SUSTAINABLE FORESTRY IN MISSISSIPPI

Mississippi Forestry Association

SFI IMPLEMENTATION COMMITTEE

SM

MISSISSIPPI

SFI-01131

Guidance for Family Forests

Clean Air and Water ● Soil Conservation

Healthy and Abundant Wildlife and Fish Habitats

Outdoor Recreation

MISSISSIPPI STATE UNIVERSITY EXTENSION

SUSTAINABLE FORESTRY IN MISSISSIPPI

Guidance for Family Forests

Table of Contents

For more information see **Managing the Family Forest in Mississippi MSUES p2470**.

What is SFI?®

SFI Inc. is a fully independent, charitable organization dedicated to promoting sustainable forest management. We work with conservation groups, local communities, resource professionals, landowners, and countless other organizations and individuals who share our passion for responsible forest management.

Our Board of Directors represents environmental, social, and economic interests equally, and we address local needs through a unique grassroots network of SFI Implementation Committees. Member companies of the MS SFI Committee are listed below.

Our forest certification standard is based on principles that promote sustainable forest management, including measures to protect water quality, biodiversity, wildlife habitat, species at risk, and forests with exceptional conservation value.

The standard is used widely across North America, and has strong acceptance in the global marketplace so we can deliver a steady supply of third-party certified wood from well-managed forests. This is especially important because of the growing demand for green building and responsible paper purchasing at a time when only 10 percent of the world's forests are certified.

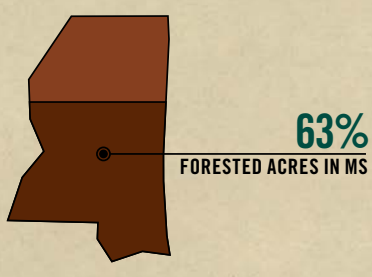
SFI Program Participants in Mississippi

Boise, Inc.
Campbell Global
Clearwater Paper Corp
Domtar Paper Company, LLC
Drax Biomass International, Inc.
Enviva Biomass
Forest Investment Associates
Georgia Pacific, LLC
GMO Threshold Timber Corp.
Green Diamond
Hancock Forest Management
Hankins, Inc.
Homan Industries
Hood Container of Louisiana
Hood Industries
Interfor
International Paper Company
Masonite Corporation
Molpus Timberlands Management, LLC
Canfor Southern Pine
Packaging Corporation of America
PotlatchDeltic Corporation
Rayonier Forest Products
Resolute Forest Products
Resource Management Service
Rutland Lumber Company
Shuqualak Lumber Company
Southeastern Timber Products
The Westervelt Company
Two Rivers Lumber Co.
TTG Forestry Services
West Fraser
WestRock
Weyerhaeuser Company
Winston Plywood and Veneer

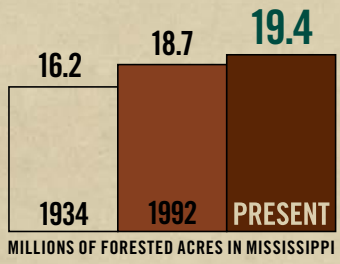
MISSISSIPPI FOREST FACTS

MSFORESTRY.NET

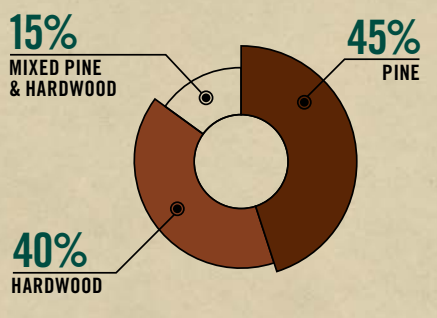
Acreage and Ownership



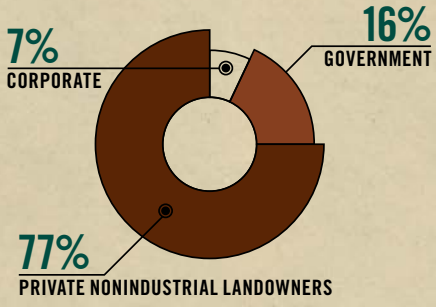
AREA OF COVERAGE



TIMELINE OF GROWTH



FOREST BY COVER TYPE



WHO OWNS MISSISSIPPI'S FORESTS

Employment and Wage Summary

FORESTRY AND FORESTRY-RELATED EMPLOYMENT:

5% ACCOUNTS FOR NEARLY OF ALL JOBS IN MISSISSIPPI

$12.8 BILLION FORESTRY AND FOREST PRODUCT INDUSTRY

ALMOST **70,000** TOTAL JOBS IN MISSISSIPPI

$3.1 BILLION WAGES PAID OUT

Timber is a vital part of Mississippi's economy.

- The value of timber harvesting in Mississippi has averaged in excess of $1 billion per year over the past 20 years.
- Mississippi forests provide recreational opportunities, encourage tourism, and create environmental benefits such as excellent water quality, cleaner air, improved wildlife habitat, and the storage of atmospheric carbon.
- Promoting sustainable forest management, reforestation after harvest, and keeping forests productive have strategic long-term benefits for Mississippi.

