Forest Resources

The Heartbeat of the South

Examining the values of Southern forests and the threats that may permanently alter the region

The practice of conservation must spring from a conviction of what is ethically and esthetically right as well as what is economically expedient. A thing is right only when it tends to preserve the integrity, stability, and beauty of the community, and the community includes the soil, water, fauna, and flora, as well as the people.

-Aldo Leopold

Conservation is the foresighted utilization, preservation, and/or renewal of forests, waters, lands, and minerals, for the greatest good of the greatest number for the longest time.

-Gifford Pinchot

Throughout the history of mankind, forests have sustained society. Forests have provided a source of fire to ensure life through a long winter. They have provided material from which to build shelter. They have provided and sheltered sources of food for hunting and gathering.

Historically, forests have been valued for their life-sustaining attributes and their continuous productivity. They have been the mainstay of many an economy, including that of the Southern U.S.

The South supports the most productive forestland in the world.[29] Forests allowed the South to develop and flourish. They provide many goods and services from water and air filtration, to employment opportunities, to wood products, to recreational activities. Society depends on these forest qualities. They form the core of the South's economic stability and are an intrinsic part of society. Forests are the heartbeat of the South.

Forests sustain the South. (1941, Arkansas)

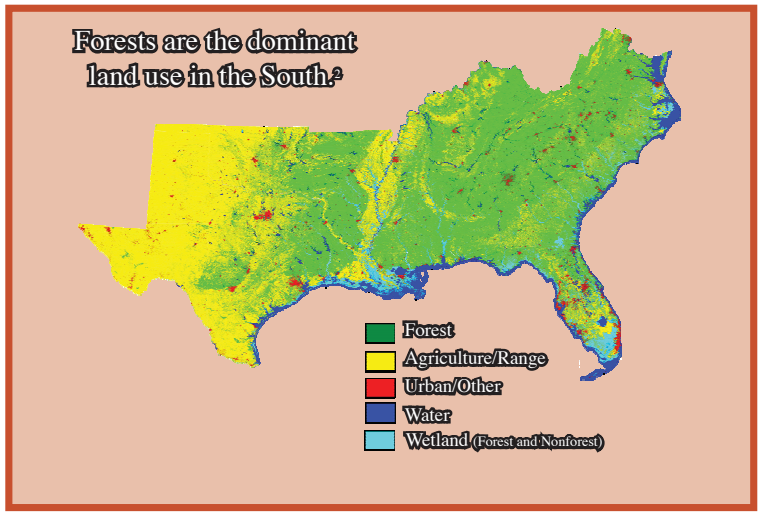
Understanding forest resources

Forests provide an array of benefits to individuals and society. In fact, these provisions are so diverse and so intrinsic to Southern quality of life that forests are rarely recognized for the many-fold benefits they offer. They brighten the landscape, clean air and water, shelter wildlife, enhance recreational activities, and provide a renewable resource that supports individual existence.

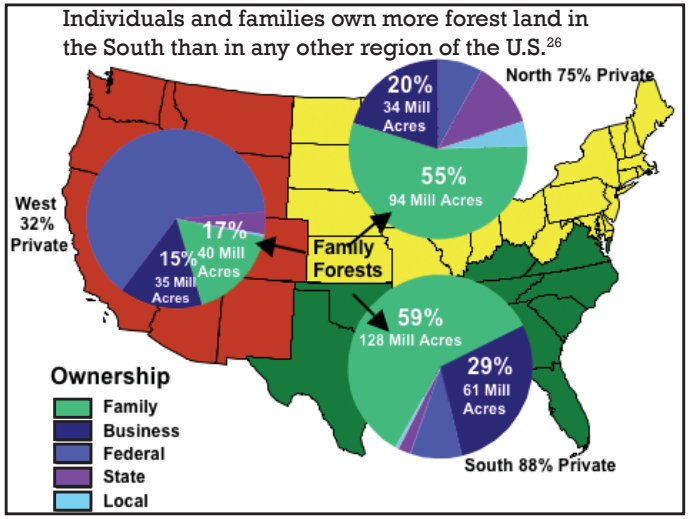
In addition to ecological and recreational benefits, Southern forests provide the world with renewable, energy-efficient building resources, paper goods, medicinal, and furniture products to list a few.

