



# LOUISIANA'S EMERGING FOREST THREATS

Healthy Forests Management Options

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## WHY DOES IT MATTER TO ME ?

**It is important for private forest landowners to prepare for the likelihood of increasing threats to their forest lands. 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 the 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 Louisiana's forestlands.**

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**Southeast Climate Hub**  
U.S. DEPARTMENT OF AGRICULTURE

The mission of the Southeast 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** - Roughly half of Louisiana's total land area is forested- about 14 million acres. These fertile forestlands are heavily dominated by loblolly pine; however, species such as sweetgum, water oak, red maple, bald cypress inhabit the countless swamps and deciduous forests. Of the 14 million acres of forests, 81% is privately owned by local land managers. These forests have a major economic impact of about \$11 billion annually, which is roughly 25% of Louisiana's entire agriculture-generated revenue. The ecosystem services they provide such as storm surge protection, carbon sequestration, and water quality improvement are invaluable to the state. However, Louisiana's forests are continually threatened by hurricane activity, invasive species, disease, and other factors. Fortunately, land managers can choose to employ adaptation options which help mitigate damages while improving the resiliency of their forest stands.



**Threats from Invasive Species/Insects/Disease** -Invasive species, insects, and disease are responsible for severe damage and mortality in Louisiana forests and can impact forest water yield and water quality, and biodiversity. Increasing growing season length associated with climate change can extend the insect/disease outbreak season. Additionally, invasive species may outcompete native or planted species for resources during periods of drought. They also may lead to habitat destruction or fragmentation and loss of aesthetic value in recreational areas. Invasive species are particularly prevalent in the southeast due to the region's mild winters that fail to destroy imported insects and plants. There are management practices to control these threats, including prescribed burning, thinning, proper herbicide or pesticide application, and decreasing the movement of dead wood or woody debris. Early detection is critical to finding outbreak areas before the problem can multiply and spread. Monitoring for signs of disease or pest activity will provide an early advantage to landowners for fighting outbreaks.



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**Threats from Drought** - Increasing drought frequency and extreme heat are responsible for damages to forest stands and ecosystems each year in Louisiana 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 and changes in vegetation. Adaptation options include thinning to reduce stand water stress, maintaining a canopied riparian zone to reduce stream temperatures, incorporation of drought-resistant species, and using prescribed burns to reduce fuel loads and wildfire risk.



**Threats from Sea-Level Rise** - Accelerated sea-level rise has been correlated with warming sea surface and air temperatures. Due to this trend, southeastern coastal states like Louisiana have experienced soil salinity issues moving further inland, resulting in severe forest damage and the overall loss of workable lands. Other impacts include vegetation changes, biodiversity, and habitat loss, water quality declines, and increased invasive species outbreaks. One adaptation option for event salinization, such as storm surges, would be to plant salt-resistant species. As salinity moves towards being a chronic issue, implementing short-rotation woody crops may retain profits while decreasing risks from storm surge events. Drainage system installation may reduce the probability of developing salinity issues by lowering water table height.

**Threats from Flooding** - Extreme precipitation events from storms and hurricanes can destroy coast and inland forests. Flooding is a common disturbance event within the southeast U.S. due to the frequency of extreme (more than 2.5" in a day) rainfall events. Floods impact forest productivity by altering soil conditions and exposing or burying root systems. Reductions in stream water quality, aquatic habitat, the aesthetic value of recreational areas, and soil productivity can also be observed after flood events. Management practices to mitigate damages include post-disturbance revegetation, maintaining the area's natural hydrology and riparian zone health, planting flood-tolerant tree species, monitoring damaged or susceptible trees for outbreaks or fungal growth, and the implementing proper erosion control structures such as culverts and drainage ditches where needed.



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**Threats from Hurricanes/Tornadoes** - A single hurricane such as Hurricane Katrina caused billions in forest damage across the state. Additionally, tornadoes can be locally damaging and cause millions of dollars per year. 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, as well as inland soil salinization from storm surge events. Adaptation to mitigate 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 Wildfire** - Increased fuel loads and more frequent droughts could increase wildfire frequency and intensity within the southeast. Other impacts include habitat destruction and fragmentation, and biodiversity declines. Prescribing burns to reduce these fuel loads and periodic thinning remain essential techniques. However, timing and control must be appropriate

during periods of drought. Salvage logging after extreme weather events or significant timber losses reduces fuel loads and chances of pest or disease outbreaks. Incorporating fire-resistant species such as long leaf pine and yellow poplar may also mitigate wildfire risks.

**Summary** - These threats impact the economic and ecosystem value of Louisiana's forestland. Threats of salinization from sea-level rise, insect and invasive species outbreaks, destructive wildfires, and intense hurricane activity are amplified by warming temperatures and changes in rainfall frequency and amounts. The adaptation methods listed on this sheet are just a few of the available options that help land managers improve resilience and reduce risk. Consult your local forest extension agent or a county forester for more information about threats and corrective measures appropriate for your forested land.

FOR MORE INFORMATION ON  
MANAGEMENT OPTIONS FOR YOUR  
WOODLANDS:

Contact your local County Ranger or the Louisiana  
Department of Agriculture  
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