Thanks to MFA...

- State funded green buildings must equally recognize all forest certification programs.
- Mississippi was the first state in the nation to establish a reforestation tax credit, helping landowners with expenses associated with the stewardship of forest land and encouraging them to replant after harvest. Mississippi Forestry Association and its partners worked with the state legislature to increase the tax credit's lifetime limit from $10,000 to $75,000.

Mississippi Forest Facts is published by Mississippi Forestry Association, msforestry.net. Statistics were compiled by the Mississippi Forestry Commission and Mississippi State University.

MISSISSIPPI FORESTRY ASSOCIATION

The Mississippi Forestry Association is the only statewide non-profit organization dedicated to sustaining Mississippi's forests. Founded in 1938, MFA seeks to unify members of the forestry community. Members and staff work to accomplish the MFA mission through public affairs, communications, and education programs that promote conservation, development, and wise use of forestland and resources.

MFA educates the public on the social, ecological, and economic values of forestry and natural resources. The association also supports landowners by working closely with its extensive statewide network of County Forestry Associations. Through education and outreach tools, MFA ensures that future generations will have clean water, clean air, outdoor recreation, wildlife habitats, and a renewable wood supply for paper and wood products.

Sustainable Forestry Initiative®

Sustainable Forestry Initiative® (SFI) Inc. is one of the largest sustainable forestry certification programs in the world and is devoted to responsible forest management. The certification standard is based on principles that promote sustainable forest management, including measures to protect water quality, biodiversity, wildlife habitat, species at risk, and Forests with Exceptional Conservation Value.

MS SFI® Implementation Committee members practice sustainable forestry in Mississippi by growing and nurturing forests for:

- Clean air and water
- Soil conservation
- Healthy and abundant wildlife and fish habitats
- Outdoor recreation

www.sfiprogram.org

SFI Activities in Mississippi

Inconsistent Practices – Inconsistent practices are any activities conducted by SFI participants that are not consistent with SFI Standards. In Mississippi, an SFI Implementation Committee (SIC) has developed a confidential process to receive, respond to, and follow up on any complaints. To report an inconsistent practice, contact the MS-SIC at **662.325.7948 or 662.325.6852.**

Landowner Education – Seventy-five percent of the forest land in Mississippi is owned by private individuals and families. During and after the timber sales process, SFI program participants encourage private non-industrial landowners who sell timber to follow voluntary BMPs for the protection of water and site quality and replant their timberland. The MS-SIC also sponsors landowner education programs that are conducted by the Extension Forestry Program of Mississippi State University.

Logger Education – Mississippi's Professional Logging Manager (PLM) program presents workshops in Best Management Practices (BMPs) and harvest planning, communicating and working with the public, business management, and safety. Since the program began in 1996, more than 840 workshops have been held for more than 31,000 participants.

Public Outreach – There are several initiatives in place to increase public awareness of sustainable forestry. The MS-SIC supports projects that aim to educate the public and youth about the importance of forest industry in Mississippi and the benefits of sustainable forestry. A few of these projects include a Student Architecture Tour, Boy Scouts Forestry Merit Badge training, Teachers Conservation Workshops, Project Learning Tree, and support of 4-H and FFA forestry judging competitions.

Mississippi Forestry Foundation

The *Mississippi Forestry Foundation* serves as the charitable arm of MFA by supporting educational, literary, scientific, and charitable goals that benefit Mississippians.

- Teachers Conservation Workshops
- MSU Forest Resources Student Scholarships
- Project Learning Tree
- Mississippi Children's Museum
- Mississippi Museum of Natural Science
- Forest Arson Reward

The total value of Mississippi's timber harvest per year is over $1 billion. Forestry accounts for 8.5% of all jobs in Mississippi. Teaching our youth about the forestry industry is essential to our state's future.

SFI IMPLEMENTATION COMMITTEE
MISSISSIPPI
SFI-01131

MFF
Mississippi Forestry Foundation

MFA
620 N. State Street, Suite 201
Jackson, MS 39202-3398
601.354.4936
MSFORESTRY.NET

SFI - Best Management Practices

Best Management Practices, commonly referred to as BMPs, are a voluntary set of guidelines developed to protect water quality from non-point source (NPS) pollution generated from forestry activities. NPS pollution is any pollutant that cannot be traced back to a specific source, like an pipe. The most common type of NPS pollution associated with forestry is sediment. When silvicultural activities expose bare soil, there is a chance that rain will erode these soils and carry that sediment to a water body. Should this happen, it is possible that the landowner will be in violation of the Federal Clean Water Act. BMPs are designed to minimize or prevent sediment from reaching water. The member companies of the Sustainable Forestry Initiative in MS abide by and advocate the use of BMPs to protect water quality.

