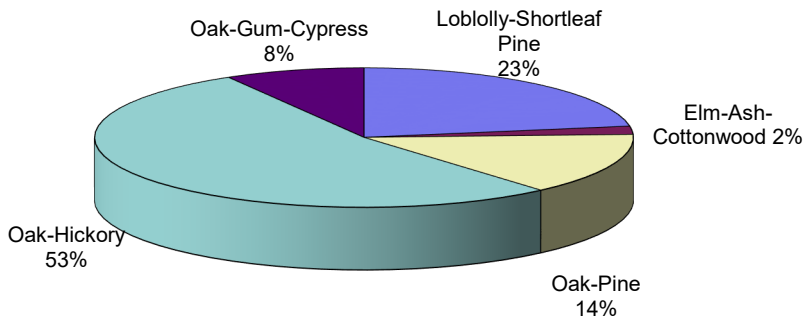
Oklahoma

Forest Health Highlights 2021

The Resource

Oklahoma's forests covers over 12 million acres, about 28% of the state's land area. Some 6.9 million acres of the states forested land is in nonindustrial private ownership, while 707,867 acres are in National Forests. Oklahoma's forests are prized for their scenic beauty, supporting tourism and outdoor recreation and providing wildlife habitat throughout the state. Major forest types in the state include oak-hickory, loblolly and shortleaf pine, mixed oak-pine, and oak-gum-cypress.

Table 1: Oklahoma Forest Type Distribution



Forest health monitoring (FHM) activities are cooperative efforts between the USDA Forest Service and the Oklahoma Department of Agriculture Forestry Services. The FHM program in Oklahoma includes regular aerial and ground surveys to detect forest damage.

Special Issues

Key issues which state and federal programs are addressing cooperatively include:

- Sustainable management of private forest lands
- Protection and development of urban and community forest resources
- Increasing participation by underserved citizens in forestry programs
- Update of Oklahoma's Gypsy Moth and Emerald Ash Borer Action Plans
- Education efforts on present and potential pests
- Utilizing the US Forest Service Forest Disturbance Monitor and ForWarn

Forest Influences

Southern pine beetle Aerial Detection:
Oklahoma Forestry Services flew for aerial detection over 800,000 acres in McCurtain, LeFlore, and Pushmataha counties. The purpose of the flight was to monitor the health of the forests as well as look for early indications of any major health problems. Early detection of southern pine beetle is the primary purpose of these flights, but other aspects are monitored as well such as other bark beetles, weather induced mortality, and discoloration of hardwood species. There was no suspected SPB activity recorded from these flights but other bark beetles were prevalent across the landscape.

***Ips* engraver beetle:**

The 2022 aerial flights showed a large amount of pine mortality across the surveyed area. Likewise increased rates of pine mortality have been seen across the state. A majority of te loblolly pine across the state is planted outside of its natural range. As a result, climate has always been a stressor for these species. Drought has been a common occurrence over the years and the summer of 2022 was significantly drier than recent years. As a result large amounts of pine mortality was observed throughout the summer, most with evidence of secondary pests like Ips and black turpentine beetle.

Sudden oak death / ramorum blight
P. ramorum was discovered on some Rhododendron's in a nursery as well as some stock at a major retailer in Oklahoma in early spring of 2019. Further testing the following summer discovered more instances of *P. ramorum* on roses at the same nursery. Oklahoma Consumer Protective Services continues its monitoring of nursery stock as well as stream surveys to watch for more cases of sudden oak death. As it has not been seen in trees outside of the nursery setting after two years, it is unlikely to have spread to Oklahoma's native oaks but the State remains vigilant.

Spongey moth:
USDA Animal and Plant Health Inspection Service (APHIS) had no positive samples collected in this year's survey.

Emerald ash borer:
The first positive identification of emerald ash borer occurred in October, 2016. The individual was found in a trap in Grove Oklahoma. There have been no more positive ID's to date. Oklahoma Forestry Services continues to work with cities and other agencies to introduce and implement an Emerald Ash Borer Action Plan. City centers and towns have adopted this action plan and adapted it to suit their individual circumstances, often times with the help of Oklahoma Forestry Services. Tulsa was the first to develop a city specific action plan while Oklahoma City continues to develop theirs. As a result of increased outreach, both by OFS as well as news outlets, private landowners have become more aware of their trees and forests and requested technical assistance in relation to their ash trees.

Oklahoma Forestry Services continues to manage the emerald ash borer trapping program. With the aid of Oklahoma Consumer Protective Services OFS was able to provide trapping materials to partners throughout the eastern half of the state. Oklahoma's Tree City USA's and Oklahoma Department of Wildlife Conservation worked with OFS to select hang the traps in their cities/Wildlife Management Areas and monitor them throughout the year. No EAB specimens were found.

