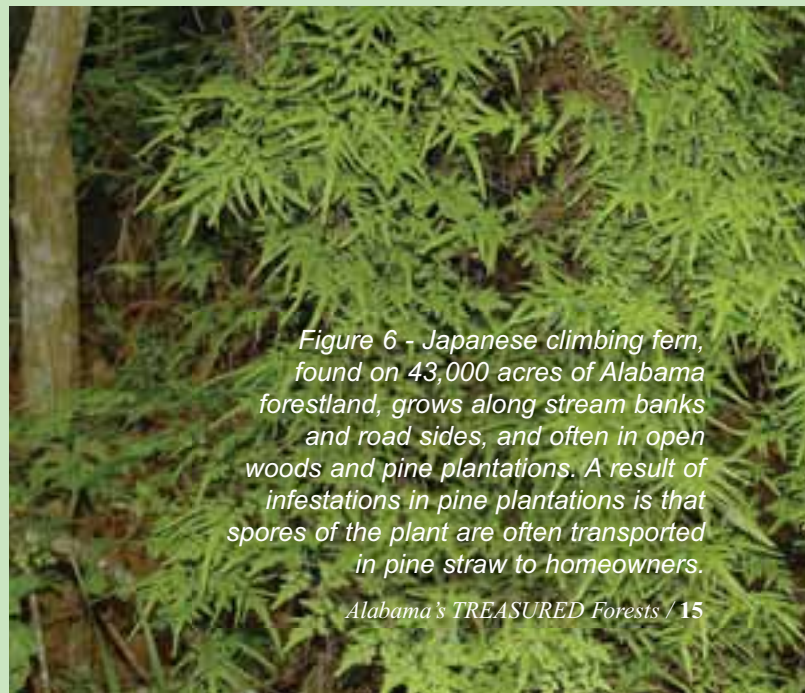


Figure 6 - Japanese climbing fern, found on 43,000 acres of Alabama forestland, grows along stream banks and road sides, and often in open woods and pine plantations. A result of infestations in pine plantations is that spores of the plant are often transported in pine straw to homeowners.



The invasive plants shown here are some of the worst in the State of Alabama. Other invasive plants of grave concern to the future of Alabama's lands and waters can be found on the Alabama Invasive Plant Council's list at <http://www.se-eppc.org/alabama/>.

Contributing photographers:
 Larry Allain, Chuck Bargerion, Ronald Billings, Ted Bodner, John Byrd, Charles Bryson, Stanley Culppepper, Randy Cyr, Chris Evans, John Everest, Tom Heattie, Nancy Loewenstein, Leslie Mehrhoff, Jim Miller, Robert Mohlenbrock, David Moorhead, Fred Naiton, Richard Old, Herb Pilcher, Scott Robinson, Dan Tennaglia



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Victory Is Possible in the War on Cogongrass

By *Stanley R. Anderson and Kenneth Leslie, Alabama Forestry Commission*

“You best start believing in ghost stories . . . you’re in one.” It’s a line from *Pirates of the Caribbean*, that Dr. George B. Inge says he is reminded of when considering his 160-acre

TREASURE Forest between Wilmer and Georgetown in Mobile County. In 2002, he reported that there were three patches of cogongrass; today there are almost 200 spots.

Dr. Inge, a former OB-GYN, now a fertility specialist in the Mobile area, devotes many of his “off” hours to recreating and working in his TREASURE Forest. He also owns Alabama forestland in two other locations: one woodland in Forest Home between Greenville and Pine Apple, and another in the Mobile River Delta near Stockton on Sandy Hook Island.

Investing heavily in time, equipment, and herbicides, George says, “Controlling cogongrass has become a hobby.” For the past six years, he has made repeated treatments, one to two times per year, in his efforts to control this aggressive, stubborn, invasive grass. He rigged up a 26-gallon sprayer system on the back of a John Deere Trail Gator and purchased a 4-gallon backpack sprayer for mop-up work. The spring and summer sprayings employ 1.2 ounces/gallon of Arsenal® and 4.0 ounces/gallon of Accord® with one ounce/gallon of surfactant. Using a handheld GPS to locate and document his efforts, it takes about 10 hours each season (20 hours per year) to perform all the required tasks.

The extra effort and hard work is paying off. On the boundary lines, the ground vegetation is quite contrasting . . . on the neighbors’ side is a thick sea of cogongrass; now on the Inge side, a natural floor of native brush, grasses, forbs, and only a trace of the persistent invasive. However, some cogongrass is still there and the war goes on. According to Dr. Inge, “It makes

you wonder if you are fighting a losing battle, if your neighbors are not controlling their cogongrass.”

However, a recent land ownership change may ease some of George’s concerns. His new neighbors have become allies in the combat against cogongrass. In beginning their eradication campaign, they have contracted to

spray the invasive weed on the property adjoining his TREASURE Forest, giving him optimism.

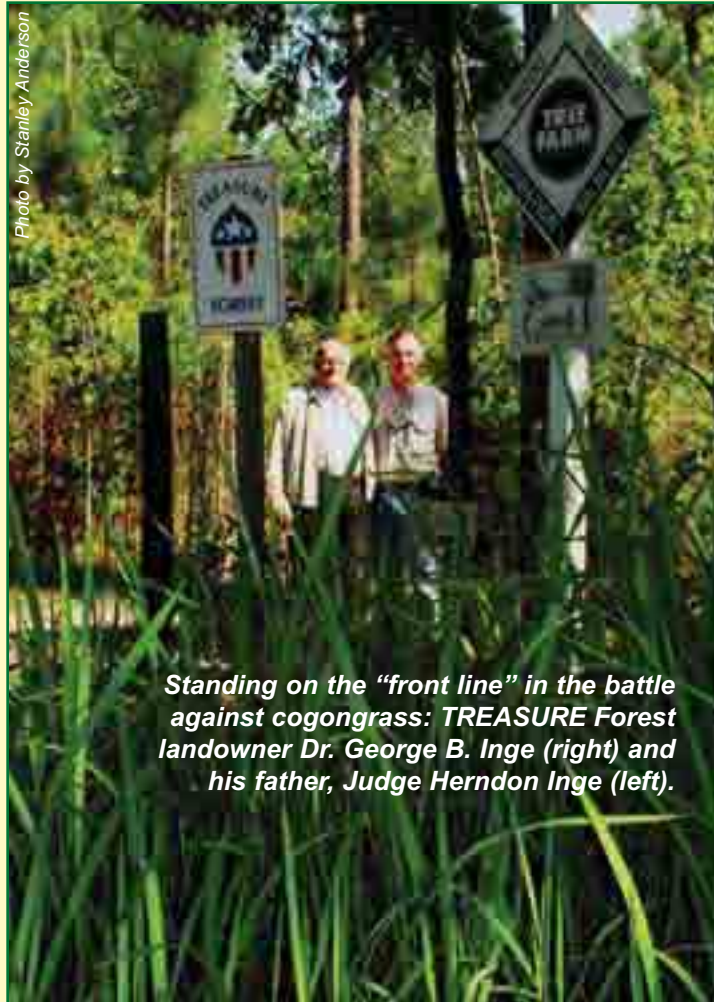
A strong sense of environmental responsibility is demonstrated by Dr. Inge as his property is located just three miles north of Big Creek Lake, the reservoir for Mobile’s source of drinking water. He carefully considers water quality and wildlife when conducting forestry practices such as firebreak construction, prescribed burning, site preparation, pine release, and invasive species control. He stabilizes his roadbeds, uses water bars, and places gravel on critical areas.

