



American Forest Foundation

Southern Wildlife at Risk:

FAMILY FOREST OWNERS OFFER A SOLUTION

PROTECTING WILDLIFE HABITAT AND DELIVERING WOOD PRODUCTS WITH SOUTHERN FAMILY FOREST LANDOWNERS

Message from

TOM MARTIN, PRESIDENT AND CEO OF THE AMERICAN FOREST FOUNDATION



We all love our Southern forests for a variety of reasons — the clean air we breathe, the places to hike, hunt and fish, the wood-based products we all use every day. But when we asked you, our stakeholders, what is your most important conservation priority, you named wildlife. This is no surprise given the incredible

biodiversity in the South and the possible near doubling of listed wildlife species if not addressed. And it's not just us, it's been in our newspapers nearly every day — the growing worries about at-risk wildlife in the South.

So we at the American Forest Foundation (AFF), in a first-of-its-kind survey, asked family landowners, who own the majority of forests in the South, what are their priorities. Similar to our stakeholders, 87% of landowners stated wildlife is the top reason they own their land, and a motivator for them to do more in the future.

What's also been in the news, is the concern that growing and changing markets for wood could further hurt the South's wildlife and biodiversity. But what AFF's survey found, is that landowners who harvest their woods, are doing more for wildlife than those who have not harvested. This demonstrates that we can both support the South's forest-based economy and improve habitat for wildlife at the same time. In fact, AFF identified 35 million acres where we could deliver both by getting more family landowners involved in forest management.

The survey also found 72% of landowners have already implemented one or more management practices for wildlife, and 73% of family landowners want to do more in the future. What's preventing most, is an uncertainty about practices and cost, barriers we can help landowners overcome.

In today's culture, we must focus on solutions.

Family landowners are not the cause of wildlife declines — in fact, they are the solution — they are the key to improving forested habitat in the South.

Knowing that the priorities of landowners and stakeholders are aligned, there's an opportunity for all of us to work together.

We're excited to already have a number of partnerships in the works.

AFF, with partners, is working on pilot projects in the Cumberland Plateau and Gulf Coastal Plains. Through outreach and relationship building, AFF has helped landowners take the first steps in implementing forest management practices. And these projects echo some of the same truths we uncovered in this report: landowners want to do the right thing, they simply need support to do it.

In these projects, we are tapping into the 80,000-strong network of the American Tree Farm System (ATFS), the largest and oldest sustainable program for family landowners. ATFS leaders, such as the Alabama Tree Farm Committee, are hosting field days and mentoring fellow landowners on the how-to of sustainable forest management for at-risk wildlife species.

We are also finding that regulatory agencies, including the U.S. Fish and Wildlife Service, that are tasked with being the caretakers of our wildlife, are also keen to partner. They too see an opportunity to work proactively with landowners to improve habitat.

And we are also partnering with GreenBlue, an environmental nonprofit dedicated to the sustainable use of materials in society. Through this partnership, we are identifying new ways to provide consumers with assurance, that the products they purchase come from forests that are managed to protect wildlife.

We ask you too, to join us. Together we can truly reach a future where wildlife are no longer at risk, family landowners are active in stewardship, and we have the needed sustainable wood supplies all consumers count on.

Executive Summary



Southern U.S. forests are among the most diverse, biologically productive temperate forests in the world. (Hanson et al., 2010) Nearly half of the 13-state southern region that stretches from Virginia to east Texas is carpeted in forests. From longleaf and loblolly pine forests on the Atlantic Coastal Plains to mixed pine and oak forests on the Cumberland Plateau to live oak forests and bottomland hardwood forests in the Gulf Coastal Plains, these diverse Southern forests host more wildlife than any other region of the country.



Unlike in the Western United States, however, where most forests are publicly owned, the vast majority of Southern forests are held privately. Nearly nine of every 10 acres is private, with the bulk of that — 134 million acres — owned by an estimated 1.8 million families or individuals.¹ (Butler et al., 2016) That means family forest owners

play a vitally important role in protecting wildlife habitat, meeting demand for wood products, and maintaining overall forest health across the South.

All 13 Southern states rank in the top 23 nationally for the total number of wildlife species within their respective borders. (NatureServe, 2002) Yet, many of these species are declining and at risk. Over the past 150 years, a compounding of events has changed the landscape. From conversion of forests to non-forest uses, to fragmented waterways, fire suppression, and an influx of invasive species, both wildlife and its habitat have suffered throughout the region. (Griep and Collins, 2013)

In fact, an American Forest Foundation (AFF) analysis found that there are 622 at-risk wildlife species² in the South, 517 of which are forest-dependent.³ Moreover, 224 of those forest-dependent

species have already been listed as threatened or endangered under the Endangered Species Act, including the red-cockaded woodpecker and the reticulated flatwoods salamander. Another 293, such as the golden winged warbler, and Alabama map turtle, are under review as candidate species or through a petition process and could be listed in the future.

Southern forests are not just rich in wildlife, however. The region is also known as America's wood basket because it produces 57% of the nation's wood. In fact, the U.S. produces more wood than any other country in the world. (Hanson et al., 2010) These forests are an economic engine that support 1.1 million jobs and contribute more than \$230 billion to the region's economy. Much of that economic output comes from



¹ Family forest owners are families, individuals, trusts, estates, family partnerships, and other unincorporated groups of individuals that own forest land but do not own or operate a wood processing facility. (Butler, 2008) In this report, it includes those family forest landowners with 10 or more acres.

² For the purposes of this report, at-risk wildlife species include listed as threatened or endangered species, candidate species, and petitioned species.

³ For the purposes of this report, wildlife includes amphibians, birds, clams, crustaceans, fish, insects, mammals, reptiles and snails.



However, most landowners are not actively managing their forests on an ongoing basis and acknowledge that there is more that they could do to protect and enhance wildlife habitat. They say that the biggest barriers to doing more are uncertainty about what to do and a lack of financial resources to get it done.

The gap between what family forest landowners are currently doing for wildlife, and what they want to do, provides an opportunity for outreach and engagement to get them the information and resources they need to protect wildlife while producing sustainable wood.

family-owned forests. (Southern Group of State Foresters, 2013) Moreover, there is a growing demand for sustainably-produced wood products from consumers who recognize the value in ensuring forests continue to provide clean water, wildlife habitat, recreation space and other important benefits, both now and long into the future.

Because family landowners own nearly 60% of Southern forests, they can — and must — play a key role in that effort. In order to find out how and where to best engage those landowners, AFF commissioned a survey that received responses from more than 1,400 Southern family landowners on their attitudes and activities related to wildlife and wood products. AFF also conducted a first-of-its-kind spatial analysis to find out where working with family landowners could be most effective at protecting at-risk wildlife and promoting sustainable wood supplies.

Family forest owners play a vital role in protecting wildlife habitat, meeting demand for wood products, and maintaining overall forest health across the South.

The survey confirmed that Southern family landowners are primarily interested in managing their woods for wildlife habitat and that nearly three-quarters of them have implemented at least one wildlife improvement activity. What's more, 73% are willing or considering conducting at least one practice for wildlife in the future. In addition, nearly two-thirds say they are willing to harvest timber if it will benefit wildlife, and 85% of those who have harvested have also taken other steps to improve wildlife habitat, such as planting native trees, restoring areas along streams, or removing invasive species.

Knowing what family landowners want and need, however, is just one part of the equation. In order to effectively engage those landowners and help meet their needs, we have to know where the most important wildlife habitat and wood baskets overlap. AFF's spatial analysis identified 183 priority counties that have a high proportion of family forest owners, substantial wildlife resources, including many at-risk species, an active wood products industry, and projected growth in demand for wood supplies. Together, these counties encompass more than 35 million

Top Line Findings

acres of family forests — just over one-fourth of the total family forest acreage in the South — owned by an estimated 438,000 family landowners.

From the analysis, AFF identified three concentrated Opportunity Areas — Atlantic Coastal Plains, Cumberland Plateau, and Gulf Coastal Plains — where outreach to family forest owners would have the greatest potential to protect habitat for at-risk wildlife while helping to meet U.S. and global demand for sustainably-produced wood supplies.

Based on this, three important strategies are recommended that will both improve wildlife habitat and provide sustainable wood supplies from family forest lands:

- Develop, invest in, and implement landscape-scale landowner outreach and engagement, focused in the three Opportunity Areas, to provide educational, technical, and financial support for practices that improve at-risk wildlife habitat and produce sustainable wood supplies.
- Promote forest product purchasing that supports sustainable management of Southern family forests.
- Provide funding and policy tools that support family forest landowner engagement, promote markets for sustainably-produced wood products, and encourage voluntary at-risk wildlife conservation efforts.

Together, the spatial analysis and landowner survey show that protecting at-risk wildlife and providing sustainable wood supplies, can go hand-in-hand, with family landowners playing a central role.

Southern Family Forest Owners Are Key to Protecting At-Risk Wildlife and Producing Sustainable Wood

- Southern forests host more wildlife and produce more wood than any other region of the country
- **58%** of Southern forests — **134** million acres — are owned by families and individuals

Southern Family Forest Owners Want to Protect Wildlife Habitat and Produce Wood Sustainably But Need Help to Do So

- **87%** say protecting and improving wildlife habitat is an important reason they own their forested land
- **72%** have already engaged in one or more wildlife improvement activities, and more than **73%** are willing or already considering at least one practice for wildlife in the future
- **64%** are willing to harvest timber if it will improve wildlife habitat (more specifically, **54%** who have never harvested before, are willing to harvest for wildlife)
- **85%** of those who have harvested have also taken steps to improve wildlife habitat
- **56%** acknowledge that they could do more to improve wildlife habitat
- Cost and uncertainty about what to do are preventing them from doing more

AFF's Spatial Analysis Identified Where Important At-Risk Wildlife Habitat and Wood Supplies Overlap

- **183** priority counties were identified with high concentrations of family forest owners, at-risk wildlife, an active wood products industry, and projected demand for wood supplies
- AFF aggregated the priority counties into three Opportunity Areas where outreach to family forest owners would have the greatest potential to protect at-risk wildlife while meeting U.S. and global demand for sustainable wood products through active forest management

Wildlife at Risk in the South



Forests.