Sawmills Map:
Throughout Oklahoma, one of the major factors contributing to poor forest health is the lack of forest management. The forest type most impacted by the lack of management in Oklahoma is the Cross Timbers, but all of the forest types throughout the state suffer to some degree. Environmental factors such as the prolonged drought in 2011-2015 followed by shorter droughts since then have caused the forests that are already overstocked to decline. One of the reasons for lack of management, especially in central Oklahoma and away from the traditional timber markets, is the lack of timber buyers. OFS continues to locate new sawmills throughout the state, update the information on those already on record, and manage an interactive map of their locations in order to provide relevant information to the landowners in an easy to process format.

Landowners can now view the area around them to find what sawmills exist, to learn what size and species the mills accept, and answer questions such as; will the sawmill purchase timber, cut timber, and pick up timber from site. Since many of these sawmills are small family operations, often times operating out of a barn, their presence was not as apparent as those in areas with traditional markets. The presence of this mills map has put in contact those with wood and those wanting to purchase timber, and as a result has begun to increase management on forests that were previously deemed unproductive.

This project works with multiple programs in Oklahoma Forestry Services including; Urban Forestry, Forest Health, Forest Stewardship, and Sustainable Utilization and Marketing. Recent projects from the Urban Forestry program in urban wood utilization have tied into this project by promoting utilization of single trees that needed to be removed for various reasons.

The map can be found at the following address. https://bit.ly/3duJLXW

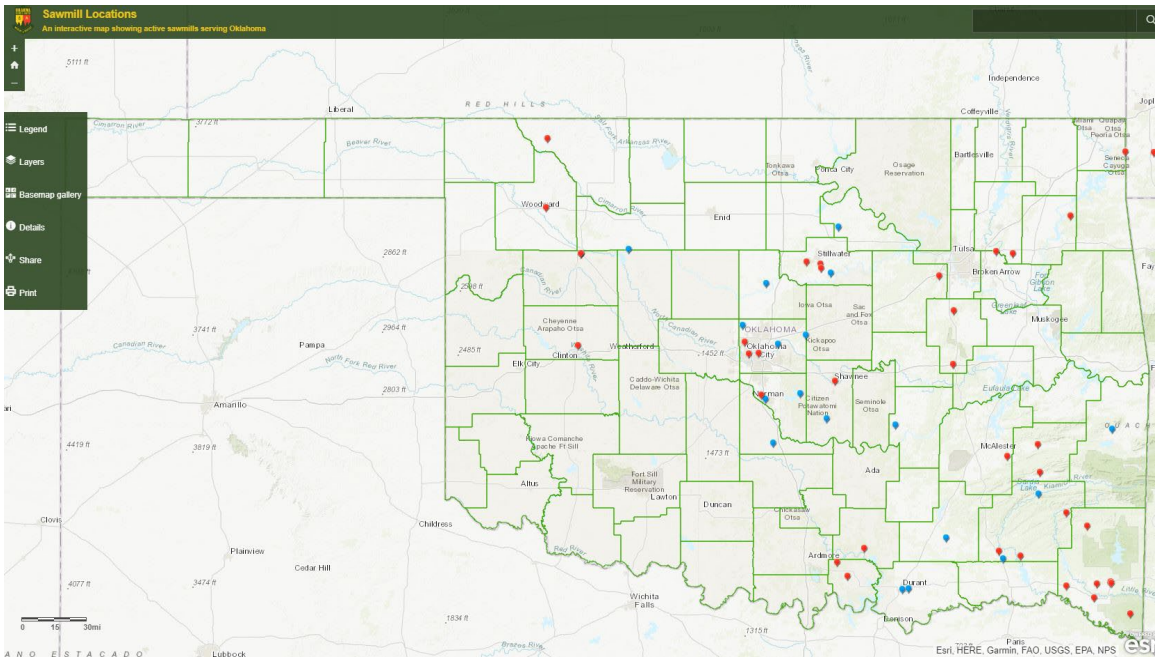


Figure 1: The Sawmills map for Oklahoma

Tree mortality from weather conditions:
Drought in Oklahoma continues to be an issue that results in increased rates of secondary pests and pathogens. The summer of 2022 had drought conditions more severe than recent years, in fact it was stated that the summer of 2022 was drier than the Dust Bowl. As the year progressed there were numerous trees, both hardwood and softwood that showed signs of decline or mortality as a result of climatic conditions.

Increased oak mortality, especially among the red oak group, caused an increase in samples sent in to the diagnostics lab at OSU. The concern was that oak wilt was being found across the state. There were no positive samples of oak wilt found, but what was discovered was a high amount of bot canker. It is suspected that the higher than normal amount of mortality with bot canker was due to two reasons. The first being the ice storm of October, 2020. This ice storm came before the trees were defoliated and there was significant damage across the state. This created numerous wounds on the trees throughout the canopy causing an increased amount of entry points for fungal pathogens. The severe drought on 2022 then added the appropriate level of stress to allow these pathogens to truly flourish thus resulting in increased mortality throughout the state.