Some of the property’s assets include gopher tortoises, pitcher plants, and natural stands of longleaf mixed with hardwoods. Additionally, over a half mile of Big Creek meanders through the forest, which includes 35 acres of planted longleaf pine and some planted slash pine on the lower tracts. George mon-

itors the gopher tortoise burrows and conducts prescribed burning to help keep the habitat healthy.

Affiliated with several groups, Dr. Inge maintains a broad perspective on environmental and forestry issues. He is a member of the Forest Landowners Association, Longleaf Alliance, Nature Conservancy, Alabama Forest Owners Association, Sierra Club, Invasive Species Council, and others as well. In May 2006, he hosted “Forested Flyways,” the traveling education program sponsored by the American Forest Foundation. While this group was visiting his land, George demonstrated

(Continued on page 19)



Standing on the “front line” in the battle against cogongrass: TREASURE Forest landowner Dr. George B. Inge (right) and his father, Judge Herndon Inge (left).



live, growing-season prescribed burning on two patches in his longleaf.

Dr. Inge is grateful for cost-share programs and highly appreciative of all the professional and technical assistance he has received over the years from both government and private sources. The Alabama Forestry Commission and Natural Resources Conservation Service have provided help through cost-share and technical assistance. Steve Lyda, former county forester for several years, spent many hours helping the Inges with their land management. He also credits Doug Link and the Alabama River Woodlands Landowner Assistance Program, as well as Steve Crowley with helping them enter into the Scotch Plywood Landowner Assistance Program.

Family ownership on this property goes back to 1921 when George's great grandfather, Plumer Burgette, first purchased it. After his death in 1933, it was leased to an adjacent landowner and received very little management for three generations. Dr. Inge started enjoying the land after his return from military service in 1984 and eventually bought it from his relative heirs in 1995. His father, Judge Herndon Inge, Jr., also owns five acres

with a cabin which adjoins the TREASURE Forest. At 88 years of age, this veteran of World War II infantry officer and former prisoner of war is still working at his law practice daily. He and George work together to maintain their road access.

Several things have inspired Dr. Inge to maintain a forest stewardship ethic. He recalls visiting the land when he was still in grammar school. Later, he was an Eagle Scout and his dad, Scout Master, but they were discouraged from using the land in those days by the adjoining landowner who was leasing the property. Another motivation to enjoy the forest was acquired while taking part in hunting trips, when stationed in Germany during his service in the Cold War. Challenged by the cogongrass issue, George now makes up for lost time.

Dr. Inge said that he is also inspired by a scripture reading from Proverbs 22:28: "Do not move an ancient boundary stone set up by your forefathers." He emphasized that if you own property, you cannot neglect it; you must maintain a management presence. If you neglect it, you might very well lose it – to cogongrass! 🌿

Alabama TREASURE Forest Association Conference and Wildlife/Forestry Festival October 24 & 25, 2008 -- Montgomery, AL

Friday, October 24, 2008

Conference

Renaissance Hotel at the Convention Center

Registration: 9:00 – 11:00 am

ATFA Luncheon: 11:45 am

Sessions: 1:15 – 4:45 pm

ATFA Banquet & Live Auction: 6:30 pm

Saturday, October 25, 2008

Wildlife/Forestry Festival

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Rules of Engagement: Tactics for the Small Acreage Land Manager

By *Stephen F. Enloe*, Assistant Professor and Extension Weed Specialist,
Department of Agronomy and Soils, Auburn University

To many small acreage land managers, invasive plant control can be a frustrating process. Clearing an overgrown backyard or wooded lot of invasive plants is a common goal, but a lack of understanding of how to approach the problem often results in time, money, and physical effort being wasted. Many people will aggressively attack a problem with a chainsaw, bush axe, or mower and then walk away, expecting to be done. However, following mechanical control, most invasive plants in the Southeast rapidly re-sprout from the stump or creeping roots. Within a few months (or even weeks, for some weeds) the problem has roared back and appears worse than ever. The landowner then turns to a herbicide recommendation ill-gotten from the neighbor's cousin's uncle who "knows" how to kill weeds. The results from that action typically vary from complete failure to complete control (which may be great, or, also include the roses, flowers, vegetables, and every other living plant within the area). This management process may be repeated in intermittent cycles before the landowner basically gives up. The good news is that it doesn't have to be that way. Armed with a bit of knowledge, you *can* reclaim your little piece of heaven from invasive plants. Here are some of the basics you need to know.

PLANT BIOLOGY 101

Invasive trees, shrubs, and vines in Alabama are almost always re-sprouters. Similar to arborescent hardwoods, many invasives quickly initiate new shoots from dormant meristems (growing points) around the root collar or on creeping roots. These quiescent growing points are maintained dormant by signals from the shoot. However, when that signal is removed, the dormant meristems are released. This is why you often see large numbers of re-sprouting shoots from recently cut stumps. Energy reserves stored within the roots are generally sufficient for many cycles of re-sprouting, so cutting even several times over the summer is not generally effective. Therefore, mechanical control is still a very useful first step for clearing dense infestations, but cannot be expected to work alone.

In addition to the re-sprouting issue, many forest invaders also produce numerous fleshy fruits that are eaten and spread by wildlife. Large showy fruits have been a signature of many horticulturally introduced species that have become invasive. This was also one of the early premises for the introduction of species such as Russian olive, whose fruits were promoted as a good food source for wildlife. Many seed within the fruits pass

through the digestive system of birds and other animals and are deposited in the feces, where they may readily germinate. Those that don't immediately germinate may also remain dormant for some time. While seed dormancy and longevity vary greatly among invaders, you can generally expect large flushes of seedlings following the initial control phase. Some species such as privet have relatively short-lived soil seed banks and can be eradicated in a few short years, while species such as kudzu have seed that may last for decades. However, continued diligence is required to eliminate new seedlings that arrive on site via fruits eaten by birds and other wildlife.

These two basic points of plant biology should hopefully convince you that there are no silver bullets for immediate eradication of invasive weeds. Therefore, be wary of anyone trying to sell you a miracle cure. Beyond any single strategy, persistence is the word most commonly associated with successful invasive plant control.