By far, the most sediment from forestry occurs as a result of the road system. Most problems can be addressed using water diversion structures. These are structures built into the road that divert water off the road and into vegetation. Vegetation will slow the water down allowing sediment to filter out. Turn-out ditches and broad based dips are examples of diversion structures that are used on permanent roads. Water bars (photo left) are better suited to temporary roads. Foresters and loggers will use a combination of water diversion structures throughout an operation to protect roads and water quality.

Stream crossings are another major source of sediment. Therefore, when possible, stream crossings should be avoided. But when crossings are needed, pollution can be minimized. Pick spots with solid approaches to the stream and use temporary bridging to cross (photo below). Culverts can be used as well as hollow logs, but these should be removed after use. Be sure to also pull out all soil to protect the stream.

The best method to protect exposed soil is to cover it with vegetation as soon as possible. Therefore seed with grass all roads, landings, stream crossings and all diversion structures after use. Once established, grass will guard the soil surface and the root system will help keep soil in place.

For more information contact the Mississippi Forestry Commission for a copy of the Mississippi BMP Manual.

Streamside Management Zones and Forest Landowners

Protecting water quality in Mississippi is everyone's responsibility. As a forest landowner, you can make sure any activity, such as harvesting your trees, does not negatively affect the quality of Mississippi's water supply.

Forestry experts throughout the state have developed strategies and management practices to reduce the amount of nonpoint source pollution from forest management. These practices are called best management practices (BMPs).

Nonpoint source pollution (NPS) can take many forms and often cannot be traced to one source or point. Increased sediment, organic matter, and temperature are just a few possible forms of NPS pollution. Landowners, foresters, and loggers can use streamside management zones—areas of vegetation along streams and other bodies of water—to protect against NPS pollution caused by land management practices.

Aerial view of streamside management zones after a harvest.

A well-managed perennial stream has streamside management zones that contain trees for shade and underbrush for sediment control.

This stream is clogged with sediment because of poor streamside management.

How Do Streamside Management Zones Work?

Effective streamside management zones have trees, brush, grass, and groundcover that help stabilize the soil next to a stream. These trees, brush, grass, or groundcovers slow surface runoff and serve as filters. The streamside management zone lets NPS pollution settle out before reaching the stream.

Another benefit of streamside management zones is the shade they provide. Aquatic plants and animals have adapted to the "natural" temperature of a stream. Over time, vegetation along each stream has regulated this temperature by restricting the amount of sunlight reaching the stream. Forestry and agricultural practices that expose the stream to above-average amounts of sunlight raise the average temperature of the stream. The increased temperature can affect plants and animals that rely on the stream.

Management

Using streamside management zones does not mean you cannot harvest any of the marketable timber along your streams. The stream type tells you the amount of harvest that is best within these areas. Mississippi has two basic categories of streams: perennial and intermittent.

Perennial streams flow all or most of the year and support many organisms. NPS pollution is most damaging to this stream type.

Intermittent streams need less protection than perennial streams. Water flows only part of the year, so regulating temperature is not as critical.

Each type of stream has a unique set of management measures. You may harvest some or all of the timber within a streamside management zone if you follow certain guidelines. These guidelines are in *Mississippi's Best Management Practices Handbook*, available from the Mississippi Forestry Commission and the Mississippi State University Extension Service.

Drains

Drains, also known as ephemeral streams, are areas that have water only after a storm, and they are not classified as streams. But protection is still important. Forest management activities within drains are limited. The *Mississippi Best Management Practices Handbook* lists important restrictions that ensure storm flow doesn't contaminate streams.

Why Should You Worry?

Even though you don't have to have streamside management zones, you do have to protect water quality. Federal and state laws have been enacted to protect water quality. The Clean Water Act is a federal law enforced by the Environmental Protection Agency. Mississippi enacted the Air and Water Pollution Control Law, which is monitored by the Department of Environmental Quality. Anyone polluting water may be fined up to $25,000 per day and be required to pay for all cleanup. In Mississippi, that responsibility falls to the timber owner.

Proper use of BMPs helps landowners, foresters, and loggers avoid breaking these laws. Working together can help define management objectives and reduce accidental violations of water-quality laws.

Shaded stream

Perennial stream

Intermittent stream

Drain or ephemeral stream

If you need assistance, please contact any of the following organizations:

Mississippi State University Extension Service Department of Forestry
http://msucares.com/forestry/index.html