They're the Earth's lungs, absorbing carbon dioxide and exhaling fresh oxygen in return.

They're the Earth's plumbing, filtering and delivering clean water to our communities.

They're the Earth's factory, producing renewable building materials, paper goods, energy and a host of other products that make our modern lives possible.

They're the Earth's playground, where tens of millions come to fish, hunt, hike and enjoy outdoor recreation with their friends and families.

And most notable, they're the Earth's nursery, providing critically important habitat for thousands of species of fish, wildlife and plants.

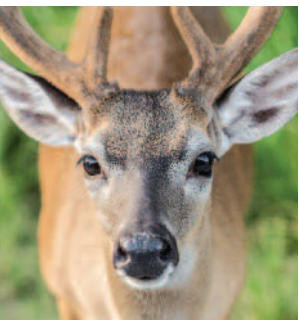
In particular, Southern forests are among the most diverse, biologically productive forests in the world. (Hanson et al., 2010)

Nearly half of the 13-state

Southern region that stretches from Virginia to east Texas is carpeted in forests. From longleaf and loblolly pine forests on the Atlantic Coastal Plains to mixed pine and oak forests on the Cumberland Plateau to live oak forests and bottomland hardwood forests in the Gulf Coastal Plains, Southern forests host more wildlife than any other region of the country.

Unlike in the Western United States, however, where most forests are publicly owned, the vast majority of Southern forests are held privately. Nearly nine of every 10 acres is private, with two-thirds of that — 134 million acres — owned by an estimated 1.8 million families or individuals. (Butler et al., 2016) That means family forest owners play a vitally important role in protecting wildlife habitat, meeting demand for wood products, and maintaining overall forest health across the South.

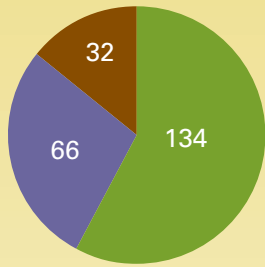
“A people without children would face a hopeless future; a country without trees is almost as helpless; forests which are so used that they cannot renew themselves will soon vanish, and with them all their benefits. A true forest is not merely a storehouse full of wood, but, as it were, a factory of wood and at the same time a reservoir of water. When you help to preserve our forests or plant new ones you are acting the part of good citizens.”



THEODORE ROOSEVELT (1858-1919) 26TH U.S. PRESIDENT,
ARBOR DAY LETTER TO THE SCHOOL CHILDREN OF THE UNITED STATES, 1919

SOUTHERN FORESTS BY OWNERSHIP (MILLIONS OF ACRES)

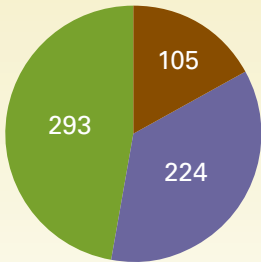
(FIGURE 1)



- Family Forests
- Corporate
- Public

AT-RISK WILDLIFE SPECIES IN SOUTHERN U.S. FORESTS

(FIGURE 2)



- Non Forest-Dependent: Threatened/Endangered and Candidate and Petitioned
- Forest-Dependent: Listed as Threatened/Endangered
- Forest-Dependent: Candidate/Petitioned for Listing

A SNAPSHOT OF WILDLIFE IN THE SOUTH

All 13 Southern states rank in the top 23 nationally for the total number of wildlife species within their respective borders. Yet, today many of these wildlife species are declining and at risk.

Over the past 150 years, a compounding of historical occurrences has changed the landscape, with many of the

pressures still present today. From conversion of forests to non-forest uses, such as agricultural land, homesteads and community expansion, to fragmented waterways, natural fire suppression, and an influx of invasive species, both habitat and wildlife have suffered through the region. (Griep and Collins, 2013; Butler et al., 2014)

In fact, AFF found that there are 622 at-risk wildlife species in the South, 517 of which are forest dependent. Moreover, 224 of those forest-dependent species have already been listed as

threatened or endangered under the Endangered Species Act, including the red-cockaded woodpecker and the gopher tortoise. Another 293, such as the golden winged warbler and the Alabama map turtle, are under review as candidate species or through a petition process and could be listed in the future.

Since families and individuals own most of the forest habitat on which those species depend for food and shelter, their efforts to protect and enhance that habitat are key to improving at-risk wildlife's chances of survival.



Southern Forests:

AMERICA'S WOOD BASKET

Southern forests are not just rich in wildlife. The region is also known as America's wood basket producing 57% of the nation's wood.



In fact, the U.S. produces more wood than any other country in the world. (Hanson et al., 2010; UN FAO, 2014) These forests are an economic engine that support 1.1 million jobs and contribute more than \$230 billion to the region's economy. (Southern Group of State Foresters, 2013)

Much of that economic output comes from family-owned forests, which contribute roughly half of the South's annual timber harvest.

As consumer demand for wood products continues to rise, so, too, does the demand for wood products that are produced sustainably. An increased awareness of the environmental benefits of wood has led to a growing use of wood products around the globe in buildings and for energy. But consumers are not just interested in more wood products, they are calling for more environmentally conscious companies that can demonstrate sustainability and proactive

conservation of the natural resources that go into their supply chains. Consumers want to know that their wood-based products come from forests that provide for wildlife, keep water clean, and will be there in the future.

Producing wood sustainably requires particular attention both at the time of harvest or thinning, as well as in the years between.

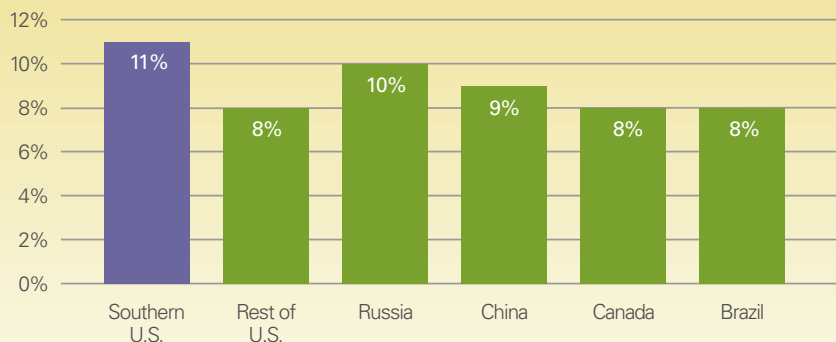
One particular program that supports small family landowners, and gives consumers the confidence that their wood products are produced sustainably, is the American Tree Farm System. Currently, there are more than 78,000 Tree Farmers across the country in the American Tree Farm System. These landowners adhere to nine Standards of Sustainability, including managing for wildlife and other benefits, at the point of harvest, and in the years between.

In addition, when harvesting or thinning, states recommend landowners and contractors follow Best Management Practices (BMPs) that are set by each state to ensure that clean water, habitat and overall forest health are protected.

According to the National Association of State Foresters, across the nation there is a 91% compliance rate with BMPs and other laws and regulations at the time of harvest. (NASF, no date) This high level of compliance underscores the dedication to conservation from family

PERCENT OF GLOBAL ROUNDWOOD PRODUCTION BY COUNTRY (2014)

(FIGURE 3)



“ I’ve experienced pine markets going away when a paper mill in Alabama shut down a few years ago. If I don’t have markets to sell my trees, then my forests are unhealthy and more susceptible to disease, fires and all sorts of things like that. ”

ALEX RICHMAN, LANDOWNER FROM ALABAMA

landowners and the other parties involved in harvesting and thinning operations.

However, the typical family landowner in the South only harvests every 40 years, or once in his or her lifetime. Thus, during the intervening years, it is important for landowners to implement other management practices that will help maintain the health of the forest and the habitat it provides. Those practices might include planting trees, treating invasive species, removing underbrush, restoring stream sides and prescribed burns.

Moreover, there is a critically important link among wood products markets, landowners, and forest conservation. Markets give landowners

access to resources such as foresters and other professionals, while at the same time allowing landowners to generate income from harvesting and thinning that they can use to implement additional forest conservation practices on the ground. In fact, AFF’s landowner survey (detailed on subsequent pages) proved that landowners who harvest are more likely to take steps to protect wildlife habitat on their land.



Forest Management

Practices

that Support Wildlife

- **Plant trees** to provide food and shelter for wildlife
- **Remove invasive plants** that don’t support local wildlife
- **Restore areas** along streams and/or create ponds and wetland areas for habitat and food
- **Leave dead and dying wood** standing or on the forest floor for food and shelter
- **Use prescribed fire** to maintain ground cover for wildlife
- **Ensure the flow of water** in waterways and streams for migrating aquatic species
- **Seek options to protect** threatened and endangered species

Southern Family Landowners:

THE SOLUTION TO BOTH WILDLIFE AND SUSTAINABLE WOOD NEEDS



Family forest owners across the South own 58% of the forests, and thus the critically important wildlife habitat. (Butler and Wear, 2013)

As a result, these landowners can — and must — play a key role in protecting wildlife, particularly those that are at risk of being listed as threatened or endangered.