Before getting into control, here are two words about safety and personal protective equipment. Use it! For non-chemical control, leather gloves, safety glasses, sturdy boots, and long sleeves and pants are highly recommended. Always wear eye protection. For herbicide use, read the label and use all protective equipment required. Also, remember that poison ivy is a common component of many forest systems and may cause severe contact dermatitis from contacting the leaves, vines, roots, fruits, or smoke. Additionally, many other critters may be present such as snakes, as well as biting and stinging insects, so be prepared for those, too. Now, on to the tools of the trade . . .

NON-CHEMICAL WEED CONTROL

Are herbicides always necessary? The answer is no, and here are some guidelines for nonchemical weed control methods. Physical methods of control include cutting, mowing, digging, hand pulling, smothering, and prescribed fire.

Cutting and mowing: Cutting and mowing with hand tools, brush mowers, or brush grinders are an excellent first step. These methods open up dense stands of invasives and can improve access to interior parts of the stand. However, as previously mentioned, most invasive species re-sprout following mechanical damage, so follow-up action will be necessary. Remember, cutting brush all day is tough on chainsaws, so be sure to keep them well maintained and keep your cutting tools sharp. Cutting brush all day is also physically tough, so avoid dehydration, overheating, and exhaustion. Also, recognize that cutting smaller stems with a bush axe can often leave sharp or jagged stumps. Brush grinders, while more expensive to use, also eliminate the need for piling and burning or chipping. Walk-behind brush mowers are typically good at cutting stems under one inch, but may struggle with larger stems. For limited use, many equipment rental companies rent walk-behind models daily or weekly, which reduces costs and maintenance associated with purchasing one.

Hand digging and hand pulling: Hand digging is useful to remove the roots of small shrub stands or patches. It is easiest in sandy soils and most difficult in heavy clays, especially when soils are dry. Get as much of the roots as possible, but recognize that you will likely miss some in the process. Allow the roots to completely dry before disposing of them, as many species may re-root and re-establish if left on moist soil. Also, remember that

the disturbance you create will stimulate seeds to germinate, so expect a new flush of seedlings soon after digging. Hand pulling is effective for seedling trees, shrubs, and some vines. Grasp the young stems at the base and pull directly upward. If it does not release from the soil immediately, it may be a re-sprout from an established plant. At this point, stop pulling before you pull a muscle. Re-sprouts are typically extremely difficult to hand pull. For vines that send out shallow lateral roots in the forest understory – such as Japanese honeysuckle – you may often get several feet of root with careful hand pulling. For stems too tall to pull by hand, tools such as a weed wrench are useful. The bottom line is this: get all you can, but know you won't get it all the first time.

Smothering: Smothering is the use of plastic, weed fabric, or heavy mulch to prevent weeds from emerging. While these techniques work well for landscaped areas, they may be cost prohibitive in natural areas. In addition, while they work well for preventing annual weeds, they are less effective for perennials, which may be delayed but will still emerge through deep mulch or beyond the edges of plastic or fabric.

Prescribed fire: Prescribed fire is a useful tool in forest management but is difficult for controlling many invasives since they are re-sprouters. Low intensity ground fires may girdle some stems and kill seedlings, but the post-fire conditions are prime for new invasive recruitment. Additional low intensity ground fires may rapidly become out-of-control stand fires. When cogongrass or fire-laddering plants such as Japanese climbing fern are present, they can carry fire into the upper tree canopy. Drought conditions as experienced in 2007 also hinder safe, effective burning. Consult with your local Alabama Forestry Commission office for updates on burning regulations for your area as some regulations have recently changed.

(Continued on page 22)



Photo by John Pirtle

Rules of Engagement: Tactics for the Small Acreage Land Manager

(Continued from page 21)

CHEMICAL WEED CONTROL

Herbicide treatments are quite different for small-scale land applications compared to large-scale forestry operations, and the end result is also different. Whereas weed control in forestry is designed to suppress weeds to foster tree establishment and survival through the early years, invasive weed control is focused on long-term prevention, control, and complete eradication where feasible. For the small acreage landowner, herbicide treatment recommendations can be a confusing set of details filled with uncertainty. Common issues among homeowners and land managers may include 1) herbicides I have never heard of and can't find at my local retailer; 2) application equipment and techniques I am unfamiliar with; 3) treatment recommendations for small patches, not acres; and 4) concern over non-target damage to desirable vegetation. Given these issues, here are some guidelines to help clear up the confusion regarding small-scale applications.

Herbicide names: University recommendations typically provide common chemical names of the active ingredient (i.e. the component responsible for killing the target plant). This is different from the trade name, which is the formulated product that you purchase and use. An example of this is glyphosate, which is the name of the active ingredient in numerous products with trade names such as *Roundup*, *Accord*, and *Glyphomax*. The reason for this is that the university does not endorse one product over another. To find the right product, look at the

active ingredients and their percentages and select the product labeled for use in your situation. Be careful to read all of the active ingredients, because many products have very similar trade names with different active ingredients. This can be very important when trying to selectively control invasive weeds growing near desirable plants. Also, remember that the selection of herbicides for sale at your local hardware, discount, or feed and seed store will be very different from those at a pesti-

cide distributor. The herbicide products are often marketed and sold to different clientele groups. The names will be different, as will the quantities for sale. A common complaint is that a 2.5 gallon jug which may treat several acres is way too big and too expensive for the small area to be treated. Why get 2.5 gallons when you only need a pint? This goes back to knowing the active ingredients recommended. If you cannot find the exact product name you are looking for, check the active ingredients and percentages on the label. While there is no guarantee that all products with comparable active ingredients perform the same, you may still be able to find a smaller amount of product that will get the job done.

Application Equipment: Typically, agricultural applicators use large boom sprayers with multiple nozzles for accurate, uniform herbicide applications. However, boom sprayers are often difficult to use on small areas, especially when rough terrain and shrubs and trees are present. For small jobs, or in the woods, or on very rough terrain, handheld pump sprayers or backpack sprayers are very useful. Sizes range from small 1 gallon models to larger 3-5 gallon backpack-style sprayers. When considering which one to buy, recognize the following issues: 1) quality of construction, 2) the load weight you are comfortable carrying and, 3) the ability to change nozzle types and replace worn nozzles.

Small hand pump sprayers require frequent stops to pump to maintain pressure while backpack sprayers can be pumped during use. Remember, you get what you pay for, so look for quality construction, comfort and proper support in carrying the spray load, and the ability to change nozzle types. Spray wands, hoses, and handles may all become entangled in vines or brush, and a quick turn may result in breaking cheap plastic parts, or pulling hoses loose and sending herbicide solution into your face, torso, or legs.