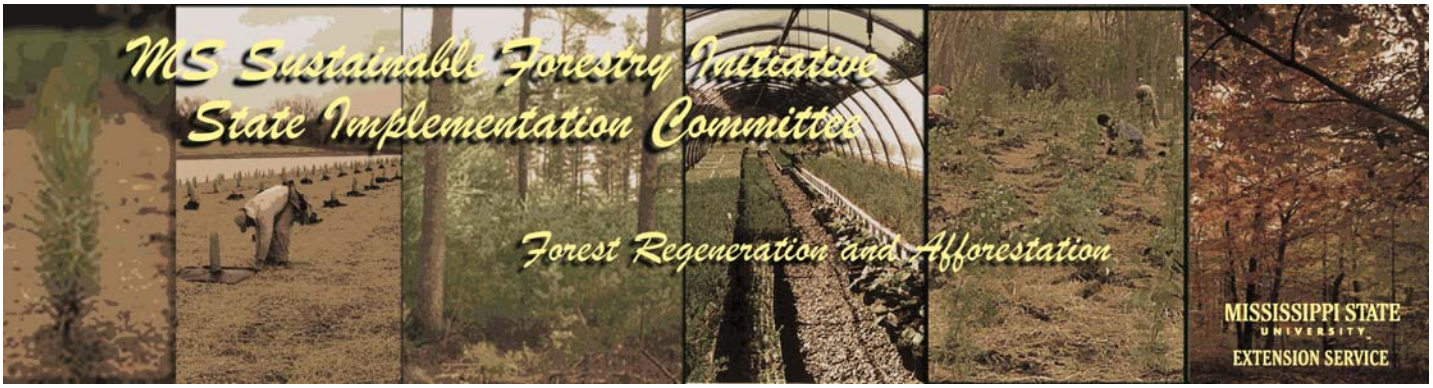
Mississippi Professional Logging Manager Program
(662) 617-0216 Professional Logging Manager Coordinator

Mississippi Department of Environmental Quality
(888) 786-0661 Complaint Hot-line

Mississippi Forestry Commission
(601) 927-8484 Forest Management Chief

Publication 2233 (POD-03-16)

By **John B. Auel**, Assistant Extension Professor,
Forestry, Retired



SFI

Forest Regeneration and Afforestation

The Sustainable Forestry Initiative (SFI) is a comprehensive system of principles, objectives, and performance measures that integrates the perpetual growing and harvesting of trees which protects wildlife, soil, and water quality. SFI member companies are committed to promoting sustainable forestry on all forestland, both private and industrial. However, practicing sustainable forestry goes beyond just timber production. It includes maintaining water quality, wildlife habitat, endangered species, and other important values.

In planning for the future, you should consider both reforestation and afforestation as a means to enhance the productivity of your land. Reforestation is the restocking of a forest after harvesting or a loss of trees through wildfire or other casualty by planting or natural seeding. Afforestation is the establishment of a forest or stand in an area where the preceding vegetation or land use was not forest (e.g., pasture, crop land, etc.). Over the years if your objectives for you land change from agriculture or other activities, think about planting these lands in trees to improve your future income, decrease the potential for erosion, and to improve wildlife habitat and biodiversity.

Prompt reforestation or afforestation is critical to practicing sustainable forestry and ensures that harvesting impacts on all forest values are managed to obtain the maximum benefits possible. SFI guidelines require member companies to reforest harvested areas within 2 years if the regeneration method is artificial and within 5 years if the method is natural regeneration.

There is no single best forest regeneration technique. Your forest management objectives can likely be met utilizing both natural and artificial regeneration methods. Your choice for regeneration depends upon the species present, as well as condition of the stand. It is very important, however, that you plan ahead for forest regeneration and make sure that your regeneration plans fit into the SFI time line mentioned above. If you have questions, you should contact a professional forester to help you plan effective forest regeneration strategies to achieve your management goals.

SFI member companies have professional foresters on staff to help you plan and promptly regenerate your land following harvesting. In addition, there are numerous professional consulting foresters, Mississippi Forestry Commission foresters, and MSU Extension foresters that can provide assistance as well.

You can find more information on forest regeneration at:
http://msucares.com/pubs/publications/p2470.pdf or www.sfiprogram.org

SFI – Forest Aesthetics

Aesthetics is simply the way that management practices look, whether it is logging, road building, or site preparation. Forestry in general is under increasing scrutiny from the public. We are dependent on a positive perception by the public. If the public thinks a practice is bad for the environment, it is. It does not matter if the practice is scientifically sound. Managing for visual quality is a way for us to improve the looks of operational areas which in turn will improve the perception the public has of our practices. Sustainable Forestry Initiative (SFI) member companies are committed to conducting environmentally and aesthetically sound management practices on company owned and private lands.

Like all aspects of forestry, it is necessary to plan for aesthetics. This is best accomplished during harvest planning. Achieving good forest visual quality requires input from foresters, landowners and loggers.

Some of the practices we already use improve visual quality. Streamside management zones for example, not only protect water resources but provide a visual break in a clear-cut making the view less disturbing to some. Seeding disturbed areas indicates concern for water quality, but also improves the looks of a harvested area.

Limiting clearcut size to 120 acres or less and making harvests irregularly shaped will not only help improve the aesthetics but also wildlife habitat. Practices solely to improve visual quality, like a clean-cut are also useful. Traditional clear-cuts only remove merchantable timber and can leave large numbers of whips and snags. This unsightly mess can support a perception that forestry is destructive. But a clean-cut, or a complete dropping of all trees makes the site look ready for reforestation and lessens negative visual effects.