There are many unanswered questions, however, about how Southern family landowners think about their woods:

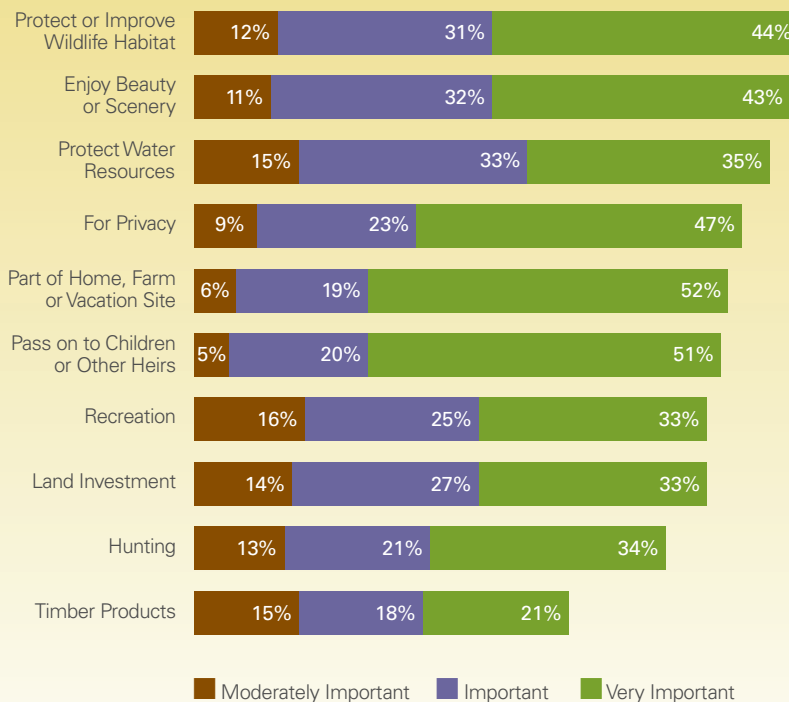
- Why do they own their land?
- What issues do they care about?
- What are their forest management priorities?
- Have they taken steps to actively manage for wildlife or other reasons in the past, and do they plan to do so in the future?
- Are there significant barriers preventing them from taking action?

TABLE 1

| Southern Family Forest Owners' Priorities | Agree/Strongly Agree | Disagree/Strongly Disagree |
|---|----------------------|----------------------------|
| I want my wooded land to stay wooded. | 82% | 4% |
| I want my wooded land to stay in my family. | 77% | 6% |

REASONS FAMILY FOREST OWNERS OWN FORESTED LAND

(FIGURE 4)



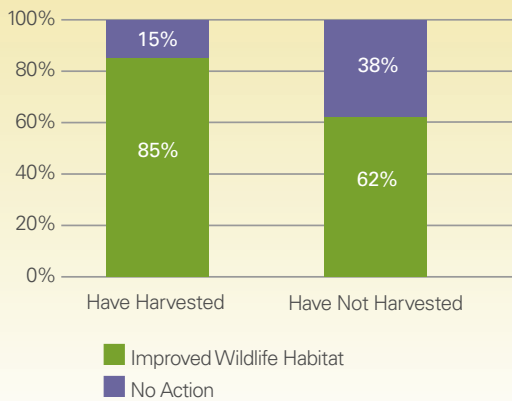
To explore those questions, AFF commissioned a survey by Hager Sharp, a research and communications firm, to conduct a South-wide survey of family forest landowners with 10 or more acres. The four-page survey was mailed to family forest landowners in 13 Southern states, and 1,424 surveys were completed and returned between April 1 and May 13, 2016.

FORESTS, FAMILY AND WILDLIFE

Southern family landowners are passionate about their forests. They say it's important to keep them wooded and to keep them in the family. (Table 1) However, the top reason they cite owning their land is "to protect or improve wildlife habitat." Nearly 9 of 10

PERCENT OF FAMILY FOREST OWNERS THAT HAVE HARVESTED OR THINNED, AND HAVE TAKEN ACTION TO IMPROVE HABITAT FOR WILDLIFE

(FIGURE 5)



family forest landowners in the South (87%) say that is an important reason, with half of those (44%) saying it is very important.

They also say they own land for the beauty and scenery (86%), protecting water resources (83%), and privacy (79%). Relatively fewer Southern landowners, though still just over half (54%), say that timber production is an important reason for owning their land. (Figure 4)

Southern landowners also believe that managing their land improves forest health (67%) and is the right

thing to do (66%). (Figure 7) In fact, 72% of landowners have conducted at least one management practice specifically for wildlife, such as planting trees, removing invasive species, or restoring stream sides or riparian areas. (Figure 6) And, 73% of all landowners say they are willing or considering to engage in activities for wildlife in the future. (Figure 6)

While Southern family forest landowners place a premium on protecting wildlife habitat, water supplies and the beauty of their forests, they are not opposed to also providing wood for forest products. In fact, nearly two-thirds (64%) say that they would be willing to harvest timber in order to improve wildlife habitat.

Perhaps most importantly, the survey shows that harvesting and sustainable management for wildlife are correlated. 85% of landowners who have harvested have also implemented other wildlife-improvement activities, compared to 62% of those who haven't harvested (Figure 5).

These results show that not only are family forest owners interested in managing for both wildlife and wood supplies, but that those who are actively managing⁴

Landowners who are harvesting are doing more for wildlife — 85% of those who have harvested have also implemented other wildlife-improvement activities, compared to 62% by those who haven't harvested.

⁴ As used in this report, "active forest management" includes a wide range of sustainable forest practices that help ensure both the short- and long-term health and vitality of forest ecosystems, including water, fish and wildlife, vegetation, recreation, and the myriad of other products and services those forests provide. It is sometimes used interchangeably with sustainable forest management and/or practices.

Fast Facts

About Southern Family Forest Landowners

- **87%** say protecting and improving wildlife habitat is an important reason they own their forested land
- **72%** of all landowners have already engaged in one or more activities to improve wildlife habitat, such as planting trees, removing invasive species or restoring stream banks and wetlands
- **73%** of all landowners say they are willing to or already considering engaging in activities for wildlife in the future
- Landowners who are harvesting are doing more for wildlife — **85%** of those who have harvested have also implemented other wildlife-improvement activities, compared to **62%** of those who haven't harvested
- **64%** are willing to harvest timber if it will improve wildlife habitat
- **56%** acknowledge that they could still do more to improve wildlife habitat on their land
- **Cost and an uncertainty** about what to do are the biggest barriers to protecting and improving wildlife on family forest lands



Photo courtesy of NASF

water, recreation and wood products.

The Barrs, who harvest annually, have been successful because they have markets for all of their wood products — ranging from logs to biomass. The income helps the Barrs keep their land in trees and to conserve wildlife habitat and improve water quality. In fact, their forest hosts all kinds of fish and wildlife, including red-cockaded woodpeckers, bluebirds, herons, and kingfishers.

As a sign of their commitment to conservation, the Barrs are using their Gully Branch Tree Farm as an outdoor classroom where 700 to 900 students take part in forestry education field trips every year.

While most Southern family landowners have implemented at least one wildlife improvement activity in the past, more than half acknowledge they could do more.

WILLINGNESS TO BE A PART OF THE SOLUTION — ROOM FOR GROWTH

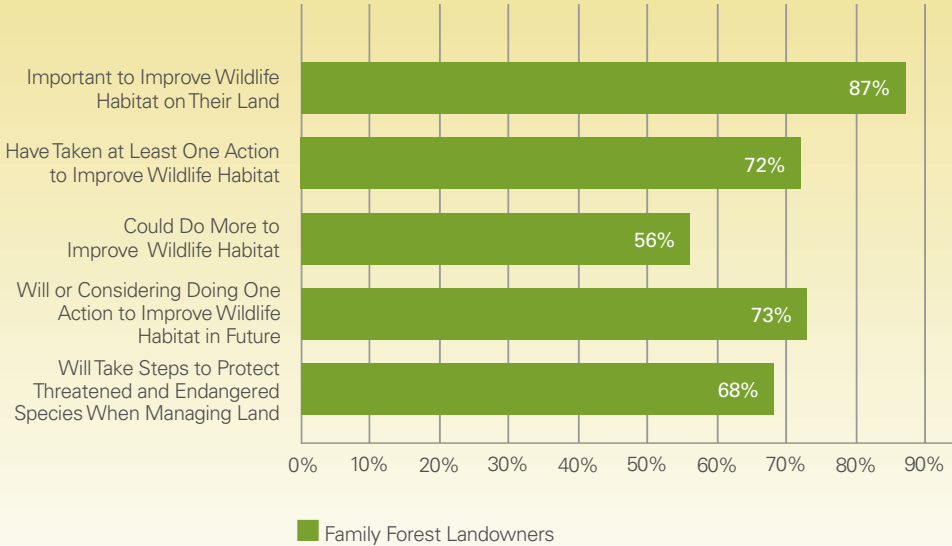
Most Southern family forest landowners embrace the importance of improving wildlife

their land are doing both. This correlation can be attributed to the fact that when landowners are harvesting in their woods, they are getting information about sustainable practices from foresters or other professionals, while also generating income that they can invest in wildlife management.