Another sprayer consideration: if you also apply insecticides or fungicides to desirable trees or garden plants, you should use a different sprayer for herbicides. Many desirable fruit trees, vines, and vegetables are extremely sensitive to very small amounts of herbicides, and severe injury or death is likely. Even a well-washed sprayer may contain enough herbicide residue to injure or kill your azaleas or tomatoes, so don't use it to spray them!

Herbicide mixing: Often you will see a herbicide rate recommendation given as percent volume to volume (%v/v) for a specific product. This is the percent of herbicide in the total solution volume [herbicide + carrier (typically water) + anything else added to the tank such as surfactant]. For example, if the recommendation is for glyphosate at 25%v/v and you want to mix 1 gallon total volume, you would add one quart of glyphosate ($0.25 \times 1 \text{ gallon} = 0.25 \text{ gallons}$ or 1 quart) with 3 quarts of water ($1 \text{ gallon} - 0.25 \text{ gallons} = 0.75 \text{ gallons}$ or 3 quarts). While you might rationalize that ratio as one quart

For small jobs, or in the woods, or on very rough terrain, handheld pump sprayers or backpack sprayers are very useful.



James H. Miller, USDA Forest Service, Bugwood.org



Silverthorn and privet were chemically controlled, leaving the native hardwoods unharmed by the application. This example demonstrates the ability to control invasives selectively in mixed stands.

glyphosate to three quarts water $[(1/3)*100\%] = 33\%$, this is wrong. Always calculate the herbicide percentage based upon the total volume $[(1 \text{ qt}/4\text{qt})*100\%] = 25\%$.

Do not over-apply: Remember the old adage, “If a pound works well, then two pounds works even better.” Now that you remember it, do your best to forget it, and never *ever* use that approach! It may feel good to put an extra glug into the tank or spray weeds multiple times to the point of runoff, but you will be wasting herbicide, money, and may even be in violation of the herbicide label, which is the law. You may get tired of hearing this, but **READ THE HERBICIDE LABEL!** Small-scale applications are no excuse to get sloppy in your work. Unless the herbicide label specifically calls for it, you do not need to spray until runoff with most herbicides. One pass across most weeds for foliar treatment is sufficient.

For spot applications, add a water-soluble indicator dye to the spray tank. This will allow you to see where you have sprayed and will help prevent both missed weeds and over-application.

HERBICIDE APPLICATION TECHNIQUES

Spot foliar treatment: Foliar spot treatments are sprays directed to the foliage of individual or small clumps of target weeds. These can often be done selectively around desirable vegetation. One pass with the spray wand will be sufficient, and you do not need to spray to runoff. While late summer or fall timings may be most effective on many woody invaders, applying to green actively growing foliage is probably the most important concept. Severe drought stress may reduce efficacy for many herbicides on many weed species. If leaves are curled or drying out due to drought, it is advisable to delay spraying until conditions are better.

Basal bark treatment: This is a technique that sprays certain herbicides on the lower 12-18 inches of bark around the entire shrub or tree. Basal bark treatments work well on young thin-barked trees, but are not recommended for older trees greater than four inches in diameter. Typically, the carrier is oil-based instead of water-based, and herbicides used for this method are more soluble in oil than water. The oil improves penetration of the herbicide through the bark to the cambium layer where it is translocated to the growing points. Historically, diesel oil has been used as the carrier for basal bark treatments but it is very

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messy and there are better oil-based carriers to use. However, they are typically only available from pesticide distributors. Alternatively, some herbicides are formulated as ready to use with the correct carrier already in the jug. Read the herbicide label for this information.

Cut stump treatment: This entails mechanically cutting the tree or shrub and immediately applying a herbicide solution to the cambium layer just inside the bark. It is best to apply the herbicide as quickly as possible. For trees greater than four inches in diameter at the base, apply the solution to the cambium layer just inside the bark. For shrubs and trees less than four inches in diameter, apply the solution to the entire cut surface.

Pesticide container disposal: When emptied, pesticide containers must be triple-rinsed and crushed or punctured before they can be placed in a landfill. Although many pesticide bottles have a recycle symbol on them, it is illegal to recycle them with household recycling. Consult your local authorities for pesticide container recycling programs in your area. In case of potential accidents, always keep a spill kit on hand and the number for Poison Control in your cell phone. The number for the Alabama Poison Center is 1-800-222-1222. Herbicides are safe when used according to the label, and most accidents occur due to carelessness and a lack of understanding. For more information on safe pesticide application, contact your local Alabama Cooperative Extension System office.

RE-VEGETATION AND RESTORATION

Following successful weed control, it is important to re-vegetate heavily disturbed areas to prevent erosion and invasion by weedy annuals. While a healthy native plant community may not completely resist some invaders, it *can* suppress many. In some situations, you can utilize passive restoration and allow grasses, forbs, shrubs, and trees to naturally re-vegetate the area. However, diligence is required to remove new invaders that may also come in. Active restoration may be necessary to establish the plant community or species that you desire. While techniques for successful restoration are beyond the scope of this article, consult with your local Extension specialists or county Forestry Commission for information on restoration. There are also many nurseries now selling native plants that are useful for restoration. Again, the bottom line is this: keep restoration in mind as a critical component in the weed control process.

CONCLUSION

The struggle with invasive plants is not hopeless. Educate yourself and your neighbors on how to identify and control invasive plants that you are dealing with. If you do nothing, your neighbors' weeds will become your weeds and vice versa.

Always remember that invasive plants don't play fair, so use every tool in the toolbox to combat them. Be aggressive, follow up and learn from your successes and failures, and adapt your control strategies as you go. You can do this. You *can* make a difference. 🐾



Chemical Warfare Fighting Off the Invasion in Your Forest

By Jimmie Cobb, Forestry & IVM Sales Specialist, Dow AgroSciences, LLC

There has been a lot written on the coming invasive weed invasion, but for much of Alabama, “The Invasion” is already here. Kudzu, privet, mimosa, Japanese honeysuckle, and others are common throughout the state. Cogongrass, Japanese climbing fern, bush honeysuckle, and others are invading parts of the state. What can a private landowner do to combat this invasion, and the growing threat of new invaders?

I am a Registered Forester and Certified Arborist who has been working in the herbicide industry for 30 years. I understand forestry herbicides and their uses very well, and understand the growth and identification of native and non-native invasive species. I battle them on my property, and want to share some of the processes I use.

When deciding what product to use, you must first consider the species to be controlled and the desirable species you do *not* want to harm. If the target vegetation is growing in an open field with no grazing and no desirable trees around, the decision of what herbicide to use is easier than if the target is growing under oaks in a hardwood bottom.

Useful ways you can generally classify the herbicides include: 1) has residual soil activity or not; 2) has foliage activity only; 3) can be used for basal bark treatments; 4) can be used under your desirable trees; and 5) can be used in aquatic or wetland areas. Keep in mind that some herbicides may have more than one of these characteristics.

