MISSISSIPPI'S EMERGING FOREST THREATS

Healthy Forests Management Options

WHY DOES IT MATTER TO ME?

It is important for private landowners to prepare for the likelihood of increasing threats to their forestlands. Private forests make up the largest holdings of forestlands in the southeastern U.S. These properties collectively will be crucial in protecting the overall health of our landscape. Management that takes most current science into account will enable landowners to better protect their land and resources and to contribute positively to the conservation and productivity of Mississippi's forestlands.

USDA Southeast Climate Hub
U.S. DEPARTMENT OF AGRICULTURE

The mission of the Southeast Regional Climate Hub is to develop and deliver science-based, region-specific information and technologies, with USDA agencies and partners, to agricultural and natural resource managers that enable climate-informed decision-making, and to provide access to assistance to implement those decisions. This is in alignment with the USDA mission to provide leadership on food, agriculture, natural resources, rural development, nutrition, and related issues based on sound public policy, the best available science, and efficient management.

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EMERGING THREATS & HEALTHY FOREST MANAGEMENT

Introduction - Nearly 63% of Mississippi is forested totaling 19.2 million acres. These forests are predominately hardwood made up of species like sweetgum, water oak, red maple, and winged elm; however, loblolly and other minor pines make up 40% of the total forest composition. Total direct forest contributions to the economy is around $2 billion a year and 72% of Mississippi's forests are privately owned. The ecosystem services provided by these southern forests such as flood protection, wildlife habitat, and improvement of water and air quality are invaluable to the state. However, threats to these benefits exist and major damages are recorded every year. Factors such as hurricane activity, invasive species, wildfires, and disease impact Mississippi's forests. Adaptation options for landowners exist to help mi□gate these damages while improving the resiliency of forest stands.

Threats from Invasive Species/ Pests/ Disease - Invasive species (cogongrass, kudzu, etc.), pests (southern pine beetle, red bay ambrosia beetle, etc.) and disease (laurel wilt disease, fusiform rust, brown spot needle blight, etc.) cause millions of dollars in forest damage each year in Mississippi and can impact forest water yield, water quality, and biodiversity. Increasingly longer growing seasons associated with climate change can extend the tree growing season, but also extend the outbreak season. Additionally, invasive plants may out-compete native or planted species for resources during periods of drought. They also may lead to habitat destruction and loss of aesthetic value in recreational areas. Management practices to control these threats, including prescribed burning, thinning, and proper herbicide or pesticide application. Early detection is critical to finding outbreak areas before the problem can multiply and spread.

Threats from Wildfire - Increased fuel loads and more frequent droughts could increase wildfire frequency and intensity within the southeast, with Mississippi suffering approximately 21,000 acres per year in forest damage. Prescribing burns to reduce fuel loads and periodic thinning remain essential techniques. However, timing and control must be appropriate during periods of drought. Salvage logging a□er extreme weather events or significant timber losses reduces fuel loads. Incorporating fire-resistant species may also mi□gate wildfire risks.

Threats from Drought - Increasing drought frequency and extreme heat are responsible for millions in damage to forest stands and ecosystems each year in Mississippi while also impacting water quantity and quality and biodiversity. Heat and water stress can leave stands more vulnerable to pests and diseases and may result in minor to substantial dieback. Drought conditions also lead to increased wildfire potential. Adaptation options include thinning, incorporation of drought-resistant species, and using prescribed burns. Monitoring for signs of disease or pest activity will provide an early advantage to landowners for fighting outbreaks.

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Threats from Flooding - Extreme precipitation events from natural disasters can destroy coastal and inland forests. Flooding is a common disturbance event within the southeast U.S. due to the frequency of extreme rainfall events. Floods impact forest productivity by altering soil conditions and exposing or burying root systems. Management practices to mi□gate damages include post-disturbance revegetation, plan□ng flood-tolerant tree species, monitoring damaged or susceptible trees for outbreaks or fungal growth, and the implementing proper erosion control structures where needed.

Threats from Hurricanes/Tornadoes - Increases in hurricane intensity and storm frequency are related to warming air and water temperatures; therefore, annual forest damage is likely to increase in the coming years. Hurricanes and tornadoes are known to cause some degree of habitat and recreation area destruction, reduced biodiversity and water quality. Adaptation to mi□gate wind damage from these events includes rotational harvesting to reduce stand age uniformity, incorporating resistant species, modifying thinning frequencies, and clear-cutting smaller exposed stands at maturity while avoiding clear-cut operations within large stands.

Threats from Ice Storms - Ice storms are another, lesser-known threat to southeastern forests. As ice builds on branches, the weight of the ice exceeds the carrying capacity of the branch and it breaks. Pines collect more ice compared to hardwoods because they retain their needles year-round, and the needles hold the ice. Additionally, pine branches break under less weight than hardwoods. As li□le as a quarter inch of ice can begin to cause breakage. Adaptation to these events includes increasing spacing width, adjusting thinning frequencies to reduce the probability of damage a□er fresh thinning, and incorporating resistant species. Post-disturbance monitoring and pesticide application to damaged trees will aid in preventing pest outbreaks and a□acks on green timber.

Summary - These threats impact the economic and ecosystem value of Mississippi's forestland. Threats of disease, insect and invasive species outbreaks, destructive wildfires, and intense hurricane and tornado activity are amplified by warming temperatures and changes in rainfall frequency and amounts. The adaptation methods listed are just a few of the available options that help land managers improve resilience and reduce risk.

MISSISSIPPI FORESTRY COMMISSION

The Mississippi Forestry Commission (MFC) is charged with promo□ng sound forest management practices, which help maintain the integrity of the environment and provide for our state's future natural resource needs. The MFC offers a variety of forest management programs and services to assist private landowners. Consult your local MFC Forester for more information about threats and corrective measures appropriate for your forested land.

Visit www.mfc.ms.gov to find your local MFC Forester.