For example, Earl and Wanda Barrs have been landowners in Georgia for more than 30 years. They have a deep passion for forest stewardship and today manage their 1,500 acres of loblolly pine, longleaf pine and hardwoods sustainably for wildlife,

LANDOWNER VIEWS AND ACTIONS ON MANAGING FOR WILDLIFE HABITAT

(FIGURE 6)



habitat on their land (87%), and nearly three-quarters of them have taken one or more steps to do so. Moreover, 73% are open to or are already planning wildlife improvement activities in the future, including 68% who say they will or may seek options to protect threatened and endangered species. (Figure 6)

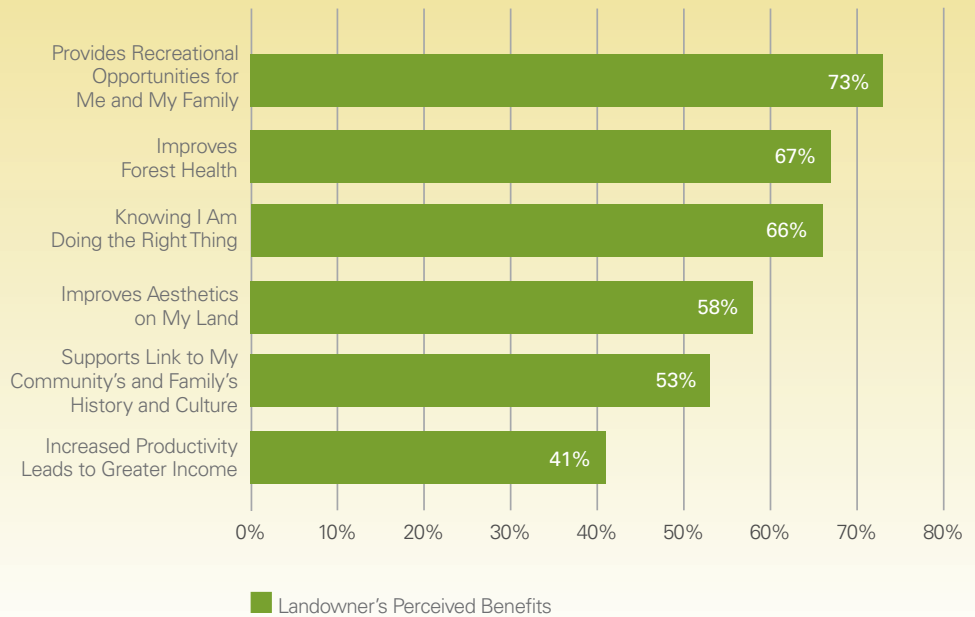
Landowners who say they are open to taking action are primarily interested in planting trees (32%), restoring areas along streams (30%), and removing invasive species (27%). They say they would learn how to do so through written materials (36%) or by attending workshops and other events (24%). Landowners also noted the most trusted sources of information are state, institutional or private foresters and wildlife professionals, their own research, or a family member or a fellow landowner.

WHY AREN'T MORE LANDOWNERS ACTIVELY MANAGING?

Southern family forest landowners understand the positive benefits of actively managing their woods for wildlife. In particular, they are motivated to do so because it provides recreational opportunities for their families (such as hunting), improves the health of their forests, and validates their interest in “doing the right thing.” (Figure 7)

LANDOWNERS VIEWS ON MOST IMPORTANT BENEFITS OF MANAGING FORESTS FOR WILDLIFE HABITAT

(FIGURE 7)



The gap between what family forest landowners are currently doing for wildlife, and what they want to do, provides an opportunity for outreach and engagement to get them the information and resources they need to protect wildlife while producing sustainable wood.



However, many are not actively managing on an ongoing basis because of costs of management, and an uncertainty about what to do. For example, 37% of landowners say they are unsure which activities will best protect wildlife, 34% state the cost of implementing practices is too high, and 34% are concerned about doing the wrong thing and harming their land. (Figure 8)

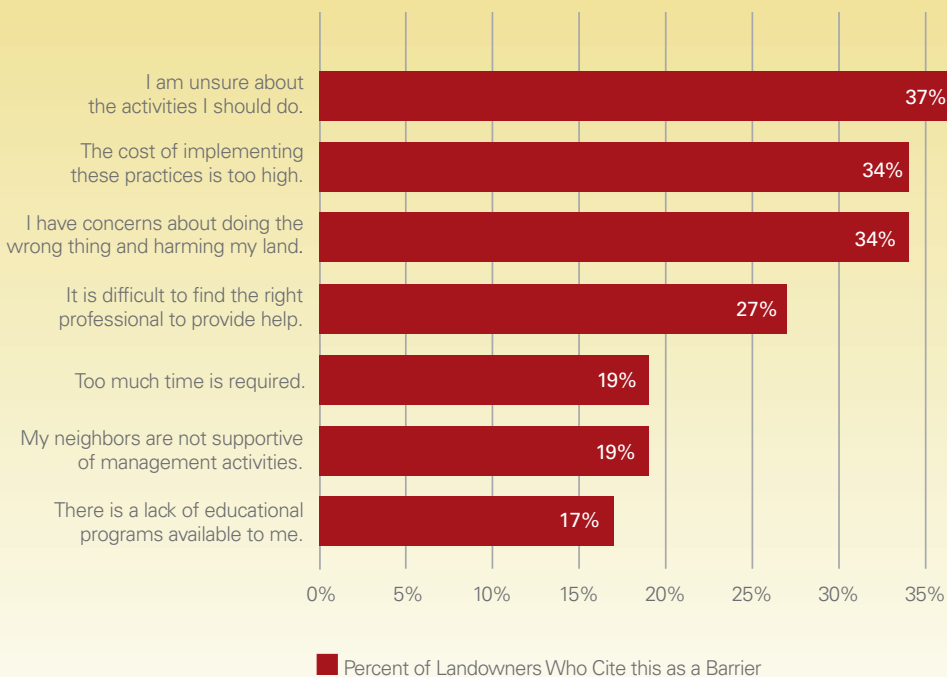
In sum, AFF's survey found that Southern family forest landowners are interested in managing their woods for wildlife habitat, and landowners who are harvesting are already primed to implement wildlife habitat improvement practices, especially for at-risk species. However, even though most landowners have implemented at least one action to improve wildlife habitat on their



Active forest management by family forest owners can benefit both wildlife and wood supplies.

BARRIERS TO LANDOWNER ACTION TO PROTECT WILDLIFE HABITAT

(FIGURE 8)



land, they are not necessarily actively managing on an ongoing basis. More than half acknowledge that they could do more to protect wildlife, but they lack the resources to do so or are uncertain which actions they need to take.

There is an opportunity to engage these landowners in active forest management, through outreach and relationship building strategies.

Managing for the Love of Nature

Dorothy and her husband purchased their property in north Alabama's Cumberland Plateau region when they were first married more than 40 years ago. They both loved the outdoors and nature, and wanted a tract of land where they could raise their children.

In the early years, Dorothy's family enjoyed their woods as they were: the trees blooming each spring, wildlife critters roaming and feeding on the land, and song birds coming and going as they pleased. She would see logging trucks go by on her quiet road, but she never considered harvesting timber because Dorothy thought that the best thing to do for the wildlife and her woods was to leave it alone and let nature take its course.

After Dorothy retired, she began to notice that wildlife weren't wandering her woods anymore. The ground was becoming thick with growth, kudzu was taking over a big section of trees, and it was hard for her to walk through and enjoy her property.

A friend recommended that she talk to a forester from the Alabama Forestry Commission. He provided reading materials on land management and they spoke extensively about what Dorothy wanted to get out of her woods. Walking those woods together, Dorothy's forester pointed out the abundance of shortleaf pine, which is native to north Alabama's rocky soil and a key tree species for the critters of the area. Dorothy was surprised to hear how management practices like treating invasive species and thinning the old trees could be good for the wildlife.



The forester, who is a part of a conservation partnership initiative with the American Forest Foundation in the Cumberland Plateau, helped Dorothy put together a management plan to restore her forest by focusing on wildlife and activities that would promote the natural growth of shortleaf pine and enhance the overall health of her woods.

Already, Dorothy has treated the kudzu and is scheduled to have her first prescribed burn. She is also planning to thin her woods in the future and will continue to work with her forester and read up on sustainable land management so that she can be a better steward. Dorothy is looking forward to next spring to watch and monitor the wildlife on her land and continue to work toward bringing them back to her forest.



Focusing on At-Risk Species

WHILE PRODUCING SUSTAINABLE WOOD

AFF's first-of-its-kind spatial analysis reveals the top opportunity areas where a focus on increasing the number of family landowners managing their forests can make a difference.

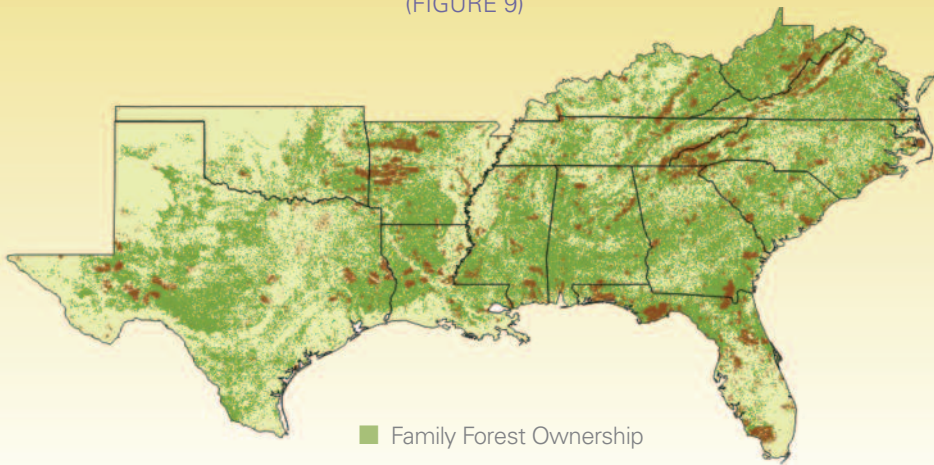
Knowing what family landowners want and need when it comes to wildlife habitat improvement, while providing wood supplies, is just one part of the equation. In order to effectively engage landowners and help meet their needs, it is important to know where wildlife habitat needs and wood baskets overlap. To find out, AFF retained RTI International to conduct a first-of-its-kind spatial analysis.