Some products that are very effective on invasive species have long soil residual activity. This long-term activity helps make them effective, but they cannot be used under or around most desirable trees. These include Tordon® and Spike®. Arsenal®, Escort®, Habitat®, and Velpar® can be used around certain pines, but can damage many hardwoods and some pines by soil activity. Others with soil residual can have very specific activity; for example, Milestone® VM and Transline® can be used under most trees, except desirable legumes such as redbud. Transline can be sprayed over the top of most trees, except legumes.

Foliage active-only products can be used to control most invasives, and can also be used under and around desirable

species. These products include Accord®, Garlon®, and Krenite®. Garlon 4 Ultra and Forestry Garlon XRT are ester products that have some volatility, and can damage closely adjoining vegetation when it is hot and the wind is calm.

Choosing which herbicide to use can also be tough because herbicide labels cannot list all of the species that they control. Often invasive weeds are new and limited in scope, so the companies have not updated the label. The internet, state and federal publications, as well as herbicide manufacturers and distributors are good sources to consult for product effectiveness. The vast majority of herbicides used in Alabama to combat invasives are shown in the accompanying table.

Once you decide which product to use, you must decide how to apply it. When doing silvicultural work such as site preparation or release work on a timber stand, try to get a herbicide application that will also control any invasive species on the tract. Many landowners enjoy doing their own applications. I personally get enjoyment and exercise while walking and spraying or cutting not only problem invasives, but also troublesome natives such as poison oak and greenbrier.

Application tools include tractor sprayers with booms or handguns; four-wheelers with booms, boomless nozzles, or handguns; power sprayers that can be mounted on pickups; and backpack and hand-held sprayers. The booms and boomless broadcast nozzles are good for grass, broadleaf, and very short brush problems.

Gasoline powered or electric powered handgun sprayers are very useful for spot treating invasive weeds and combating vines such as kudzu and wisteria. Products are generally recommended as a percent solution to apply in these situations. For high volume guns putting out 75+ gallons per acre, you need a lower percent solution than an electric gun that will only put out about 25 gallons. High water volumes are very useful when spraying kudzu with Tordon, Milestone VM, Escort, or Transline. Most brush species can be controlled equally as well with a low concentration herbicide solution sprayed to totally wet the target, or a higher concentration sprayed to apply a fine mist covering most leaves. Using the low volume rate with high volume equipment can be costly!

Backpack sprayers are very useful tools in fighting invasives. In addition to the adjustable cone and small fan nozzles that come with most backpacks, you can add wand extensions and booms that allow you to broadcast-spray brush and weeds that are up to 8 feet tall. Extend the wand 3 to 4 feet and hold it up and pointing behind you, and you can treat swaths of up to 15 feet wide effectively. Use a wide angle flat fan or flood jet nozzle for this application.

I think most people in the invasives fighting business are familiar with foliage applications, but some other useful application techniques include basal, cut stump, injection, and soil banding or pellets. In a basal application, the lower 12 to 15 inches of bark are treated with an oil and herbicide mix. You can treat stems up to 6 inches in diameter. The treatments can be applied year round, but winter applications are very effective; working conditions are usually great, and grass and weeds do not interfere as much with application. Most invasive trees and shrubs can be controlled by this treatment, including privet, tallow tree, silverthorn, ailanthus, and others. Garlon 4 Ultra is the most used herbicide for this treatment, and it is applied at 20 to 25% concentration in a basal bark oil or diesel oil. There is also a ready-to-use product available called Pathfinder® II that is very handy for smaller jobs.

Most herbicides that are used for foliage spray can also be used for cut stump or injection treatments. If you are removing stems of invasive trees or shrubs, you should treat the stumps. Immediately after cutting, you can use a water-soluble herbicide such as Accord, Roundup®, Arsenal, Garlon, or Velpar for treating the cambium area of the cut stump. Check the label for dilutions, usually 25 to 50%. Pathway and Milestone VM Plus are used undiluted on fresh-cut stumps. With water-soluble herbicides, the sooner after cutting the stump is treated, the better your results. If you want to treat cut stumps more than an hour after cutting, use the basal products listed above, and apply to the cambium and bark along the edge of the stump. For injection, cut into the stem about ½ inch deep with a hatchet or machete, and squirt the herbicide into the “cup” formed by the

cut. The cut stump and injection treatments work year round, except during strong sap flow periods in the spring.

Certain herbicides with a lot of soil activity, such as Spike and Velpar, may be applied in soil spots, bands, or by pellet applications. These products should not be used near any desirable trees and shrubs. They are highly soil-active, which makes them useful for the soil banding or spot treatment, but they will also control or injure anything with roots in the treated area. The applications should be made in the winter or early spring where they can be moved into the soil for root uptake. For fence rows with privet and other problems, Spike can be banded or applied by pellets for long-term control. Individual stems can be treated with spots applied around the stem. Consult the label for use rates. Spike is also effective on kudzu patches in areas away from trees, and can be broadcast for control.

On my creek bottomland, privet, silverthorn, and Japanese climbing fern have been the most troublesome species. I am spraying under large oaks, pines, beeches, sweetgums, and other hardwoods, so most of my applications are limited to products with no soil activity. My initial treatments on the privet were foliar applications of Accord in the late fall and early winter. This lets me kill the privet, but not harm deciduous hardwoods growing around the privet. After reducing the density with Accord, I have followed up on escapes with basal treatments of Garlon. As the birds drop seeds that sprout, I spray the privet seedlings with Garlon or Accord, or pull them up.

The silverthorn is a nasty, thorny evergreen with numerous stems. Basal Garlon applications are controlling this. The birds drop new seeds, and foliar Garlon treatments on the seedlings, or machete, are working very well. Japanese climbing fern is spreading down the creek banks, and foliar applications of Accord have been good for control.

I have gotten the invasive species down to a very small number, but birds and other animals, wind, and water continue to bring them back to me. I am getting my neighbors involved, and trying to reduce the re-invasion while enjoying my creek bottom woods. 🍷