The entrances to a logging job is what the public is most likely to see. As such, entrances are the most problematic. The public will react negatively to mud on the highway and rutted entrances to a logging site. Therefore, keep the entrance clean and roads clear of mud. If harvesting occurs behind an aesthetic buffer or the tract is off the highway, angle the haul road to shield the landing from the highway. When cutting along the highway, keep slash and debris away from the roadside. Things as simple as not leaving garbage on site can go also long way to improve public opinion of forest management.

Signs should be used as well. Signs on either side of the entrance will let the public know there is a logging job up ahead. This is important for safety reasons, but also lets the people know that you care about your forest.

Basically, visual quality management uses common sense practices that improve the aesthetics of management activity. Treat every tract as your personal property and manage it how you would want your property cared for.

Visual Quality Management Before and After a Timber Sale

The appearance of property following a timber harvesting operation can be a major concern to landowners. Log landings and skid roads can be ugly. Log landings are likely to have large areas of bare ground and piles of debris along the edges. Skid roads will also have bare ground with possible ruts and slash (tops and limbs) which make walking difficult. Huge piles of pine and hardwood slash left scattered in the woods can be another eyesore. Damaged trees along skid roads further detract from the visual appearance of the forest.

Fortunately, all of these problems can be alleviated by careful planning and supervision of the harvest operation, plus some remedial measures after the harvest. For example, landings can be located where debris can be easily buried or burned. A skid road network can be located on the ridge and other stable areas to avoid rutting. Access to wet areas can be limited to times of the year when the ground is dry. The sale contract can require that tops be crushed to within 2 or 3 feet off the ground. Trees that are likely to be damaged can be marked as part of the sale.

After harvest, the landings and skid roads can be seeded to grass and other groundcovers to soften their appearance and to prevent erosion. Slash can be removed from the skid roads. Parts of skid roads that were rutted can be smoothed out with a bulldozer. Most standard timber sale contracts will require some or all of the above measures to preserve the appearance of the forest. However, careful planning of the details of their implementation can lead to a better final appearance and to less confusion about expectations and execution.

Locating the Log Landing

To improve visual quality, move the log landing a 100 feet or more away from roads and other visually sensitive areas. Place the landing on top of a ridgetop or the backside of a hill to partially block its view. Put a slight curve in the haul road to block any direct line of sight from major roads. Location of landings and haul roads are usually negotiated with the professional logging contractor during a planning meeting before harvesting begins.

Reseeding Log Landings and Skid Roads

After a timber sale, most of the property will be covered with a layer of crushed slash and duff (leaves and other organic matter). This organic layer protects and stabilizes the soil. Natural seed found in the duff germinates rapidly and this natural vegetation provides another layer of protection for soil. But log landings and skid roads are a different story. These areas are heavily compacted and bare which makes these areas very susceptible to erosion, especially if there is a slope.

Risk of erosion can be reduced and visual appearance can be softened by reseeding these susceptible sites immediately after completion of the harvest. Also, the seeding of certain plant species will provide food for wildlife. Contact your local MSU Extension office for recommended ground covers, site preparation, seeding techniques, and lime-fertilizer recommendations to improve establishment. A light scratching of the soil and the sowing of seeds just before a rain storm usually improves germination.

Hardwood and Softwood Debris Left at Log Landings

Debris are the pieces of stems and tree tops left at the landing. This debris is often left because it is crooked, forked or otherwise unsuited for making logs. Usually piles of debris are pushed to the edge of the log landing during the harvesting operation. Be clear on what to do with the debris before the

logging contractor leaves the property. Left alone, these piles of debris can degrade the aesthetic appearance of the property. There are several effective methods listed below for debris disposal. Choose the method of debris disposal or combination of methods that will meet your management goals and improve visual quality.

DEBRIS DISPOSAL METHOD	*ADVANTAGES*	*DISADVANTAGES*
Push to the edge of landing	Low cost, habitat for wildlife, no special equipment	Visually unattractive
Push into adjacent woods flat to the ground	Low cost, habitat for wildlife, no special equipment	Somewhat visually unattractive
Skid back into the woods	Moderate cost, no special equipment	Debris still visible in woods
Bury in depression near landing	Moderate cost	May create a liability for future house site
Pile and burn at landing	Eliminates nearly all material	Expensive, some large pieces may not burn
Truck off landing	Eliminates all material	Expensive, potential problems obtaining dump permit

Paying for Improvements

There are two common ways visual quality improvements are arranged and paid. The first is to include visual improvements in the timber sale bid prospectus and sale contract. This obligates the timber buyer and professional logging contractor to do the work. The cost of work comes out of the stumpage price. The buyer decides the timing and details of execution, which may not be the same as the landowner. In the second method a landowner sets aside money from the timber sale to hire a vendor to do the work. Visual quality improvements are timely and executed better because the vendor works directly with landowner. But this method requires more time from the landowner.