FINDING THE PRIORITIES, IDENTIFYING THE OPPORTUNITIES

The spatial analysis combined county-level geospatial information from four categories — family forest ownership, species biodiversity, at-risk species (candidate and petitioned only) and existing economic activity — with wood supply demand projections from a detailed economic model of the U.S. forest sector.⁴

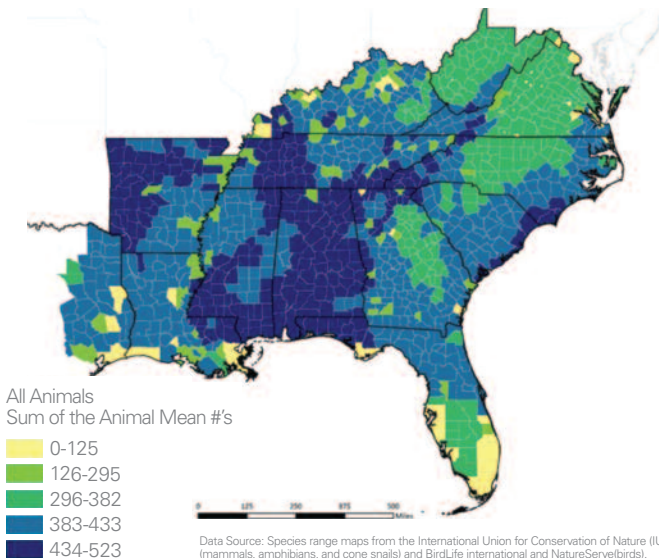
DISTRIBUTION OF FAMILY FORESTS IN SOUTHERN COUNTIES

(FIGURE 9)



BIODIVERSITY BY COUNTY

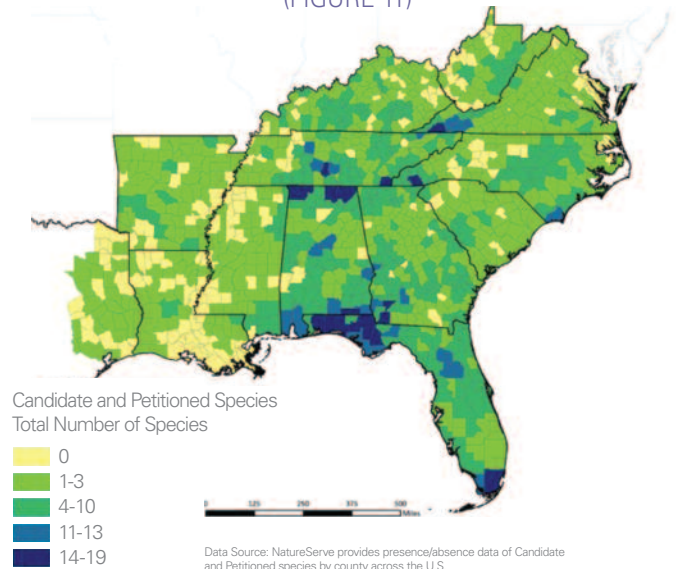
(FIGURE 10)



Data Source: Species range maps from the International Union for Conservation of Nature (IUCN) (mammals, amphibians, and cone snails) and BirdLife international and NatureServe (birds).

CANDIDATE AND PETITIONED SPECIES BY COUNTY

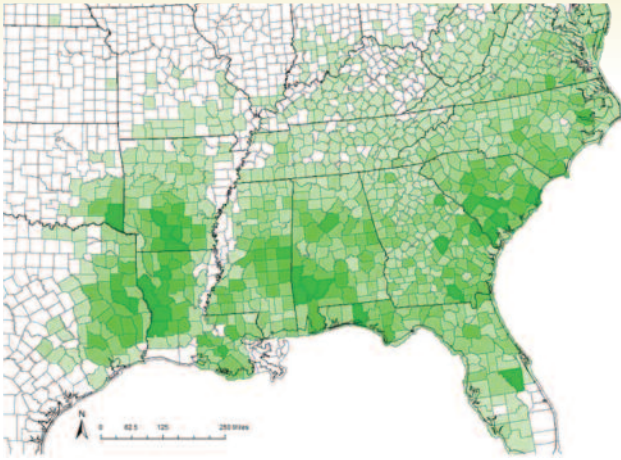
(FIGURE 11)



Data Source: NatureServe provides presence/absence data of Candidate and Petitioned species by county across the U.S.

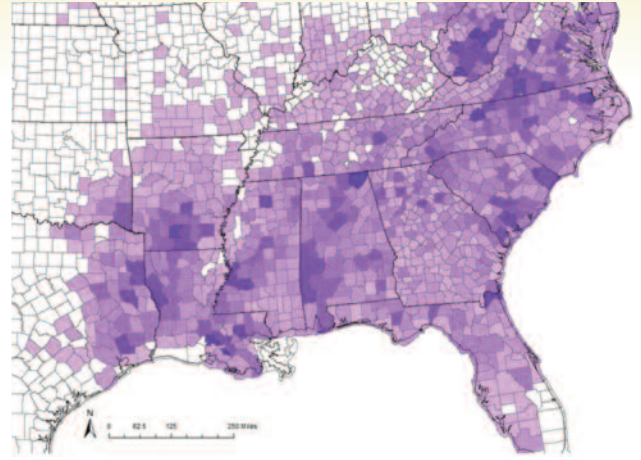
PROJECTED AVERAGE ANNUAL SOFTWOOD REMOVALS BY COUNTY (2015-2025)

(FIGURE 12)



PROJECTED AVERAGE ANNUAL HARDWOOD REMOVALS BY COUNTY (2015-2025)

(FIGURE 13)



First, the analysis used U.S. Forest Service data to calculate the proportion of family-owned forests in Southern counties. (Figure 9)

Next, species counts for mammals, birds, fish, amphibians, reptiles and trees were layered onto the county family forest data, along with data for species at risk of being listed as threatened or endangered under the Endangered Species Act. (Figures 10 and 11)

Finally, county-level harvest data and projections for future harvesting and changes in timber inventory were added to the mix. (Figures 12 and 13)

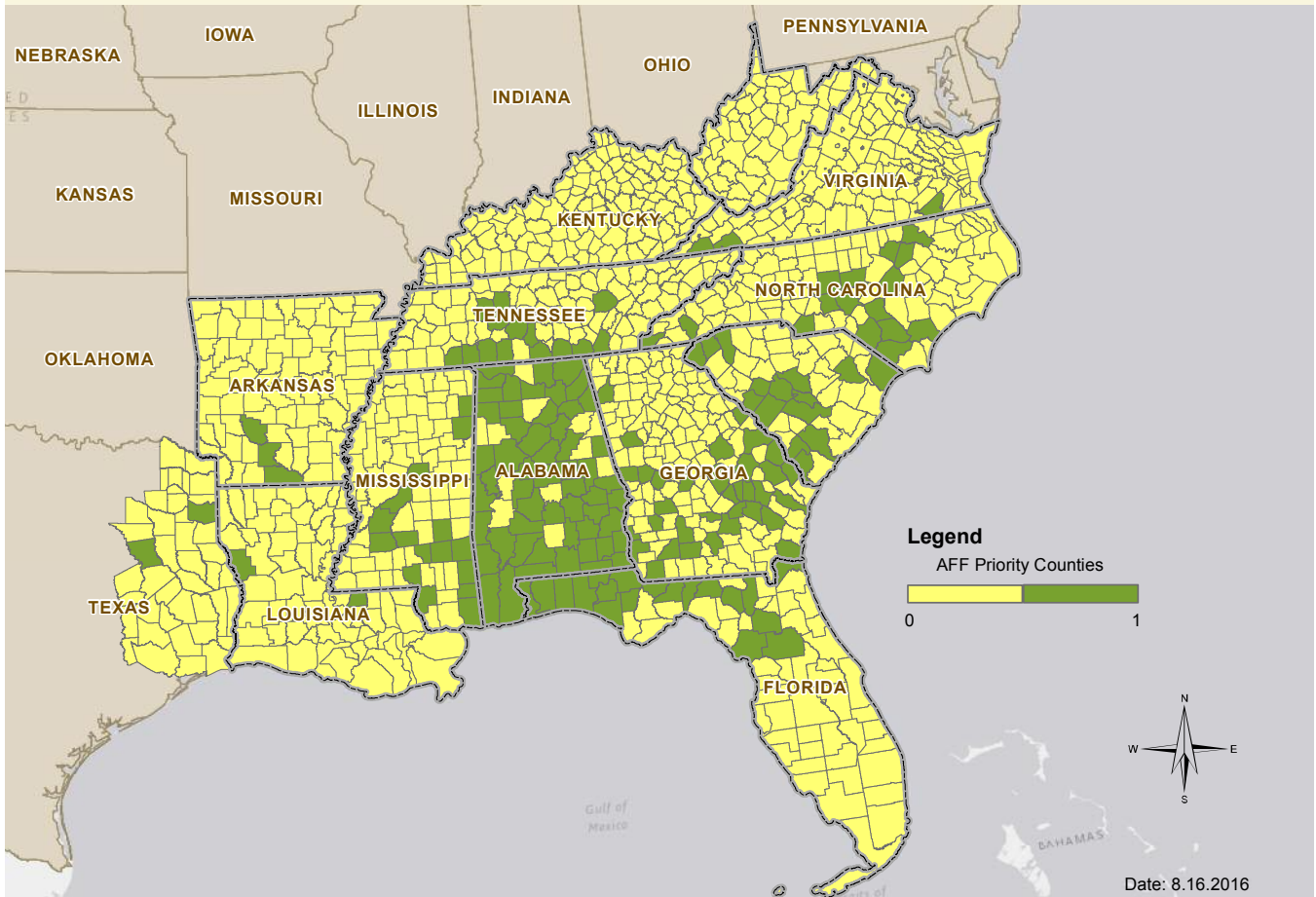
In the end, 183 priority counties were identified that have a high proportion of family forest owners, substantial wildlife resources, including many at-risk species, an active wood products industry, and projected growth in demand for wood supplies. Together, those counties have more than 35 million acres of family forests — just over one-fourth of the total family forest acreage in the South — owned by an estimated 438,000 family landowners.