Forests also provide employment for thousands of Southerners. Over 570,000 are employed by forest-based manufacturing alone[1] (not including those employed by pre-production activities such as logging or forest management, government agencies, or forest-based recreational activities).

Southern forests provide ecological, economic, and recreational benefits.



The forests of the southern U.S. cover approximately 215 million acres. These lands are among the most productive forests, producing 60 percent of the nation's and 18 percent of the world's industrial roundwood output.[3,4] This timberland is primarily composed of private holdings (88 percent) with the majority (59 percent) being family-owned forests.[3]



While the overwhelming majority of Southern forests are held and managed privately, they are the backbone of the forest industry. Productive forests throughout the South help keep forest products competitive globally. Forests have long been a foundation of Southern livelihood. However, recent threats foreshadow significant changes in Southern forest resources. This publication describes the value of forests, the threats facing the South's largest renewable resource, and the solutions currently available.

VALUES	THREATS	SOLUTIONS
•Ecological benefits •Economic returns •Employment •Recreation •Critical habitat •Renewable resource	•Urbanization •Fragmentation •Demographic shifts •Invasive species •Global competition	•Working together •Research and Education
(pages 5 to 11)	(pages 12 to 17)	(pages 18 to 22)

Values of Southern forests

Ecological benefits

Forests provide many ecological benefits from carbon sequestration to water and air filtration.

- Storage of CO_2 is important to the control of greenhouse gasses. Forests and forest products store CO_2.[24]
- Carbon stored in forest products that are burned for fuel results in a net carbon change of zero, unlike the burning of fossil fuels. [24]
- Forest watersheds trap sediments and slow runoff, reducing erosion and improving water quality.[24,3]
- Forests assist with controlling point and nonpoint-source water pollution.[3]
- Riverine wetlands (the majority of Southern wetlands) cycle nutrients and toxicants, mitigate flood damage, enhance water quality and support ecosystems.[3]
- Southern depression wetlands remove sediments and pollutants from water and support diverse plant and animal communities.[3]

Economic returns from timber

Forests are a cornerstone of the Southern economy. Timber is only one of the many aspects of forests providing monetary returns. Timber creates economic benefits for landowners, mills and manufacturers, and local, state, and federal governments.

- In 2003, nearly $8 billion was paid to Southern land owners for their timber.[9]
- The value of the delivered timber from Southern land owners was over $12.5 billion in 2003.[9]
- Southern manufacturers of wood products and paper contributed billions of dollars to the South's economy.
  - over $13 billion in payroll[1]
  - over $53 billion in materials[1]
  - nearly $4 billion in capital expenditures[1]
  - over $95 billion of shipments[1]
- Production of non-timber forest products (e.g. dietary supplements, florals, edible items, etc.) contributed approximately $1 billion to the South's economy.[10]

Privately owned Southern forests contribute significantly to the economy.[9]

State	All Forests	Private Forests		Stumpage Value Paid to All Owners	Delivered Value of Timber	Rank Among States
	Million Acres	*Million Acres*	*% of Forests*	*Million $*	*Million $*	
Alabama	22.8	21.5	94%	$1,192	$1,680	1
Arkansas	18.6	15.2	82%	$634	$1,082	7
Florida	14.7	11.8	81%	$405	$661	10
Georgia	24.2	22.3	92%	$1,004	$1,678	2
Kentucky	11.6	10.6	91%	$182	$334	12
Louisiana	14.0	12.4	88%	$648	$1,085	6
Mississippi	18.6	16.6	90%	$1,099	$1,504	3
North Carolina	17.7	15.3	87%	$728	$1,137	5
Oklahoma	4.9	4.3	88%	$124	$218	13
South Carolina	12.2	11.0	90%	$504	$829	8
Tennessee	13.6	12.1	89%	$228	$466	11
Texas	11.9	10.9	92%	$711	$1,182	4
Virginia	15.5	13.5	87%	$349	$711	9
South	**200.3**	**177.5**	**89%**	**$7,809**	**$12,565**	

Above dollar values listed in millions.