Conclusions

The overall appearance of timber harvesting operations is a major concern to many forest landowners. The movement of heavy machinery across land is likely to cause some damage. But with proper planning, supervision, and remedial action, the aesthetic quality of harvested sites can be maintained. Skid road location and design can minimize rutting and damage to sensitive sites. Lopping tree tops and removing damaged trees along skid roads increases the appearance of openness and beauty. The removal of debris from log landings transforms these areas to important habitat for many wildlife species. These practices can be augmented by reseeding the log landing and skid roads after harvest. Seeding produces new vegetation cover that reduces soil erosion and provides wildlife habitat, while improving the visual quality of the area.

Source of Information:

Davies, Karl and Cynthia Wood. 1995. Aesthetic Improvements During and After Timber Harvesting Operations http://www.daviesand.com/Papers/Aesthetics/Harvesting/index.html

SFI

Wildlife Management in Mississippi

Since 64% of the land area in Mississippi is occupied by forests, management of forestlands plays a significant role in the health and abundance of many wildlife populations. Member companies of the Sustainable Forestry Initiative (SFI) are committed to the development and implementation of science-based measures to enhance stand level, and when possible, landscape level wildlife habitat elements (snags, mast trees, den trees, etc.).

Habitat needs are quite different among species. For example, a single tree may provide food and cover for insect species. But many acres of forest are needed for large mammals like white-tailed deer and black bear. Each forest type: pine, upland hardwood, mixed pine/hardwood, and bottomland hardwood provide special habitat for many wildlife species. The more diverse forest types, densities and ages there are in a given area, the greater diversity of wildlife species that will occupy that area.

Forest management can therefore affect the composition and abundance of wildlife species. Some species are linked to a specific forest type. For example, bobwhite quail and eastern bluebirds are only found in sparsely stocked, open stands that are commonly burned. Other species are not so picky and utilize a diverse array of forest types and stand ages. Examples are gray squirrel and white-tailed deer that are not very sensitive to varying levels of tree density. Furthermore, one can expect wildlife species composition to change as a forest ages. For example, a three year old pine plantation may be well suited for a particular wildlife species but by age twenty the plantation can no longer support that species.

Remember, managing a property for timber production does not exclude management for wildlife. Wildlife biologists from the MS Department of Wildlife, Fisheries and Parks are available to assist you with how to best manage a timber stand for a particular wildlife species. The MSU Extension Wildlife and Fisheries and Forestry faculty can provide assistance as well. In addition, you can also contact your SFI member company forester for advice. For more information on wildlife: http://msucares.com/wildfish/wildlife/index.html

SFI - Imperiled and Endangered Plant and Wildlife Species

Member companies of the Sustainable Forestry Initiative (SFI) are committed to protecting and managing the quality and distribution of habitats and species. Of particular interest, are those species and communities considered to be globally-critically imperiled (G1) and globally imperiled (G2). "G1" species and communities are defined as being at very high risk of extinction due to extreme rarity (often 5 or fewer populations), very steep declines, or other factors. "G2" species are at a high risk of extinction due to very restricted ranges, few populations (often 20 or fewer), steep declines, or other factors.

There are three plant, 28 wildlife species, and two communities classified as G1 or G2 in Mississippi, along with 41 additional species listed as federally threatened or endangered. SFI member companies are committed to working with landowners, professional foresters, state and federal agencies, and other stakeholders to provide outreach opportunities to family forest owners on the conservation of biodiversity for all imperiled and threatened species. Examples of such species and communities in Mississippi are listed below.

G1 and G2 Plant Species in Mississippi:
There are three G1 and G2 plant species in Mississippi. Pondberry (*Lindera melissifolia*) is a G2 species naturally occurring in Arkansas, Missouri, and Mississippi and from North Carolina to Georgia. Pondberry inhabits pond margins, swampy depressions, sand sinks, and seasonally flooded wetlands. Pondberry does not have any particular aesthetic value, nor are any horticultural, medicinal, or other economic uses known. However, all steps for protecting the habitat of Pondberry are taken into account, including following Mississippi's Wetlands Best Management Practices.

G1 and G2 Wildlife Species in Mississippi:
There are 28 wildlife species classified as G1 or G2 in Mississippi. Most of these live in or near water. These areas are already protected by Mississippi's Best Management Practices. One G2 species which does not live in or near the water is the Indiana entire bat (*Myotis sodalis*). The Indiana entire bat is primarily cave dwelling. Disturbances while roosting in caves, along with people entering caves and blocking cave entrances are cited as main reasons for their decline. Mississippi SFI member companies are dedicated to protecting the habitat of Indiana entire bats, as well as all other G1 and G2 wildlife species habitats.

G1 and G2 Communities in Mississippi:
Communities can be defined as an assemblage of plants and animals living together and occupying a given area. In Mississippi, there are two G1 communities; the Blackland prairie of eastern Mississippi and what is collectively called the Delta Streams. The largest threats to these two communities are agriculture,

aquaculture, and urban development. Even though these areas have few productive forests on them, SFI member companies are committed to protecting these communities.

Federally Endangered Species:
There are 45 animals and 4 plant species considered by the federal government to be threatened or endangered. It is important that these threatened and endangered plants, animals, and communities be protected as much as possible. An example of a federally threatened species found in Mississippi is the Louisiana black bear (*Ursus americanus luteolus*). Federally threatened and endangered species hold many cultural, ecological, esthetic, medicinal and recreational values. Imperiled and endangered species need to be protected and saved so that future generations can experience their presence and value.