Photo courtesy of Leslie Robertson NASF

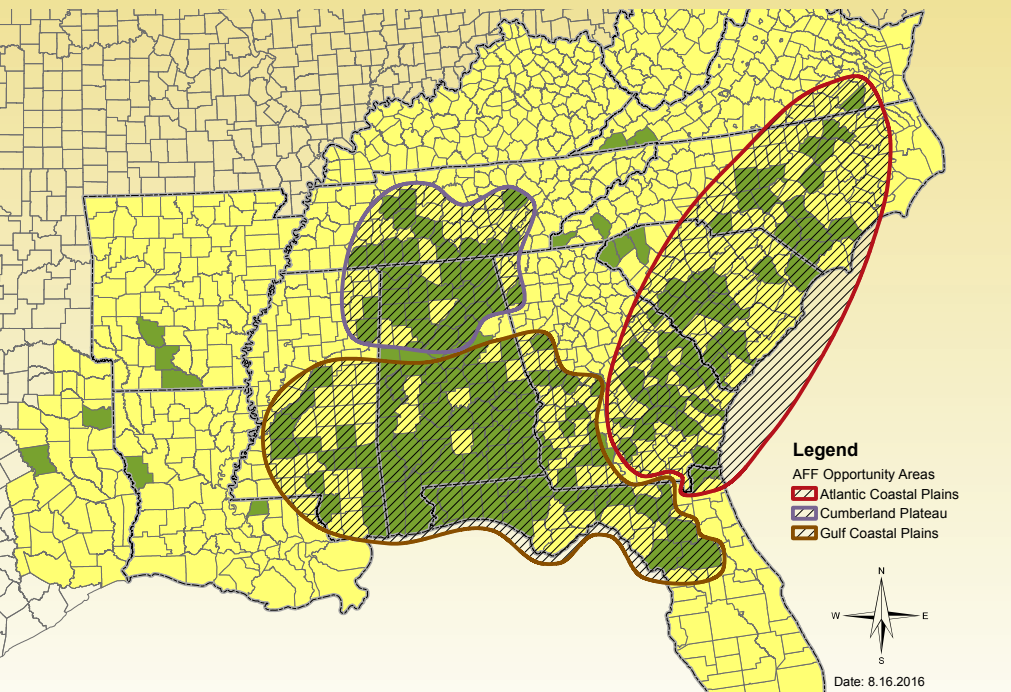
⁴ A detailed description of the spatial analysis methodology is in the Appendix.

PRIORITY COUNTIES WITH HIGH CONCENTRATIONS OF FAMILY FOREST OWNERS, WILDLIFE AND BIODIVERSITY, AND IMPORTANCE TO WOOD SUPPLY



Esri, HERE, DeLorme, MapmyIndia, © OpenStreetMap contributors, and the GIS user community

AFF OPPORTUNITY AREAS FOR ENGAGING FAMILY FOREST OWNERS IN DELIVERING BOTH WILDLIFE HABITAT AND SUSTAINABLE WOOD SUPPLY



More importantly, AFF identified 338 at-risk wildlife species in the priority counties, with 306, or 91%, being forest dependent. Already, 139 of those are listed as threatened or endangered under the Endangered Species Act, and an additional 167 are under review for listing.

After completing the spatial analysis, AFF grouped the county-level data into three Opportunity Areas — Atlantic Coastal Plains, Cumberland Plateau, and Gulf Coastal Plains — where outreach to family forest owners will have the greatest potential to improve habitat for at-risk wildlife while helping to meet U.S. and global demand for sustainably-produced wood products.

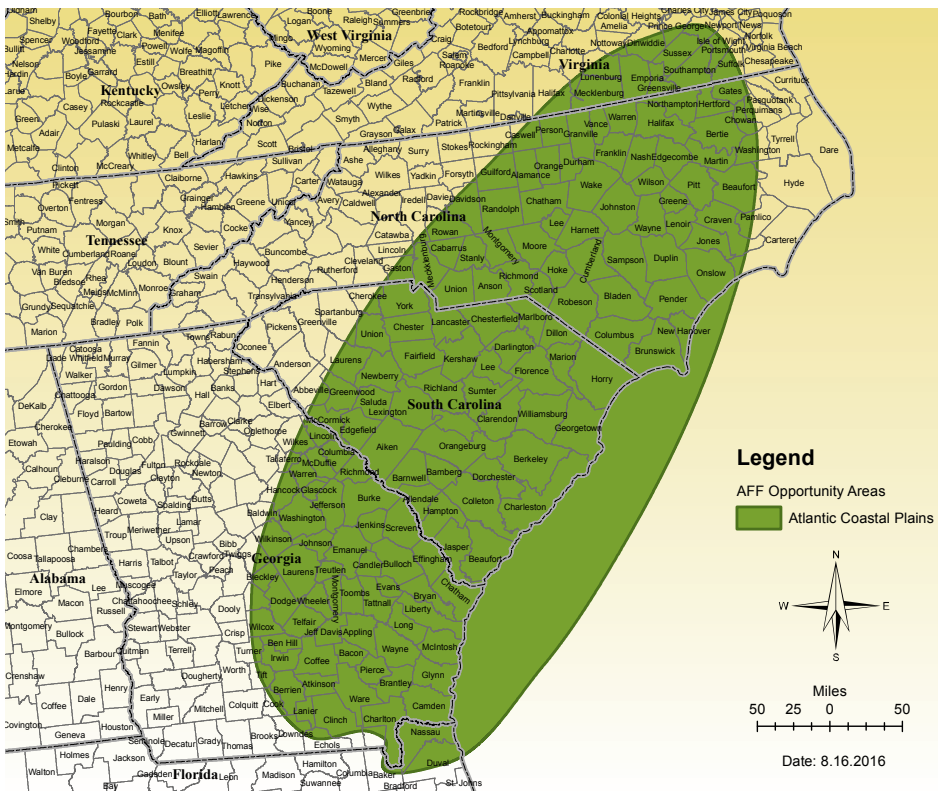
The Atlantic Coastal Plains Opportunity Area

Stretching from southern Virginia to the Carolinas, the Atlantic Coastal Plains host some of the most diverse forested wildlife habitat in the United States. The region is heavily forested, with longleaf and loblolly pines in the soft, sandy lowlands and bottomland hardwoods in the sediment-rich swamps and floodplains.



These forests provide vital habitat for a wide variety of fish and wildlife, some of which are found nowhere else in the world.

The Atlantic Coastal Plains Opportunity Area is home to red fox, wild turkey, white-tailed deer, river otter and many others. But a decline in habitat caused by community development, fragmented waterways, invasive species and more has put some of its wildlife under increased pressure. Already, 28 forest-dependent wildlife species



are listed as threatened or endangered, including the wood stork and Atlantic sturgeon. An additional 45 are at risk and could be listed as threatened or endangered in the future.

This Opportunity Area is also a key source of wood supplies for a thriving industry whose mills and manufacturers produce furniture, paper, wood pellets, and other forest products. AFF's spatial analysis showed that there are more than 8.6 million acres of family-owned forests in the Area's priority counties. Together, they are responsible for 65% of the annual harvests.

There are an estimated 106,000 family forest owners in

the priority counties of the Atlantic Coastal Plains Opportunity Area. Increasing the number of those landowners who are actively managing their land sustainably could improve and protect wildlife habitat for at-risk species while providing sustainable wood supplies for markets in the United States and around the world.



Taking the Long View



Salem Saloom will tell you he grew up outside. A childhood spent hiking, camping, and working his way from Cub Scout to Eagle Scout fostered a love of the woods, and the wildlife — particularly turkey — that roam them.

Salem and his wife Dianne purchased their first 158-acre piece of timberland in Conecuh County near Alabama's Gulf Coast with hopes of growing timber and enjoying the wildlife, especially the turkey hunting.

Unfortunately, the Saloom's vision was interrupted when Hurricane Ivan hit their land in 2004. The storm upended most of their loblolly and slash pine, leaving just a few older longleaf pine trees scattered across the land.

Salem had grown up seeing longleaf pine, but after the storm hit he began to do a bit of research. He found that longleaf pine was once a vast and majestic species across the South that provided vital habitat for turkey and other critters he loved, including the endangered red-cockaded woodpecker and the threatened gopher tortoise. He learned that these wildlife species were dwindling because there wasn't enough longleaf pine habitat for them to thrive and that while efforts to aid recovery were taking place on publicly owned land, little was being done on private land.



The storm and his subsequent research were turning points for Salem and his family.

While he was practicing good forestry by following the laws and BMPs, Salem wondered if he could do more.

The Salooms decided it was time for a new vision for their land that was focused on restoring longleaf pine forests that would be better able to withstand future hurricanes, drought, and pine beetle infestations. It would also provide the needed habitat for many of the wildlife species they enjoyed while still providing high valued wood fiber they could sell as timber.



Today, the Salooms own more than 2,200 acres, more than half of which is planted in longleaf. They plan to plant more in the future and will continue to maintain the overall health of their woods with prescribed burns that create the fresh ground growth wildlife depend on for food.

Not only do Salem and Dianne find their longleaf forest beautiful, but they now have healthy populations of turkey, quail and deer. And they often see gopher tortoises and gopher tortoise nests on their land.



The Salooms are also actively encouraging other landowners in their community to join them in restoring longleaf forests. They hope for a day where some of the wildlife species can be delisted, and they can tell their grandchildren that they were a part of the recovery to make it happen.