Employment

- Forest industry ranks as one of the top three manufacturers in 10 of the 13 Southern states. In the remaining three states, forest industry ranks in the top 10.[1]
- In all, forest industry sustains employment for over 1.5 million Southerners (this includes 570,000 employed in manufacturing).[1]
- Forest products industry provides good paying jobs in areas where other economic opportunities are scarce.[3]
- State-level jobs and income in outdoor and tourism-related industries are increasing in all 13 Southern States.[3]
- In 1997, outdoor recreation-based tourism contributed between 0.64 and 2.88 percent of southern jobs.[3]
- Forest-related recreation employment is associated with better economic conditions in rural areas of the South as well as increased household income and decreased unemployment and poverty rates.[3]

Land management, timber harvest, lumber production, and recreation are a few of the employment opportunities forests offer.

Recreation

Forests provide an outlet for outdoor recreation. The value of those participating in outdoor recreation in the South represents a multi-billion dollar business.

Outdoor recreation has seen huge growth over the past 20 years (see Table, right). This trend is expected to continue.[15]

Revenue generated by outdoor recreation activities is significant to the South's economy (see Box, opposite page).

The need for outdoor recreation is increasing.[12]

Participation in millions.

Activity	Year 1982	2000
Bird Watching	22	73
Day Hiking	26	76
Backpacking	9	25
Primitive Camping	18	38
Developed Camping	33	62
Canoeing/ Kayaking	15	28
Swimming in Natural Water	59	98
Sightseeing	86	118

Sportsmen (hunters and anglers) are a group of outdoor recreation seekers with a great impact on the nation.

- 38 million sportsmen are in America. [11]
- They pour approximately $70 billion into the nation's economy annually (with $179 billion in ripple effect). [11]
- Sportsmen pay $2.4 billion annually in federal income tax.
- They pay $1.7 billion annually for conservation and management of the habitats crucial to their recreational activities.[11]
- Recreational fishing by residents and non-residents of Southern states generates $13.4 billion in retail sales with a total multiplier effect of nearly $26 billion.[22]
- Recreational fishing provides $6.5 billion in salaries and wages and supports over 268,000 jobs.[22]

Hunters and anglers benefit the South.

Florida
Hunters and anglers generate nearly 6 times more revenue for the state than its orange crop.[11]

Florida and North Carolina are among the top 5 states for non-resident fishing destinations.[13]

Georgia, Tennessee, and Kentucky are among the top 10 states for bowhunting.[14]

Georgia
Bowhunting = $589 million (retail sales)[14]
Peanut crop = $364.8 million (gate value)

Virginia
Bowhunting = $248 million (retail sales)[14]
Tobacco harvest = $179 million (includes cash receipts, value of production, and delivery)

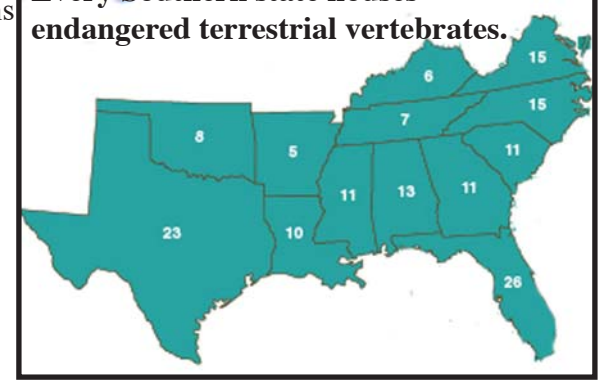
Critical habitat

Southern forests feed and shelter a diverse array of plant and animal species and help filter and maintain waterways necessary to fish and amphibians. With proper management, wildlife habitat can be improved. Forest are critical to many threatened and endangered species.The South's forests, including pine plantations, provide many ecological services.