Herbicide Use Decision Tree												
Product	Controls Broadleaf Weeds	Controls Grass	Controls Brush & Trees	Has a Soil Residual Activity	Foliar Active	Basal Bark Use	Injection & cut surface	Can be used Under Trees	Aquatic label	"Dry" Wetland Label	Allowed in grazed areas(1)	
Accord® Conc., Rodeo	Y	Y	Y	N	Y	N	Y	Y	Y	Y	Y(1)	
Accord XRT II, Roundup	Y	Y	Y	N	Y	N	Y	Y	N	Y	Y(1)	
Arsenal®	Y	Y	Y	Y	Y	N	Y	P*	N	Y	Y(1)	
Milestone® VM	Y	N	S	Y	Y	N	N	Y*	N	Y	Y	
Escort® XP	Y	N	S	Y	Y	N	N	P*	N	Y	Y(1)	
Garlon® 4 Ultra & XRT	Y	N	Y	N	Y	Y	Y	Y	N	Y	Y(1)	
Garlon 3A	Y	N	Y	N	Y	N	Y	Y	Y	Y	Y(1)	
Habitat®	Y	Y	Y	Y	Y	N	Y	N	Y	Y	N	
Krenite®	Y	N	Y	N	Y	N	Y	Y	N	Y	N	
Plateau®	Y	Y	N	Y	Y	N	N	Y	N	N	Y(1)	
Spike® 20P, Spike 80DF	Y	Y	Y	Y	N	N	N	N	N	N	Y(1)	
Tordon® K, Tordon 101	Y	N	Y	Y	Y	Y	Y	N	N	N	Y(1)	
Transline®	Y	N	S	Y	Y	N	Y	Y*	N	N	Y(1)	
Velpar®	Y	Y	Y	Y	N	N	Y	P*	N	N	Y(1)	

Y Controls a broad range of species in the category, or fits well in the category description

N Does not control a broad range of species in the category, or does not fit the category description

S Controls or suppress some species in this category

***** Do Not Apply Under Desirable Legumes. Appears selective for other species, but testing still being done.

(1) many products have restrictions, check for specific grazing restrictions on each product label

P* Can be used under certain pine species at some rates

Velpar, Krenite, Escort Trademark of Sulphur
 Arsenal, Habitat, Plateau are Trademarks of BASF
 Roundup is a trademark of Monsanto
 Accord, Rodeo, Garlon, Milestone, Pathway, Spike, Tordon, Transline, Pathfinder are trademarks of Dow AgroSciences



LARGE-SCALE

HERBICIDE

By Michelle A. Isenberg, Associate Wildlife Biologist, Custom Air, LLC

Large-scale herbicide applications may be a mystery – even intimidating – to landowners. However, forest landowners who want to have herbicide work done on their property may be surprised how easy the process can be. Whether it is how to contract the work or what to expect, this article is aimed at answering a few of those questions. Contracting spray work on your property may be an answer to accomplishing some of your forestry management objectives.

When considering an herbicide spray program on your property, the first step is to identify the need you have and start planning now. Getting your work completed takes time, preparation, objectives, and a goal. If your intentions are to spray, start making arrangements immediately. Herbicide applicators start booking work early in the year, January 1. The sooner you contract with an applicator, the sooner your work will be completed.

TYPES OF TREATMENTS

There are several different types of treatments that landowners can contract application for on their property. Herbaceous weed control is sprayed in the spring of the year to control broadleaf weeds and grasses in newly planted plantations. Generally, the first spring after planting is when herbaceous weed control is applied. Sometimes landowners will do another spring treatment in the second growing season to continue weed control. Site preparation is the most common application that is contracted in forestry. Site prep is after the trees have been clear-cut and the application is aimed at controlling hardwood trees and waxy competition. These treatments start in mid-June and end at leaf drop. Release treatments begin as early as July 15 and also stop at leaf drop. Release treatments control hardwood trees after planting if a site prep treatment was not done



APPLICATIONS

prior to planting. Mid-rotation treatments are sprayed on sites where hardwood competition is impacting the growth of older stands. Both release and mid-rotation treatments are either over the top of pines or under the canopy.

All of these applications are based upon the type of pines that will be planted or have been planted. The type and amount of herbicide is then determined by the applicator in coordination with the landowner and the landowner's forester. If the landowner is contracting directly with the applicator, then the applicator makes the best recommendation for the site, which is called a "site prescription." The site prescription consists of varying amounts of herbicides used in specific combinations to target the competition.

TIMING

The spray season for application kicks off in early February with herbaceous weed control. These treatments will run until

mid-May. Early site preparation starts June 15. These tracts were cut earlier and the vegetation is fully sprouted. August 1 is when the late session begins for site prep. As well, release spraying starts August 15 and overlaps with late site prep. Between the two, they will last until leaves on hardwoods begin to drop. This is the time when the majority of tracts in forestry are sprayed. It is essential to have your plan together early in the season. There are fewer acres that are sprayed early, and the window is greater in terms of timing to have your tract sprayed. Applicators will book work as early as possible to ensure a completed job. Contracting your work later in the year puts your tracts behind other landowners who booked early in the season. If you know following a clear-cut that your intentions are to spray, start working with your forester or applicator to ensure your site gets sprayed.

(Continued on page 28)

LARGE-SCALE HERBICIDE APPLICATIONS

(Continued from page 27)

EQUIPMENT

Large-scale applications consist of helicopters and skidders. The majority of land sprayed in forestry in the southeastern United States is by helicopter. Fixed wing aircraft are not used in forestry – only helicopters! Also, skidders or rubber-tire tractors are the work horses for ground applications. Ground back-



pack crews are utilized in certain situations for large-scale applications. Contrary to popular belief, helicopters spray more acres and tend to be the cheapest per acre for application vs. a ground backpack crew. The reason is production. A heli-

copter can spray up to 500 acres on a good spray day. A ground skidder can produce around 75-90 acres per day; a large backpack crew can only spray up to 50 acres per day. Production is the driver when determining costs. However, a ground crew may be needed where a helicopter cannot go, and smaller sections that have sensitive areas will require a hand crew. But overall, the helicopter is the main application vehicle in the forestry industry.

PRODUCTION

Along with helicopters comes an immense amount of coordination on the ground. The application trade is a very fluid environment. Weather affects the business every day, with rain and wind speed the two most important factors in getting work completed. In years of hurricane activity, production can be impacted greatly. Most

hurricanes occur in the fall of the year. Therefore, hurricane season coincides with late-season spraying which is when the bulk of the acres are treated. That's a good reason to have your



property scheduled for an early treatment starting June 15. It not only helps you to avoid bad weather delaying your application, but it also opens up your window for burning. If you are planning to burn after your site prep treatment, earlier sprayings are

always better. You have more time throughout the growing season to burn your site after the spray job.

With the amount of acres that are sprayed in a single season, one of the most crucial factors of achieving a successful spray job is coordination and information exchange. When tracts are contracted, other tracts in the general area are lumped together to spray during the same timeframe. A logistics coordinator plans the routes through the area and picks up as many tracts as possible. This allows the crews to be more productive.

WATER SOURCE

The water source for both aerial and ground applications come from local water authorities, with permission granted prior to application. Most crews are familiar with local water sources, but sometimes general information may be needed on a local water authority, in which case the area manager will ask the landowner. With the amount of water needed to spray a site, water sources will be identified well before the application takes place. The need for water sources has become more vital in the application industry due to the ensuing drought. Although some water authorities have restricted amounts that they allow the agricultural business to access, most are aware of the need for water associated with application and are easy to work with. Once the drought subsides, water sources should return to normal. If the tract is in an area where water is difficult to obtain, alternate sources further away will be identified.