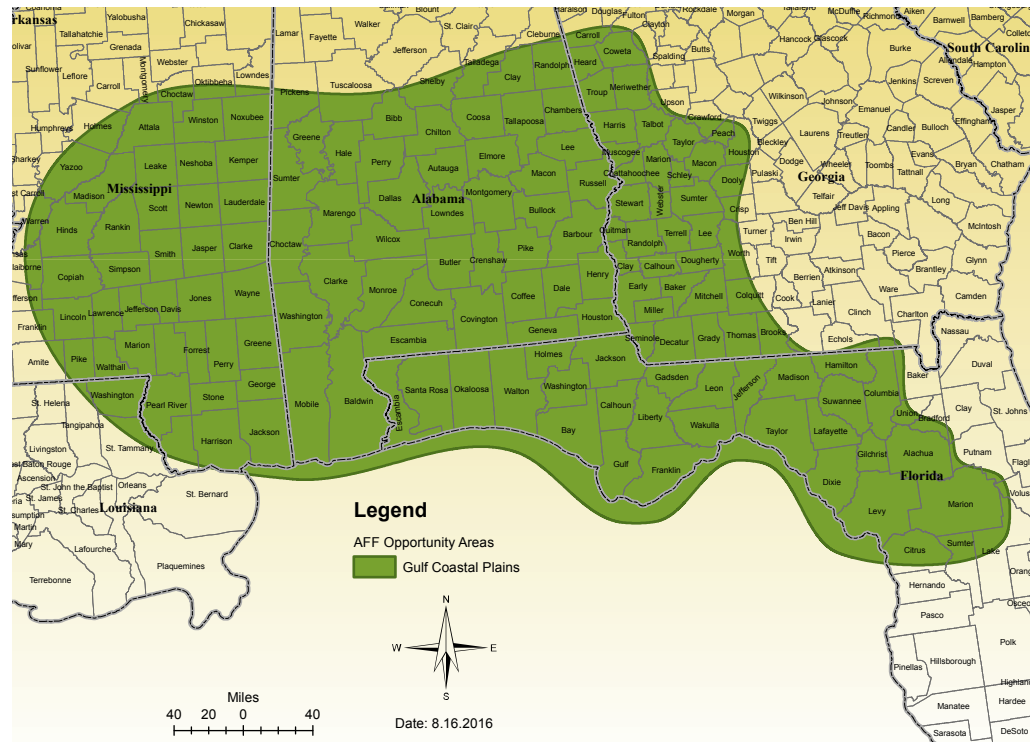
The Gulf Coastal Plains Opportunity Area

While most people think of the Gulf Coast as beaches and saltwater marshes, the region is actually heavily forested. Its plains span the coastline of Mississippi, Alabama, the panhandle of Florida and into Georgia. From long swaths of upland pines, to majestic stands of longleaf pine, to low swampy areas of bottomland hardwoods, the region's 10 million acres of forest create a unique ecosystem characterized by its vast biodiversity and valuable wood supplies.

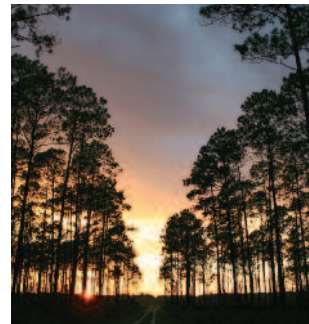
The Gulf Coastal Plains Opportunity Area is home to a wide variety of forest-dependent wildlife, including wild turkey, white-tailed deer, and a myriad of birds, amphibians, and mussels. However, conversion to non-forest uses and fire suppression have increased the pressures on at-risk wildlife. Already, 90 species, such as the gopher tortoise and black pine snake, are listed as threatened or endangered, and 120 others are at risk of being listed in the near future.

This Opportunity Area is also one of the world's most productive sources of wood for construction, energy, paper products and other consumer goods, supporting tens of thousands of jobs across the region. More than 60% of the average annual harvests in the Area come from family-owned acres.

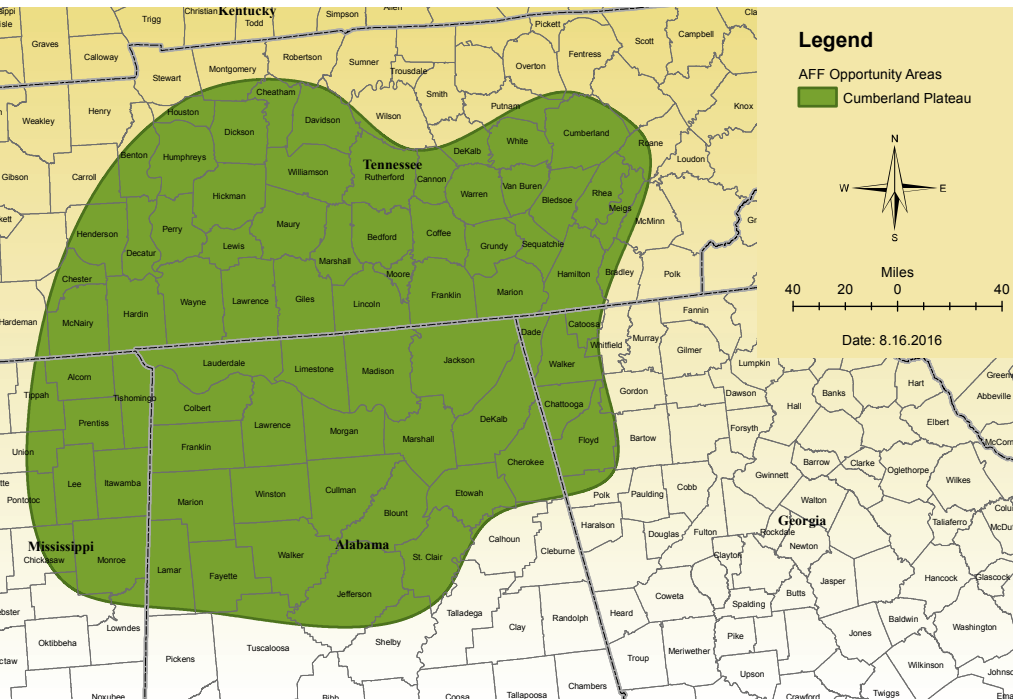
The spatial analysis shows that there are 17.9 million acres of family-owned forests in the priority counties of the Gulf Coastal Opportunity Area — by far the



largest of the three Opportunity Areas. It's estimated 221,000 family landowners are critically important both for protecting wildlife habitat for at-risk species and for continuing to supply sustainably-produced material for U.S. and global markets.



The Cumberland Plateau Opportunity Area



The Cumberland Plateau, which spans northern Alabama and southwestern Tennessee, is one of the most significant forested landscapes for plant and wildlife diversity in the South.

Sitting at the tail end of the Appalachian Mountains, the Cumberland Plateau's changing elevations create a rich ecosystem of pine forests in its upper heights and mixed pine-oak forests along the winding rivers and streams in its

shallow valleys. The region's nearly 9 million acres of forests are home to a wide range of fish and wildlife, some of which are found nowhere else in the world.



The pine warbler, Eastern cotton-tailed rabbit, southern flying squirrel and a diverse array of other forest-dependent wildlife call the Cumberland Plateau Opportunity Area home. However, its wildlife habitat is under pressure from invasive species, a decrease in disturbances like fire, and other threats. Shortleaf pine forests, in particular, have been disappearing for decades, with fewer than 200,000 acres known in existence



today across the region. Already, 92 wildlife species in this Opportunity Area are listed as threatened or endangered, including the red-cockaded woodpecker and Northern long-eared bat, while 71 more are at risk of being listed.

The forests of the Cumberland have long supported the region's communities and its forest products industry, which supplies consumers worldwide with paper and packaging for household goods, as well as sawtimber for homes and buildings and wood pellets for energy. In northern Alabama alone, the Cumberland generates more than \$5 billion in annual production, helping make Alabama the second highest wood fiber producing state in the country.

There are 5.9 million acres of family forests in the priority counties of this Opportunity Area and its estimated 73,000 owners are responsible for 68% of the Area's average annual harvests. An increase in individuals actively managing and caring for these forests could ensure that both wildlife habitat is protected and demand for sustainably-produced wood is met.

Recommendations

As this report demonstrates, there is a significant opportunity to achieve the twin goals of protecting at-risk wildlife and meeting the growing demand for sustainable wood by engaging more Southern family forest owners in management of their lands.

While most landowners want to do the right thing, they need help. Landowners need information and technical assistance, to help them conduct practices today, and feel confident that these practices will have long-lasting benefits for wildlife. And they need financial support, including strong markets to help cover the costs of management. What's more, the spatial analysis identifies the priority areas where efforts to support and help landowners overcome barriers, would be most effective at accomplishing both goals.

While there are many strategies to achieve these objectives, in this report, AFF focuses on those that have the greatest potential for on-the-ground progress toward long-term success across the South.

With this in mind, AFF recommends three strategies that will both improve wildlife habitat and provide sustainable wood supplies from family forest lands:

- Develop, invest in, and implement landscape-scale landowner outreach and engagement strategies, focused in the three Opportunity Areas, to provide educational, technical and financial support for practices that improve at-risk wildlife habitat and produce sustainable wood supplies.
- Promote forest product purchasing that supports sustainable management of Southern family forests.
- Provide funding and policy tools that support family forest landowner engagement,

promote markets for sustainably-produced wood and paper products, and encourage voluntary conservation efforts for at-risk wildlife.

Develop, invest in, and implement landscape-scale landowner outreach and engagement strategies, focused in the three Opportunity Areas, to provide educational, technical, and financial support for practices that improve at-risk wildlife habitat and produce sustainable wood supplies.

AFF's survey shows Southern family forest owners want to do the right thing, but they need financial and technical assistance to get the work done. Focusing in the Opportunity Areas identified by AFF's spatial analysis can help activate landowners and address at-risk wildlife needs.





In the past few years, AFF has pioneered successful, coordinated family forest landowner outreach programs, in collaboration with local nonprofits, forest industry partners and state forestry agency partners, in more than a dozen locations around the country. These programs take a more modern data-driven approach, proactively identifying and targeting the landscapes where the needs are the greatest and resources can be used most effectively. Based on the lessons learned in those outreach programs, AFF recommends the following plan

aimed at helping Southern family forest owners in the three Opportunity Areas:

- Work with local partners to (a) identify clear landscape-wide goals around at-risk wildlife and sustainable wood supplies, as well as (b) leverage collaborative capacity by coordinating and focusing resources and avoiding duplication.
- Develop a landowner outreach strategy that meets landowners where they are and on their terms.
- Establish relationships between landowners and trusted resources to build understanding of the benefits of managing their forests for wildlife habitat, the needed forest practices, such as restoring stream crossings, treating invasive species, harvesting, collecting data on threatened and endangered species and more.
- Assist landowners with ongoing sustainable management practices so that they remain engaged in improving forest health over time.
- Develop and implement a tracking system in order to track progress, measure impacts, and enable timely follow up.
- Adapt outreach strategies based on lessons learned.

Promote forest product purchasing that supports sustainable management of Southern family forests.