- Southeastern forests support significant biodiversity (e.g. Longleaf pine ecosystems, Southern Appalachians, Florida panhandle, the Everglades)[22]
- Approximately 250 of the 450 species of reptiles and amphibians in the U.S. are found in the South with around 90 species found only in the South.[22]
- The South contains several species of concern (state and federal threatened, endangered, or candidate species) including:

159 crustaceans
165 fish
127 snails
76 insects
19 reptiles
54 amphibians
18 mammals
20 birds

Every Southern state houses endangered terrestrial vertebrates.



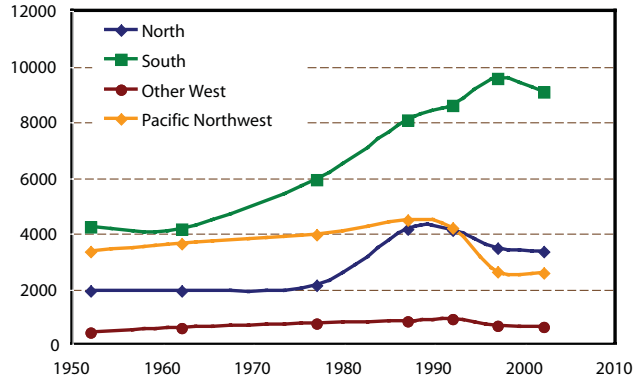
Renewable resource

Forests are a renewable and sustainable resource (unlike coal, oil, and natural gas). With proper care and management, forests can meet the needs of the present and provide for future generations.[18]

Renewable timber resources provide many daily needs and produce sustainable employment.

- Structural wood products have the most energy-efficient life cycle of any construction material[19]
- U.S. wood consumption has increased 66% since 1970 with the size of a single family home increasing 40%.[18]
- U.S. consumption of wood and wood products per person is double that of any other developed country.[18]
- The amount of standing timber in the South nearly doubled from 1952-2000. (from 60.5 to 105 million cubic feet for softwoods, from 88 to 152 million cubic feet for hardwoods)[22]
- The South produces more than double the timber of any other U.S. region.

U.S. Timber Harvest Share by Region, 1950 - 2002 [7]



Threats facing Southern forests

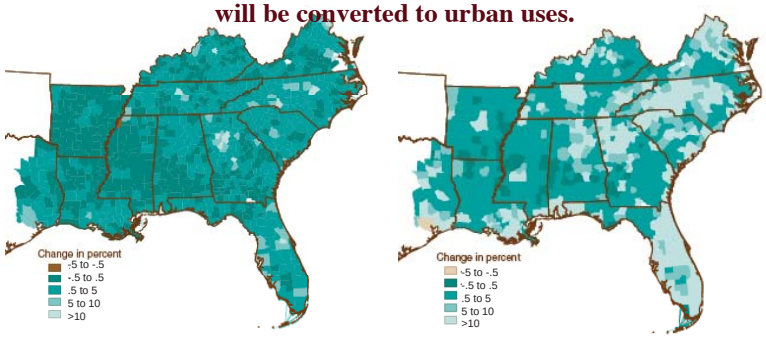
Urbanization[17]

Forests are a cornerstone of Southern culture and economy. However, Southern population is increasing and moving away from crowded cities in search of green spaces and larger homes. Areas that were once rural are being converted from agricultural and forest uses, and becoming part of the urban interface.

This urbanization and resulting division of forests into smaller parcels (parcelization) (also caused by changes in ownership) can have many negative impacts.

- decreases in native wildlife habitat
- loss of biodiversity
- increased encroachment of invasive species
- reductions in water quality and aquatic diversity
- decreases in timber production and accessibility
- greater loss of life and property from wildfires
- changes in recreational opportunities
- loss of aesthetic value
- reduction of timber management options
- reduction in types of recreation (and other activities dependent on large forested areas)
- decreased likelihood of forest management[25]

As the Southern population grows, forest land will be converted to urban uses.



Change in percent of urban land use for 1982-1992[9]

Projected change in percent of urban land use for 1992-2020[9]

Parcelization and ownership change

The majority of Southern forests, 89 percent, are privately owned, and family ownership is increasing while the size of land parcels held is decreasing.[3, 20] As ownership changes, land use and management decisions change.