What does this mean for the Mississippi SFI-SIC?
The member companies of SFI are committed to working with agencies, landowners, and other groups to manage the quality and distribution of wildlife and plant habitats while contributing to the conservation of biological diversity in forest stands and across landscapes. With respect to federally threatened and endangered species, it is ultimately the obligation of private landowners to avoid harming their habitat. Member companies are in full compliance with this requirement.

More information on G1, G2 and federally endangered species can be obtained from any SFI member company. In addition, the following sites provide useful information:

The Mississippi Museum of Natural Science: www.mdwfp.com/museum/html/research (601) 354-7727
Mississippi Department of Wildlife, Fisheries, and Parks: www.mdwfp.com, (601) 432-2400
US Fish and Wildlife Service: www.fws.gov/endangered/
National Wildlife Federation: www.nwf.org
NatureServe: www.natureserve.org

SFI

Protection and Conservation of Biological Diversity and Forests with Exceptional Conservation Value

Introduction:

Biodiversity can be defined as the variety, and abundance of plants, animals, and other living organisms present, as well as their interaction with each other. Among other benefits, maintaining biological diversity is another means of enhancing wildlife habitats on your land. The Sustainable Forestry Initiative (SFI) standard defines biological diversity or biodiversity as: "The variety and abundance of life forms, processes, functions, and structures of plants, animals and other living organisms, including the relative complexity of species, communities, gene pools and ecosystems at spatial scales that range from local to regional to global."

While many believe that biodiversity is most effectively addressed at the watershed or larger level, there are opportunities to manage and contribute to biodiversity at all levels; stand, forest, watershed, landscape and global. Landowners can influence compositional and structural diversity at the stand and forest levels through their management choices. Landowners can ensure biodiversity by maintaining:

- A mix of habitat and cover types- both terrestrial and aquatic.
- A mix of species, both flora and fauna.
- A distribution of age classes within and between stands.
- Forests with Exceptional Conservation Value (FECV).
- Special sites and other unique stand features such as snags, low-value trees, seeps, etc.

SFI member companies are committed to the management, quality, and distribution of wildlife habitats on all forests. In addition, member companies will develop and implement measures at the stand and landscape levels that contribute to the conservation of biological diversity. They will promote habitat diversity and the conservation of forest plants and animals, including aquatic species. More information on the conservation of biological diversity can be found at:

www.fwrc.msstate.edu or www.sfiprogram.org

SFI

Management of Harvest Residue (Forest Biomass Utilization)

As the demand for renewable energy sources continues to grow, landowners should weigh the benefits and costs of bioenergy production from their forestland. One such consideration is selling harvest residue following a traditional sawtimber/pulpwood sale. With careful planning, and by following Mississippi Best Management Practices (BMPs), this can be accomplished using the same landing and road systems with very little impact to the site. Additionally, there should be little impact on site productivity and nutrient levels as stumps, leaves and small limbs (the high-nutrient portions of trees), will remain. In addition, this type of harvest will occur infrequently during the life of your stand, which will also minimize any effects.

Benefits of biomass utilization following harvests or through other operations include:

- Reduction of dependency on fossil fuels while satisfying growing energy needs
- Creation of jobs and business opportunities
- Additional income for landowners from biomass sales
- Visual quality is improved when whips and snags are removed creating a clean-cut
- Decreased site preparation costs as harvested sites are left cleaner
- Opportunities for low to no cost timber stand improvement
- Increased forest health by reducing threats and/or restoration costs from fire, disease/pest infestations, invasive species and storm damage

Landowners should work closely with their forest resource professionals to ensure that the type of harvest they are using is right for their property, and that their activities follow BMP guidelines. Contact a member company of the Sustainable Forestry Initiative for help in determining if selling harvest residue is a viable option in your area.

More information on forest biomass utilization can be found at the Mississippi State University Wood Utilization Research Center Website at: http://www.fwrc.msstate.edu/WUR/
or www.sfiprogram.org

SFI - Control of Invasive Exotic Plants, Animals, Insects and Diseases

Invasive exotic plants and animals are those that are found outside their native range. They can potentially have negative ecological, financial and social impacts. Invasive species pose a threat to the survival and reproduction of native species and can decrease forest productivity, complicate forest management and degrade biodiversity, wildlife habitat and the visual value of your forest. The member companies of the Sustainable Forestry Initiative (SFI) are committed to the control of invasive species in Mississippi's forests.

Invasive species are able to thrive in geographic and climatic conditions similar to those of their native country. But here they do not have any natural predators, parasites, or diseases. That means people are the only method of effective control. There are hundreds, maybe even thousands of invasive species across the U.S. Some of the more common invasive **Plants** are: cogongrass, kudzu, Japanese climbing fern, tallowtree or popcorn tree, and privets. Invasive **Insects/Animals** include gypsy moth, emerald ash borer, sirex woodwasp, red bay ambrosia beetle, and feral hogs. Invasive **Microorganisms** include sudden oak death, Dutch elm disease, American chestnut blight, and laurel wilt.