As described in this report, there is growing demand, from both consumers as well as wood products companies, for sustainably-produced timber. Meeting that demand requires promoting sustainable management on family forest lands. Adopting and implementing sustainable policies and practices at the purchasing end will stimulate adoption of those practices by family forest landowners, which benefit the companies and consumers as well as the landowners and wildlife.

AFF's survey shows Southern family forest owners want to do the right thing, but they need financial and technical assistance to get the work done. Focusing resources and cost-share in the Opportunity Areas can help.

Provide funding and policy tools that support family forest landowner engagement, promote markets for sustainably-produced wood products, and encourage voluntary conservation efforts for at-risk wildlife.

While there are a number of federal and state programs that provide technical, educational, and financial assistance to family forest owners, AFF recommends both targeting these resources to the Opportunity Areas identified in the spatial analysis, as well as ensuring these resources are used for comprehensive landowner outreach programs as described above. This will both effectively use limited funding and ensure that those funds deliver measurable progress toward meeting the wildlife protection and wood supply goals.

In addition to these assistance programs, other tools such as tax incentives and policies that support the use of sustainable forest products from family forest lands should be encouraged.

Lastly, policies such as the Endangered Species Act should be focused on encouraging proactive,

preventative actions by family landowners, with funding support for landowners to do population surveys to better understand at-risk wildlife species true state of

existence. In addition, tools to protect landowners from future regulations if they do conduct wildlife practices should be established.



Conclusion

Southern U.S. forests are among the most biologically diverse and productive in the world. But decades of development have converted woods to farm or urban uses, invasive species like kudzu have choked huge tracts of forest, and fragmentation and fire suppression have created unhealthy conditions. Together, these and other pressures have put hundreds of forest-dependent wildlife species at risk.



At the same time, we are relying more and more on the South's forests for our wood product needs, and family forest lands will play a big role in that future.

These challenges cannot be addressed successfully without engaging more family forest owners in active, sustainable management practices on an ongoing basis, including planting native tree species, controlling invasive species, and restoring stream banks, along with thinning and harvesting. Protecting at-risk wildlife and providing sustainable wood supplies, both from family forest lands, can go hand in hand.

The good news is that most family landowners want to help wildlife. And, those who harvest timber are also implementing wildlife practices. Unfortunately though, many landowners are not actively managing their forests on an ongoing basis, even though a majority acknowledge that they could do more to protect and improve habitat. This is because they are unclear about what practices to do or lack financial resources to get it done. The opportunity gap between what family forest owners are doing and what they want to do opens the door to an outreach and education program aimed at overcoming those barriers.



AFF's spatial analysis identified 183 priority counties across the South, and more than 35 million acres of family forest lands, where high value wildlife habitat overlaps with important wood supplies. By aggregating priority counties into three Opportunity Areas, AFF and its partners will be able to target resources in a way that meets the goals of protecting wildlife habitat while also meeting demand for sustainably-produced Southern wood products.





Appendix

REFERENCES

- Baker, J. S., Latta, G., Callihan, R., Cajka, J., O'Neill, M. 2016. "Driving Forest Productivity and Conservation Through Spatial Analysis." Raleigh, NC: RTI International.
- Butler, B. J. 2008. "Family Forest Owners of the United States, 2006." Gen. Tech. Rep. NRS-27. Newtown Square, PA: U.S. Department of Agriculture, U.S. Forest Service, Northern Research Station. 72 p.
- Butler, B. J., Hewes, J. H., Butler, S. M., April, R. Z. 2014. "Research Supporting Stemming the Loss of Family Forests Across the United States: Section II." 111 p.
- Butler B. J., Hewes, J. H., Dickinson, B. J., Andrejczyk, K., Butler, S. M., and Markowski-Lindsay, M. (2016). Family Forest Ownerships of the United States, 2013: Findings from the USDA Forest Service's National Woodland Owner Survey. Journal of Forestry, May 2016.
- Griep, M. T., and Collins, B. 2013. "Wildlife and Forest Communities." Gen. Tech. Rpt. SRS-178. U.S. Department of Agriculture, U.S. Forest Service, Southern Research Station. Ch. 14.
- Hanson, C., Yonavjak, L., Clarke, C., Minnemeyer, S., Boisrobert, L., Leach, A., and Schleeweis, K., 2010. "Southern Forests for the Future." Washington, DC: World Resources Institute. 88 p.
- NASF (National Association of State Foresters). No date. "Protecting Water Quality Through State Forestry - Best Management Practices." http://www.stateforesters.org/sites/default/files/issues-and-policies-document-attachments/Protecting_Water_Quality_through_State_Forestry_BMPs_FINAL.pdf
- Southern Group of State Foresters. 2013. Economic Importance of Forestry in the South.
- Stein BA. 2002. States of the Union: Ranking America's Biodiversity. Arlington, Virginia: NatureServe.
- World Resources Institute. 2016. "Southern Forests: The Woodbasket of the Nation." <http://www.seesouthernforests.org/case-studies/southern-forests-wood-basket-nation>
- UN FAO (Food and Agriculture Organization of the United Nations). 2014. "Global Forest Products Statistics." <http://www.fao.org/forestry/statistics/80938@180723/en/>

Methodology

GENERAL METHODOLOGY

AFF employed a two-stage process for identifying Opportunity Areas in the South where family forests that provide critically important habitat for fish, wildlife and plants, including at-risk species that are or may be listed as threatened or endangered, are also essential for meeting wood products demand both now and in the future.

First, RTI International was retained to develop a methodology that combines geospatial information on family forest ownership, species biodiversity, at-risk species, and existing economic activity with projections from a detailed economic model of the U.S. forest sector. The data were analyzed at a county level in the following 13 Southern states:

- **Alabama**
- **Arkansas**
- **Florida**
- **Georgia**
- **Kentucky**
- **Louisiana**
- **Mississippi**
- **North Carolina**
- **Oklahoma**
- **South Carolina**
- **Tennessee**
- **Texas (only eastern part of state)**
- **Virginia**

Each of the four data categories is described below.

FAMILY FOREST OWNERSHIP

Forest ownership data were obtained from the U.S. Forest Service, from which RTI extracted the areas of private family ownership for integration with the wildlife diversity, at-risk species, and economic datasets. Two key variables, aggregated at the county level, were used in the methodology:

1. Total family-owned forest area (hectares); and
2. Proportion of family-owned forest area to total forest cover.

BIODIVERSITY AND TOTAL SPECIES COUNTS

RTI calculated county-level species biodiversity using geospatial data layers obtained from a biodiversity portal (www.biodiversitymapping.org) which in turn obtained them from a variety of sources: the International Union for Conservation of Nature (IUCN) (all terrestrial vertebrates, freshwater fish, and trees), and BirdLife International and NatureServe (birds). RTI combined each species layer with the private forest ownership layer, which resulted in species data in just the areas that data were analyzed to calculate the minimum, maximum, range, and mean number of species of each class of animals and trees at the county level. The results were then joined to the county data layer, and RTI created maps showing the mean number of species by county.

The six final species counts included in the methodology are: amphibians, mammals, birds, fish, reptiles and trees.

AT-RISK SPECIES

Wildlife, fish and plants considered to be at risk are those listed as threatened or endangered under the Endangered Species Act (ESA), as well as those that have been petitioned for listing under the ESA. Both variables, candidates and petitioned species were included in the RTI methodology.

AFF provided the at-risk species data to RTI from NatureServe, which used datasets compiled by the U.S. Fish & Wildlife Service. They include both candidate species as well as the 374 petitioned species in the Southeastern states, some of which, like the gopher tortoise, have been the subject of joint conservation efforts among state and federal agencies, the wood products industry, and environmental groups. RTI aggregated and mapped the data for all counties with family forest acreage to show the distribution of at-risk species across the South. The at-risk species were not included in the overall biodiversity/species counts because the at-risk species counts are a reasonable

indicator of areas where additional sustainable management activities could reduce the potential for conflicts between wildlife protection and wood production. Economic activity could potentially be inhibited by the ESA guidelines.

ECONOMIC ACTIVITY

The RTI methodology includes economic data from both actual county-level harvest data as well as projections for future harvesting using a detailed economic model of the U.S. forestry sector. RTI used U.S. Forest Service Timber Products Output reports from 1997, 2002, 2007 and 2012 to calculate average hardwood and softwood removal rates for each county across all ownership classes.

The Land Use and Resource Allocation (LURA) modeling system was used to generate projections for county-level harvest activity by simulating supply and demand for wood products over the next decade. It included these four variables:

- 1. Average Clear Cut:** Average annual clear-cut area by county for the time frame 2015-2025.
- 2. Average Thinning:** Average annual thinning area by county for the time frame 2015-2025.
- 3. Average Total Removals:** Average annual removals by county for hardwood and softwood across all forest types and ownership classes.
- 4. Total Inventory Loss:** Total change in inventory in 2025 relative to the base year (2015).

COMBINING THE DATA, IDENTIFYING THE OPPORTUNITIES

The datasets were standardized by comparing each of the four data categories for every county with the average results for those categories across the entire South. The resulting percentiles for each category were weighted evenly so that family forest ownership, species biodiversity, at-risk species, and economic activity were all assigned an equal importance. The four percentiles were summed and averaged, and any county that exceeded a 60% threshold (set by AFF) was determined to be an area with a high potential for both wildlife protection and wood production.

In the second stage of the project, AFF aggregated the data on a geophysical, rather than a county-level, basis to create three Opportunity Areas where its outreach to family forest owners would have the greatest potential to protect habitat for at-risk wildlife while helping to meet U.S. and global demand for sustainably-produced wood and paper products. The three Opportunity Areas are: Atlantic Coastal Plains, Cumberland Plateau, and Gulf Coastal Plains.





**A REPORT BY THE AMERICAN FOREST FOUNDATION
WASHINGTON, DC**

Contact:

Chris Erwin, Director of Southern Conservation, cerwin@forestfoundation.org.



American Forest Foundation

2000 M Street NW

Suite 550

Washington, DC 20036

P 202.765.3660

www.forestfoundation.org