MAPS

Applicators work off maps that landowners provide. The area manager visits the site ahead of the crew, writing the prescription for herbicides and obtaining all the necessary site information. The crew and pilot rely solely on the information that is provided to them. Therefore, the better the information, the smoother the job will flow. Good aerial maps and photos are needed, with areas delineated by lines. GPS points are required to find the tract by both air and ground. As well, if certain areas on the tract should not be sprayed, it is important to have those marked on the map. Looking at a tract from the air is completely different than looking at it from the ground. Any sensitive areas should be marked on the map, such as adjacent crop fields, food plots, houses, groves of oaks, ponds, anything and everything that needs to be avoided by the application. Putting in fire lanes prior to spraying is always helpful but not necessary.



LAT/LON

The latitude and longitude of a tract determine how it is found. The pilot will fly straight to the tract, waiting for the batch truck and crew to arrive. During that time, he can fly the tract and look for anything out of the ordinary, and ask the landowner about it before starting the job. As well, the crew finds the tract by the Lat/Lon coordinates. The area manager ensures the accuracy of these points when visiting the site prior to the crew's arrival.

GPS

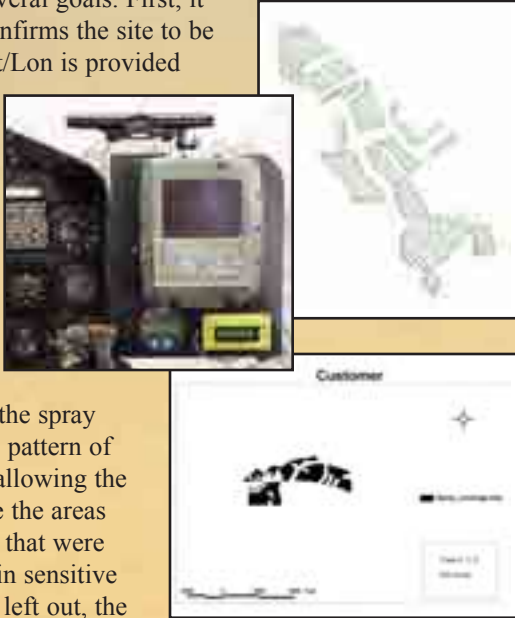
Sophisticated GPS (global positioning systems) are employed by both helicopters and skidders for tracking spray jobs. This accomplishes several goals. First, it identifies and confirms the site to be sprayed. The Lat/Lon is provided

before a spray job is matched to the equipment on board to ensure the accuracy of the location.

Second, a GPS map is provided to the

landowner after the spray job, showing the pattern of application and allowing the landowner to see the areas of their property that were sprayed. If certain sensitive areas were to be left out, the landowner can see firsthand

that they were not sprayed. The GPS also guides the pilot or operator throughout the tract to ensure an accurate application.



WATER BARS

One important consideration when having aerial applications is that the water truck have access to the site. While water bars are extremely important for erosion control on some tracts, they are often difficult for the batch trucks to clear. Batch trucks, which carry water to the site, are usually 3,000 gallon tank



trucks and clearance is very low. If there is no access without crossing large water bars, an LZ (landing zone) can generally be found on an alternate area, or perhaps with permission of an adjacent landowner. This needs

to be discussed and determined prior to the crew's arrival. The area manager will help with this to ensure proper access.

LZS

The LZs (landing zones) are where the batch truck, crew truck, and helicopter work from, usually located on the tract to be sprayed. However, this area can sometimes be located off the specific tract. This is determined prior to the spray job to ensure entrance to the spray site. In the case of a helicopter LZ, several factors are examined. The pilot needs plenty of clearance up and away from the batch truck, to depart from and land on. The helicopter will land directly on top of the batch truck to be refilled with a new load. A load will consist of 10 acres at a time, if a 10 gallon per acre mix is being used. If 15 gallons per acre (gpa) is prescribed, then the load will be a little over 6 acres. If the tract is a perfect 100 acres at 10 gpa, then the helicopter will take off and land 10 times. This is why the LZ needs to be acces-



sible on all sides of the batch truck. If large standing trees are in the way, sometimes a chainsaw will be used to fell the trees to allow good access. Also, if an LZ is located on adjacent property, a good ferry length for the helicopter is less than one half mile. It's important to know where potential LZs could be located, either on your property or with the permission of an adjacent landowner.

COSTS

What is the cost for these types of large-scale applications? That is one of the most common questions that landowners have. Costs are hard to determine without a site inspection and all the pertinent information about the type of treatment. Therefore, each tract is assessed and a cost given at that time. Should a landowner commit to a large-scale application on their property, the area manager will visit the site and discuss all the possible options. If the landowner has a forester that will handle the application, then the forester can make the necessary arrangements to have the site visited and cost projections can be discussed.

SUCCESSFUL APPLICATIONS

Whether you are deciding between a small-scale application or a large one, one factor remains vital . . . that your application is a success. As each landowner has his or her own set of objectives, applications may vary. Some areas may need both large and small-scale applications. Should you need help deciding what to do, seek assistance and ask questions. Each day, landowners are considering different techniques and methods to achieve their objectives. Answers are available, so don't hesitate to ask. No matter which road you choose, make your herbicide applications easy for you, and make them a part of your successful forestry legacy! 🌲

Cogongrass Task Force: Teaming Up to Battle a Common Enemy

By Elishia Ballentine, Editor

It's the most unwanted of all pest plant species in Alabama – in the whole Southeast for that matter – and a number of state and federal agencies and private entities have declared war against it . . . cogongrass, *Imperata cylindrica*.

It was a momentous occasion on Tuesday, May 13, 2008, when 22 different representatives officially entered into a Memorandum of Understanding (MOU) to team up in the battle against this non-native, invasive weed. The signing event took place at the 4-H Center in Columbiana where a large group of foresters and other natural

resources professionals met for the Sixth Annual Conference of the Alabama Invasive Plant Council (ALIPC).

The purpose of this MOU is to establish a mutually agreeable framework for collaboratively combating the short- and long-term negative effects of the grass within the state. All parties agree it is to their mutual benefit and the natural environment of the state to work cooperatively to educate, train, and share technology between partners and the general public about cogongrass and the serious impacts this plant could have on our natural environment if left to spread unchecked. By signing the agreement, the partners committed to facilitating a voluntary and cooperative effort in providing a means of control, suppression, or eradication of this pest species across Alabama.

