



Oklahoma

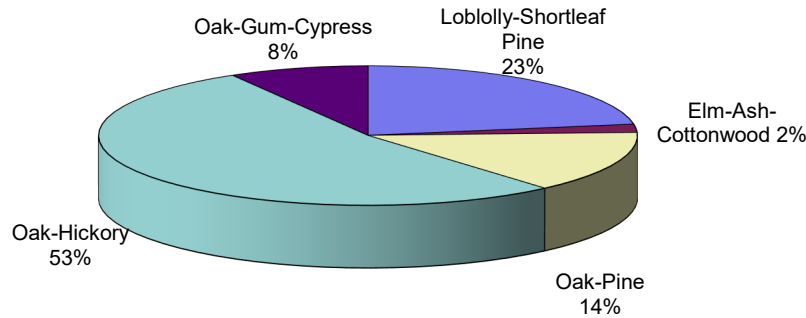
Forest Health Highlights 2021

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. Multiple spots were flagged as needing follow up on the ground surveys due to their size but it is suspected that they are large pockets of other bark beetle induced mortality.

Ips engraver beetle:

The 2021 aerial flights showed a large amount of pine mortality across the surveyed area. Some of the areas will need on the ground follow up due to their size. Likewise increased rates of pine mortality have been seen across the state. It is suspected that an unusually cold freeze occurring over two weeks in February was a major contributing factor in this increased mortality. Pines across the state, especially those found in urban and yard settings, showed signs of stress in the early spring, some even shedding a majority of their needles. While some didn't recover, most did as spring progressed. As summer became hotter and drier many more pines began to die, often showing signs of Ips and/or black turpentine beetle. It is suspected that the freeze added a level of stress that is not usually present early in the year. While hot and dry summers are not unusual in Oklahoma, trees that had only just recovered from the unusual winter were unable to survive the dry summer resulting in many dying in August-September.

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.

Gypsy 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. Due to supply issues with APHIS, no new purple prism traps were available to trapping materials consisted of those remaining from the previous trapping season, resulting in a smaller area monitored.