- From 1980 to 2000, 28 million acres (13%) of Southern forest changed hands.[20]
- From 1996 to 2004, 18 million acres of Southern forest land passed out of industry ownership.[31]

Many forest-based companies are selling their land holdings to reduce debt, increase shareholder returns, and increase tax efficiency.[21] These lands are often purchased by timberland investment management organizations (TIMOs) and real estate investment trusts (REITs), but their usual 10 to 15 year length of investment may affect the type of management activities used.[21]

As land owners focus on monetizing real estate opportunities, further subdivision of land occurs as portions are sold for development, accelerating changes in land ownership and forest fragmentation.[21] The resulting smaller tracts of land (parcels) and higher population densities decrease the likelihood that any forest management will occur.

Changing in ownership and management are:

- decreasing forest tract size/ increasing parcelization.
- furthering urbanization of forested land.
- increasing the number of forest tracts managed for short-term returns only.
- decreasing the likelihood that any forest management will occur.

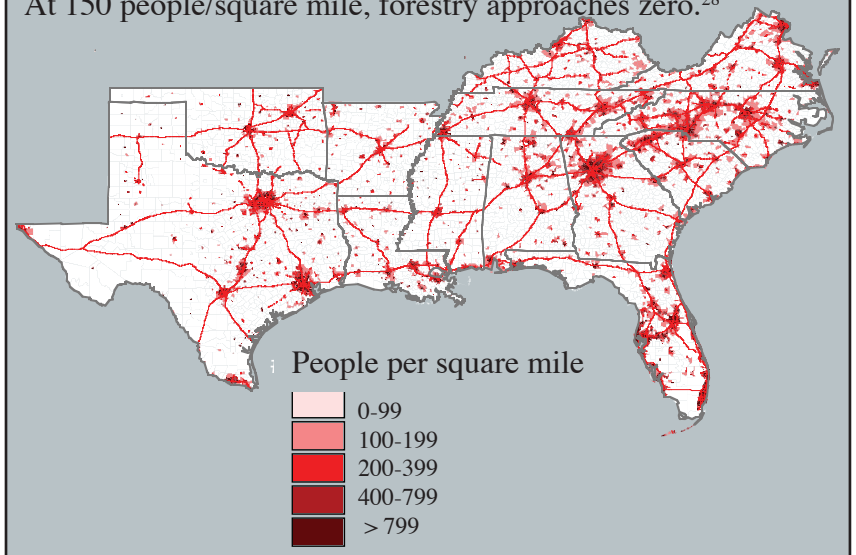
Demographic shifts

Projected shifts in population and demographic composition of the South will affect forests. Changes in management, allocation of governmental funding, forest recreation, and conversion of forest lands for urban uses are projected.

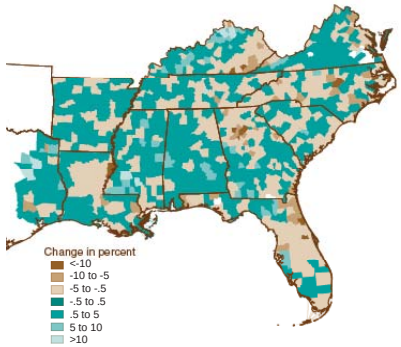
- By 2020, 21% of the population is expected to be over 65.[15]
- These baby-boomers will desire new and varied outdoor recreation opportunities, changing forest use patterns.[15]
- Federal funding available for government programs supporting U.S. forests may shrink as funds are re-allocated to support this aging population segment.[15]
- This population segment, and others will increase urban development.

At approximately 45 people/square mile, there is a 50:50 chance of practicing forestry.[28]

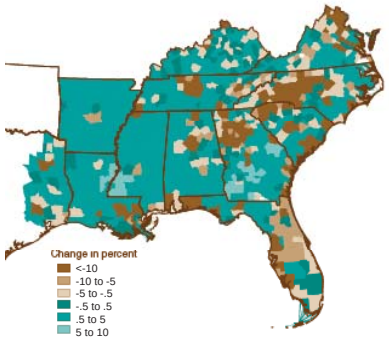
At 150 people/square mile, forestry approaches zero.[28]



Forest land is expected to decrease over the next 15 years.