State Forester Linda Casey said, "All of these partners fully recognize the threat that cogongrass poses to the farmers, ranchers, foresters, private landowners, as well as to public lands within Alabama. Cogongrass is everyone's problem. This partnership brings all the stakeholders together to eliminate this destructive weed." Casey noted that, "All parties on the MOU agree that it is to their mutual interest and benefit to work together in education and detection, as well as inventorying, monitoring, controlling, and preventing the spread of



Declaration of War on Cogongrass - Some of the representatives of the 22 Alabama partners who gathered on May 13, 2008, officially signing an agreement to collaboratively combat the non-native, invasive weed across the state.

cogongrass. A united front will strengthen us across all boundaries so that we will be able to better leverage our resources and more effectively provide service and protection to the people and landowners of Alabama."

Authorized representatives from the following cooperators have signed or will sign the agreement: Alabama Forestry Commission; Alabama Department of Agriculture and Industries; Alabama Department of Transportation; Alabama Division of Wildlife and Freshwater Fisheries; Alabama Cooperative Extension Service; Alabama Soil and Water Conservation Committee; Alabama Invasive Plant Council; Auburn University; Alabama Cattleman's Association; Alabama Forestry Association; Alabama Farmers Federation (ALFA); Alabama Wildlife Federation; Resource Management Service, LLC; USDA Farm Service Agency; USDA Natural Resources Conservation Service; USDA Animal and Plant Health Inspection Service, Plant Protection and Quarantine; USDA Forest Service Forest Health Protection, Southern Region; USDA Forest Service National Forests in Alabama; USDA Forest Service, Southern Research Station; US Army Corps of Engineers; Custom Air and Herbicides Plus, LLC; and UAP Distribution, Inc. ♣

Invasive Plants Management

2008 EQIP

Special Funding Project

The Alabama USDA-Natural Resources Conservation Service (NRCS) is funding a new Invasive Plants Management Project. This special project, designated by the NRCS State Conservationist, is now funded by 2008 Environmental Quality Incentive Program (EQIP) funds at the state level.

The project will provide incentive payments to landowners willing to control the targeted invasive species on their property. Incentive payments will be made to participating landowners for three years with contracts ranging from three to five years.

Landowners will be expected to treat invasive plant-infested acres according to treatment plans developed with the assistance of technical experts. Payments will be based on actual treatment (infested) acres.

Objectives

Invasive plants can be eliminated in many Alabama counties if action is taken now. This will result in greatly increasing the productivity of the land resources. This project has three main objectives:

1. Increase the overall awareness of the problem of the following targeted invasive species:

- kudzu
- cogongrass
- Chinese tallowtree
- Japanese climbing fern
- Multiflora, Cherokee, and Macartney rose

2. Provide an incentive to landowners to control these invasive species on their lands and therefore protect the land resource and its productivity.

3. Prevent the spread of invasive plants to non-infested lands.

Guidelines

The following guidelines should be followed to determine applicant qualifications and administer this project.

1. Eligible lands are those infested with the targeted species.
2. Eligible landowners, producers, or operators are those which will have control of the eligible land for the period of the contract and meet other eligibility requirements of the EQIP.

3. Only infested (treatment) acres are eligible for the incentive payments. Acres will be rounded to the nearest 1 acre. Areas of 0.1 to 1 acre will be funded at the 1 acre rate. A minimum of 1 acre is required for participation in this project. Payments will be limited to a maximum of 50 infested (treatment) acres.
4. Payment will be three years of incentive payments based on the species being controlled.
5. The tract, field, or management area will be included in each contract and conservation plan. For example, if an applicant has 10 acres of treatment area within a 40-acre tract which he manages as a unit, the contract and associated plan will include the 40-acre tract. The boundaries of the tract and the treatment areas will be shown on the contract plan map.
6. An initial treatment is required, plus follow-up treatments where needed. Contracts will be for a minimum of three years to a maximum of five years with a limit of three years of payments.
7. Land currently enrolled in CRP is not eligible for participation in this project.

For more information, visit www.al.nrcs.usda.gov or contact your local NRCS Service Center for further guidelines and details about the program. ☎

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Japanese Climbing Fern

Lygodium japonicum

By Fred Nation, Educator, Baldwin County

L *Lygodium japonicum* is a perennial exotic fern that is native to Eastern Asia, the East Indies, and Australia. Its dense, tangled growth and high-climbing habit make it quite distinctive and easy to identify. The long structures that appear to be stems are actually twining and climbing leaves (fronds) that can grow to about 90 feet in length. The main leaf axis (rachis) is tough and wiry, with short opposite stalks that support the dissected, finely divided leaflets. Some of the leaflets are fertile, with finger-like projections that produce spore-bearing structures (sporangia) in double rows on the underside.

Like other exotic pest plants, Japanese climbing fern is a generalist, able to invade a wide range of habitats, sunny or shady, such as open forests, the edges of creeks, rivers and lakes, newly cleared or timbered land, roadsides, and other disturbed sites. According to the Florida Department of Environmental Protection, it was likely introduced intentionally in Florida in 1932 as an ornamental, where it has escaped cultivation and spread north to North Carolina, and west to Eastern Texas. In Alabama, it has become a major pest plant in the southern part of the state where densities are continually increasing, but the entire state is vulnerable to eventual infestation by this destructive invasive exotic plant. Japanese climbing fern is a quarantined species in Alabama, and transport into or within the state is prohibited by the Code of Alabama, Chapter 80-14-10.

Lygodium japonicum is an environmental disaster in our natural habitats and managed pinelands. It forms dense foliage canopies that overwhelm fencing, and completely cover and shade-out native vegetation. Tangled masses of high-climbing fronds contribute to crown burns by functioning as “fire lad-

ders,” particularly in winter, to conduct destructive fire away from the ground and up into the canopies of trees.

Like all ferns, *Lygodium* produces no flowers or fruits. Reproduction and transport are by means of spores, produced in huge numbers, and spread by the wind. Another possible means of transport is pine straw, which is often used as mulch in landscapes. In fact, pine straw is suspected as a vector for the spread of several noxious weeds, including Japanese climbing fern and cogongrass, *Imperata cylindrica*.

Japanese climbing fern has become a serious pest in recent years because it has no natural enemies in the Southeast, and it is extremely difficult to control. If the fronds are cut, burned, or otherwise damaged, the underground stem (rhizome) will quickly sprout replacements. Chemical herbicides are expensive and labor-intensive, but if used correctly, they are safe, and often chemicals offer the only realistic solutions for the control of pest plants that would otherwise severely damage our native and cultivated flora.

An excellent resource for detailed information on the control of *Lygodium japonicum* and other destructive exotic plants is: *Nonnative Invasive Plants of Southern Forests, a Field Guide for Identification and Control*, by James H. Miller, Research Ecologist, USDA Forest Service. This publication is available online at: www.invasive.org/eastern/srs/.

Unfortunately, Japanese climbing fern is a world-class invader, and it is here to stay. To be successful, any invasive exotic control program must be a long-term, multi-year effort. But, with persistence and an effective plan-of-action, we can limit the damage that this highly destructive exotic plant causes to the fields and forests of Alabama. ♣



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