Control Measures

An integrated pest management program is the best approach to control invasive species and involves the following:

- Prevent introduction of invasives
- Regular surveillance, early detection and rapid response
- Eradication of invasives using various control measures over several years if necessary
- Re-establishing native plants for ecosystem rehabilitation and restoration
- Using resource professionals

Preventing the introduction of non-native species is by far the most effective and economical control measure. Therefore you should have an effective, ongoing surveillance program in place. If an invasive species should get established, the second most important control measure is a rapid response to prevent spread and eradicate the unwelcome competitor. Depending on the invasive species and particular circumstances, control measures can involve one or a combination of methods—mechanical (e.g., hand-picking, traps, tillage), biological (e.g., promoting beneficial predators), chemical (e.g., pesticides, herbicides). Following this, it may be beneficial to establish and/or release fast-growing native plants that can out-compete any surviving invasive plants while preventing soil erosion.

Your local county Extension Agent, MSU or service forester, MS Forestry Commission can help you identify and develop a control strategy for non-native invasive species on your property. You can find additional information at: www.cfr.msstate.edu, www.msucares.com, www.foresthealth.msstate.edu, www.mfc.ms.gov, or www.sfiprogram.org

SFI - Protecting Special Sites

Sustainable Forestry Initiative (SFI) member companies are committed to managing special sites that are ecologically, geologically, or culturally important in a manner that takes into account their unique qualities. These preserved areas are included in forest management plans to protect their value for future generations. Member companies also encourage private landowners to do the same.

Special Sites

Mississippi is rich with historic sites, from Indian burial mounds to Civil War battlefields to Civil Rights memorials. Most of these sites are easy to identify and measures have already been taken to protect them. There potentially exists, however, numerous sites that have yet to be identified. It is the job of landowners to ensure that if an historic site is found on their land or land they are managing, steps are taken to protect the area.

Many of these historically significant sites are also culturally significant. They provide valuable information on Mississippi's past and important links for living ancestors of those cultures to their heritage. These sites support many native animals and plants that were essential to those cultures that used them for food and medicine. Destruction of these sites would deny Mississippi this important resource for identifying with the past. Forestry professionals can and do manage these types of areas for both timber production and preservation.

Ecologically and geologically unique sites also exist in abundance in Mississippi. These range from wetland sites to longleaf pine stands to the loess bluffs along the Mississippi River. Improper management and exploitation of these resources can alter or damage their unique qualities. SFI member companies have been and will continue to be stewards of these areas to ensure all future generations can enjoy the benefits these areas provide. Foresters have also been instrumental in restoring some of these areas that were altered in the past. New longleaf stands and wetland reclamation are just two of the many practices in which forest industry has taken the lead.

Contact Information

If you have questions about special sites in Mississippi, you can contact the Mississippi Department of Wildlife Fisheries and Parks (MDWFP). The MDWFP is responsible for the Natural Heritage Inventory which catalogues these sites. Their web address is http://www.mdwfp.com/seek-study/heritage-program.aspx

Reducing wildfire risk

The key message for landowners is to respect fire. The two main causes of wildfires in Mississippi are incendiary/arson and debris burning. Back in 2013 the Mississippi Forestry Commission responded to 680 incendiary/arson fires that burned 9,125 acres and 584 debris fires that escaped and burned 5,678 acres. These wildfires threatened 1,384 homes, destroyed 20 and damaged 4. Volunteer fire departments responded to a similar number of fires.

Some the most effective steps landowners can take to prevent wildfire on their forested property are:

1) **Prescribed burns.** A planned and controlled fire on a cool, calm day can remove hazardous fuels without damage. The forest is then protected on the next dry, hot, windy day because there is no fuel to carry a fire. To schedule a prescribed burn contact your forester or the Mississippi Forestry Commission Service (MFC) Foresters (www.mfc.ms.gov or 1-833-632-3473).

2) **Install firebreaks**. Construct firebreaks around the perimeter to prevent fires from entering your property. Add interior firebreaks to provide additional protection to young vulnerable trees and access for firefighting equipment. Remember, access is only needed for dozers and plows to fight wildfires not fire trucks.

3) **Work around the edge.** Pay careful attention to hazardous fuels along roadways and entrances where arson could be problem.

4) **Control access to your property.** Install gates or other barriers to prevent trespassing. Put up signage with contact information just in case someone sees a problem.

To protect buildings located on forested property create a 30-foot defensible space around each building. The idea is to clear flammable vegetation up to 30 feet away. Some trees can be left as long as their branches are 10 feet away from other trees. Trim shrubs low and prune lower tree branches up high to keep fuels apart and unable to light each other. Water the lawn to keep it green and mowed short (3 inches or less). Remove debris (leaves, needles, branches) on or near buildings. For other fire prevention ideas contact MFC.