Non-Native insects of concern

- Emerald Ash Borer
- Thousand Canker Disease (Walnut twig Beetle)
- Spongey Moth
- Asian Long-Horn Beetle
- Asian Gypsy Moth

- Mexican soapberry borer
- Spotted lanternfly

Increased education on forest health:
Oklahoma Forestry Services has put an increased emphasis on forest health education. OFS has used the initial detection of emerald ash borer and the increased public awareness to discuss the transportation of many of the forest pests listed above. Other causes of decline, such as drought induced mortality and overstocked forests have also been a focus when working with landowners, especially when in the Cross Timbers Forests of central Oklahoma.

Demonstration Areas:
Oklahoma Forestry Services have a couple formal demonstration areas scattered throughout the state. The one with the longest history of use is located on the Pushmataha Wildlife Management Area and has been used to demonstrate the effects of forest management in the forms of thinning and burn rotations. The area has multiple parcels of land with signage showing the outcome of different combinations of thinning and burn rotations allowing landowners to make more informed decisions on what practices they need to reach their end goals with the aid of visual representations.

The parcel of land behind the Broken Bow office in South East Oklahoma was established to demonstrate forest management. After ice storms in the early 2000's the area has become inundated with privet. OFS continues to work removing the established privet, preventing young shoots from reestablishing themselves, and utilizing the area to demonstrate invasive species management as well as sustainable forest management. The stands in this property have undergone a full inventory in 2021 and timber sales are being set up in order to create varying age classes through thinnings and clearcuts. Stands will now include various age classes of pine, mixed hardwoods, and pine-hardwood.

Figure 2: Management Chief Craig Marquardt pointing out signs of bark beetles at the Broken Bow Demonstration Area

The most recent demonstration area to begin establishment is at Turkey Mountain Urban Wilderness Area. Turkey Mountain is a forested park located in the Tulsa area. A few year ago the land was supposed to be developed. Public outcry saved the natural area and as a result the park was made. Continual support from the public has led to the area being selected for the Leave No Trace program. The community reached out to OFS for help

with managing the forest as well as invasive species control. Management on the property began in the fall of 2021. Through FY 2022 roughly 10 acres have been managed for privet. Invasive species management on a 60 acre tract began in the Fall of 2022 and will continue through the winter. A multiple-resource management plan, including burn plans, has been written for the entire property. A prescribed fire is planned to happen in January 202 as weather and available resources permit. Following the prescribed fires will be further invasive species removals and thinnings my hand crews to reduce competition and fuel levels.

This property is now working with fuels mitigation programs as it is a dense forest in the middle of downtown Tulsa. As a result, more forms of forest management will be brought to Turkey Mountain across a larger area.

Forest Stewardship Program
There were 52 Stewardship Plans reported covering 11,900 acres, all of which included a section on Forest Health. Forest Health was discussed more in depth with the landowners while the plans were being written.

Oklahoma's Forest Statistics

- Of the 50 states, Oklahoma ranks 20th in size, with an area of 43,954,560 acres, over 800,000 acres of which are covered by water and approximately 12,000,000 acres are covered by forests.

Table 2: Eastern Oklahoma, Area of Timberland (productive forest land) by Ownership Group

Area of timberland by forest-type and ownership group, East Oklahoma, 2008						
Forest-type	All ownerships	U.S. Forest Service	Other federal	State and local government	Forest industry	Nonindustrial private
			thousand acres			
Softwood types (Pines and other softwoods)	1096.8	159.2	51.1	28.9	350.6	507.0
Hardwood types (oak, elm, ash, hickory, etc.)	3971.0	98.3	244.0	135.2	214.8	3278.6
Nonstocked	35.3	0.0	1.4	0.0	2.9	31.0
All groups	5103.1	257.5	296.5	164.1	568.3	3816.6

Table 3: Oklahoma Forest and Paper Industry Employment and Annual Payroll Income

Oklahoma Wood-Related Sectors		
Sectors	**Employment**	**Annual Payroll Income**
Forestry & Logging	895	$31,562,000
Wood Products	4,075	$176,234,000
Pulp & Paper	2,943	$205,063,000
Furniture	2,788	$100,377,000
Total	10,701	$513,236,000

Table 4: Economic Impacts of Oklahoma's privately-Owned Forests

Forestry-Related Industries	**All Forests**	**Privately-owned Forests**
Employment	7,982	7,902
Payrolls	$300,343,142	$297,339,710
Annual Sales	$2,758,886,681	$2,731,297,815
Contribution to the State GDP	$1,068,876,000	$1,058,187,240

Source: Forest2Market, National Alliance of Forest Owners, 2009.