Change in percent of forest land for 1982-1992[9]



Projected change in percent of forest land for 1992-2020[9]

The U.S. population is projected to move away from the crowded North and East, shifting toward the South and the West.[15] Additionally, the nation will become even more urban as the city populations grow.

- 80 percent of the population lived in urban areas in 2000.
  - These areas were growing at a rate of 2 million people per year, converting 3 million acres of rural land into urban use.[16]
- Forest Service researchers forecast an additional net loss of 23 million acres of forest land by 2050.[17]
- The average size of a U.S. home has grown by 40% since 1970, requiring both more wood products for building and increased conversion of land for dwelling space.[18]

Invasive species

Invasions of non-native plants, insects, and pathogens in Southern forests cause significant damage to forest ecosystems. Invasive species can affect forest health, wildlife populations, and economic value of the standing timber to list a few impacts.

- There are 33 plants or groups invading Southern forests.[30]
- Four non-native diseases will have or have had significant impacts on Southern forest ecosystems:
  - Chestnut blight (which decimated the American Chestnut)[3],
  - Beech bark disease (which will change the location of Beech in the South)[3],
  - Butternut canker (which may completely eliminate butternut from Southern forests)[3], and
  - Dogwood anthracnose (has led to widespread decline of Dogwoods).[3]
- Invasive insects also pose threats to Southern forests:
  - The Hemlock woolly adelgid kills both eastern and Carolina hemlock and is working its way down the Blue Ridge from the Shenandoah Valley.[3]
  - The gypsy moth, which defoliates trees, is moving from Virginia into North Carolina. It is expected to cover the South within the next 20 to 30 years.[3]

The Hemlock woolly adelgid has caused tremendous fatality of Hemlocks on the Blue Ridge.

Global competition[27]

The southeastern United States produces more timber than any other single country in the world. Still, global competitiveness is changing in the South in response to multiple forces. Chief among these is shifting demands for wood products around the world. One key long term indicator of competitiveness is the amount of production capacity in the region. In the paper sector, production capacity - i.e., equipment used to produce paper products - has declined since 1998 and the age of the remaining capacity is increasing on a yearly basis. This reflects a slowing of domestic investment in the paper sectors and an increase in production capacity in other parts of the globe.

Output of paper products has declined in the region and the export market for raw materials for paper production has evaporated over the past five years. Hardwood chip imports to the United States remain low, but recent import levels indicate that South American chips can be competitive with domestic supplies depending on prices.

Several end uses of wood products have moved to other parts of the globe. The most notable change has been the loss of domestic furniture manufacturers to Asia. Hardwood production for furniture may still be a domestic enterprise but increasingly the end use production will occur off shore.

In contrast, competitiveness with respect to lumber and panels (plywood and oriented strandboard) remains strong. Growth in OSB production from the South is anticipated over the next ten years as new mills come on line.

Managing the threats, discovering solutions

Southern forests truly are the heartbeat of the South. Providing revenues, employment opportunities, recreation, and essential raw materials, forests touch every aspect of life. Societal and demographic change, global competition, invasive species, land management shifts, urbanization, and parcelization threaten Southern forests. However, by acting now and working together the region's most valuable natural and renewable resource can be protected.

From providing lumber to build homes to offering recreational opportunities, forests are an important and sustainable part of Southern society.

Working together

Removing threats to Southern forests requires being (and staying) informed about issues facing forest resources. Individuals can help by:

- Providing information about forest issues and how they affect the livelihood of the South.
- Discussing these issues with peers and community members.
- Increasing individual awareness of current and pending legislation regarding forests and sharing this information with others.
- Working to generate support for policies encouraging forest sustainability.

Volunteers in training will teach future generations about the value of our forests.

Partnerships are working to sustain forests and their many resources for future generations.

A variety of research organizations (federal agencies, universities, research partnerships, industry, nongovernment agencies, and others) exist that can provide information about the region's forests and also assist with developing solutions to Southern forests' threats. Participating in and supporting these organizations can help ensure that timely solutions to threats facing forests are found.

Additionally, partnering among these organizations leads to collaborative solutions which are capable of having wider-reaching impacts because more individuals, communities, and organizations are involved.[15]

By becoming involved, staying informed, sharing this information, and making people into partners, a network can be established to ensure that forests will continue to provide for children and grandchildren.

Research and education

Both the values of Southern forests and the issues threatening their sustainability can be identified; however, knowledge of these values and threats needs to be carefully refined in order to more clearly identify problems and potential solutions.[3]

While this list is not an exhaustive list, some areas where further research is needed are:

- the impacts of expanding population on ecosystems[3];
- examination of historically successful environmental planning and policy;
- effective planning and policy for local, community, urban, state, and regional levels;
- how family landowners form values and make management decisions[3];
- refining methods for forecasting change in forest area, broad forest types, forest structure, and ecosystem function[3];
- forest productivity regarding ecological services, wildlife habitat, and timber production[3];
- understanding how threats to forests and changes within them affect the values derived from a forest ecosystem[3];
- restoration of degraded or converted forest land;
- forest research at landscape and regional scales[3];
- the role of fire in forest ecotypes and strategies to safely reintroduce fire into forest ecosystems[3];
- implications for wildlife and ecosystem functions within pine plantations[3]; and
- the development of new forest management approaches for wildland-urban interface areas[3].

Universities, state and federal agencies, nongovernmental organizations, industry and others are working to create effective partnerships. These partnerships will help deliver not only greater understanding but also develop effective solutions to protect this priceless resource.

In partnership, these groups strive to communicate knowledge of Southern forests, to increase awareness of environmental issues, to prepare society-ready professionals, and to educate future generations while delivering solutions for today.

To become a partner, request more information about Southern forests, or obtain a list of resources, contact:

Southern Forest Research Partnership, Inc.
P.O. Box 6938
Athens, GA 30604-6938
Phone: 706-542-3098
E-mail: lbiles@forestry.uga.edu

www.SFRPonline.org

Resources

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Image sources

Cover: Forest picture from RTI image archive, available - http://www.ruraltech.org/projects/image_archive/index.asp; Small pictures clockwise from top: Lumber in housing by David Briggs, available - http://www.ruraltech.org/projects/image_archive/index.asp; Stenciling by David Briggs, available - http://www.ruraltech.org/projects/image_archive/index.asp; Mountain bike from USDA Forest Service; Education group from USDA Forest Service; Deer, available - http://www.freenaturepictures.com; Pigeon Mountain Salamander by Georgia Department of Natural Resources, available - http://www.georgiaencyclopedia.org/nge/Article.jsp?id=h-940; Log truck by David Briggs, available - http://www.rurualtech.org/projects/image_archive/index.asp.

Page 1: Arkansas, 1941. USDA Forest Service Southern Research Station. Available: http://www.srs.fs.usda.gov/gallery/.

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Page 7: Clockwise from top: Pisgah National Forest from USDA Forest Service; Stenciling and Log truck both by David Briggs, available - http://www.ruraltech.org/projects/image_archive/index.asp; Forester by Larry Mason, available - http://www.ruraltech.org/projects/image_archive/index.asp.

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Page 15: Urbanization from the Virginia Department of Forestry.

Page 16: Blue Ridge Mountains from USDA Forest Service.

Page 18: Clockwise from top left: Lumber, Camping by Bill Lea, and Hiking by Bill Lea all from USDA Forest Service Southern Research Station, available - http://www.srs.fs.usda.gov/gallery/index.php?; Seedling from Texas Forest Service.

Page 19: Teachers in Training by Kris Irwin, Warnell School of Forestry, University of Georgia.

Page 20: Forest through trees, available - http://www.ruraltech.org/projects/image_archive/index.asp.

Page 22: Forester and Landowner from the Georgia Forestry Commission; Partnership from USDA Forest Service.

Broadening support for collaborative forest resources research that is economically viable, environmentally sound, and socially acceptable.

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