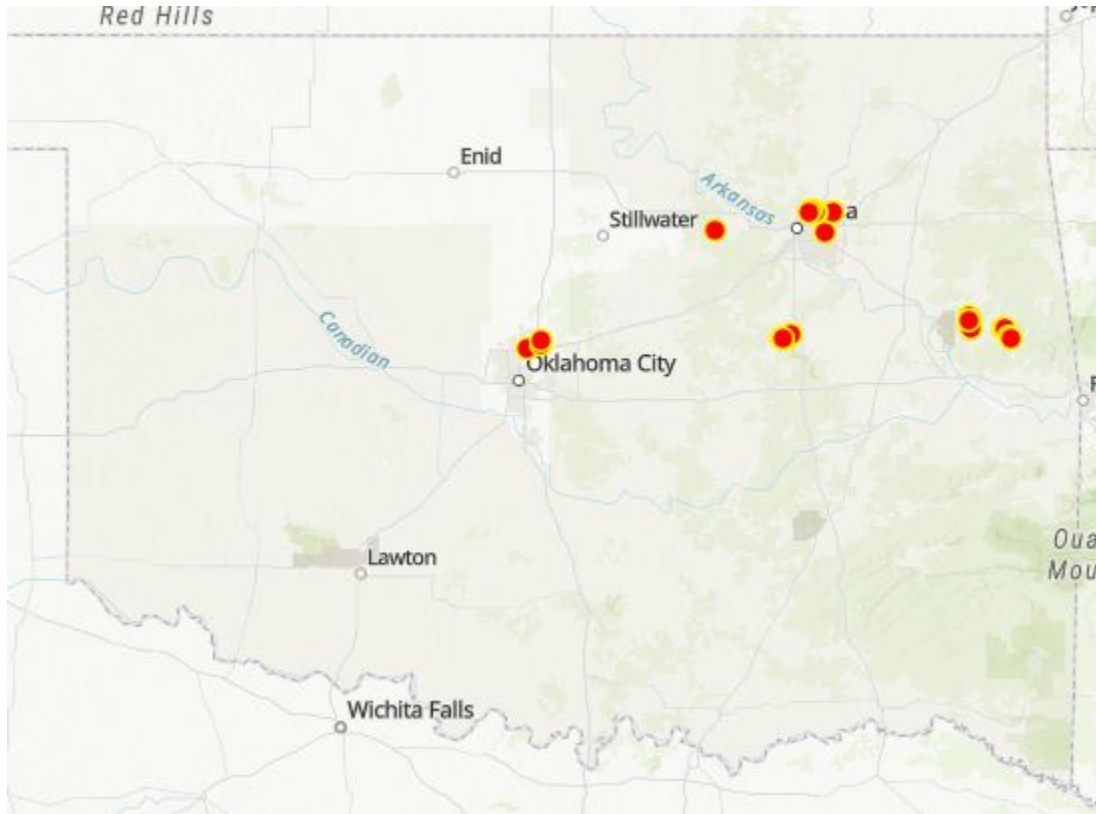


Figure 1: Locations of emerald ash borer traps spread throughout the native range of ash species in Oklahoma.

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>

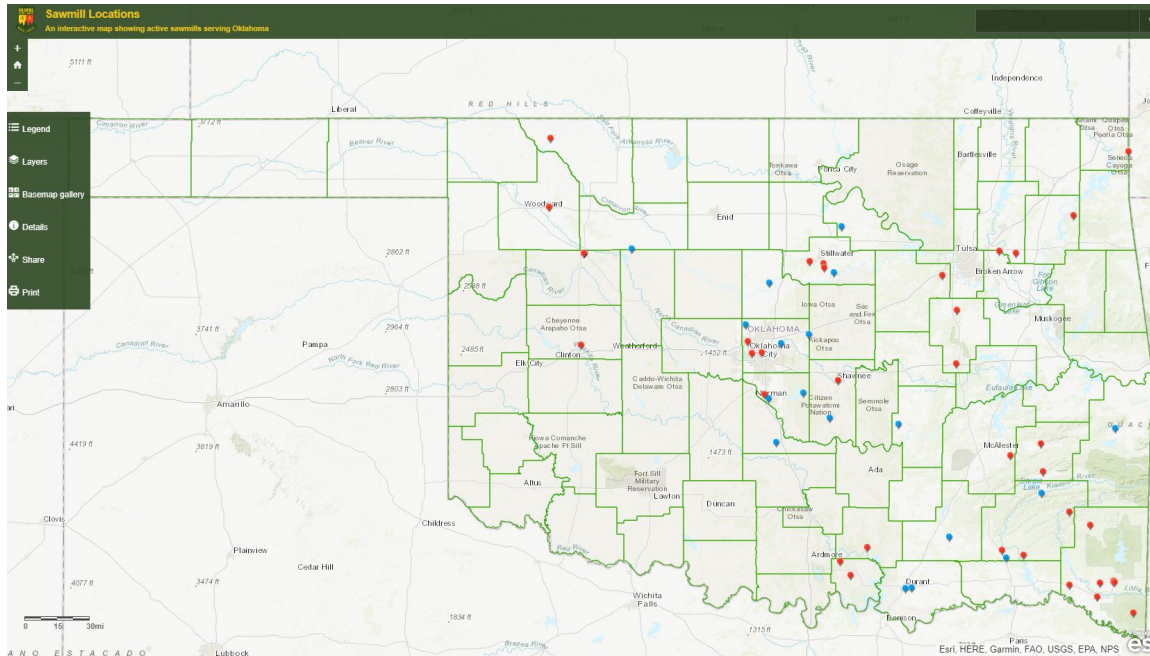


Figure 2: The Sawmills map for Oklahoma

Tree mortality from weather conditions:

Drought in Oklahoma continues to be an issue that results in increased rates of secondary pests and pathogens. 2021 had an unusual winter to add to the climatic stressors. In February there was a two week period of significantly lower than average temperatures. This caused some levels of decline, defoliation, and in some cases mortality on trees across the state, especially evergreen species. Most of the effected individuals recovered and put on new growth throughout the spring. As summer approached the weather became hot and dry, especially in the latter half of summer. As a result of the cold winter spell and the drought conditions in late summer, a large amount of pines began to die off throughout August and September, most showing signs of secondary pests (Ips and black turpentine beetle)

A late freeze also occurred in April throughout Oklahoma, Arkansas, and Missouri that killed off the newly formed foliage in some species, especially oaks. As the year continued most of the effected individuals recovered after putting out a second flush of foliage. OFS Surveyed one of the hotspots at Lake Thunderbird State Park in Central Oklahoma with a UAV, taking pictures from above the canopy which can be viewed [here](#) (clicking on the points of the webmap allows opening of the photos).

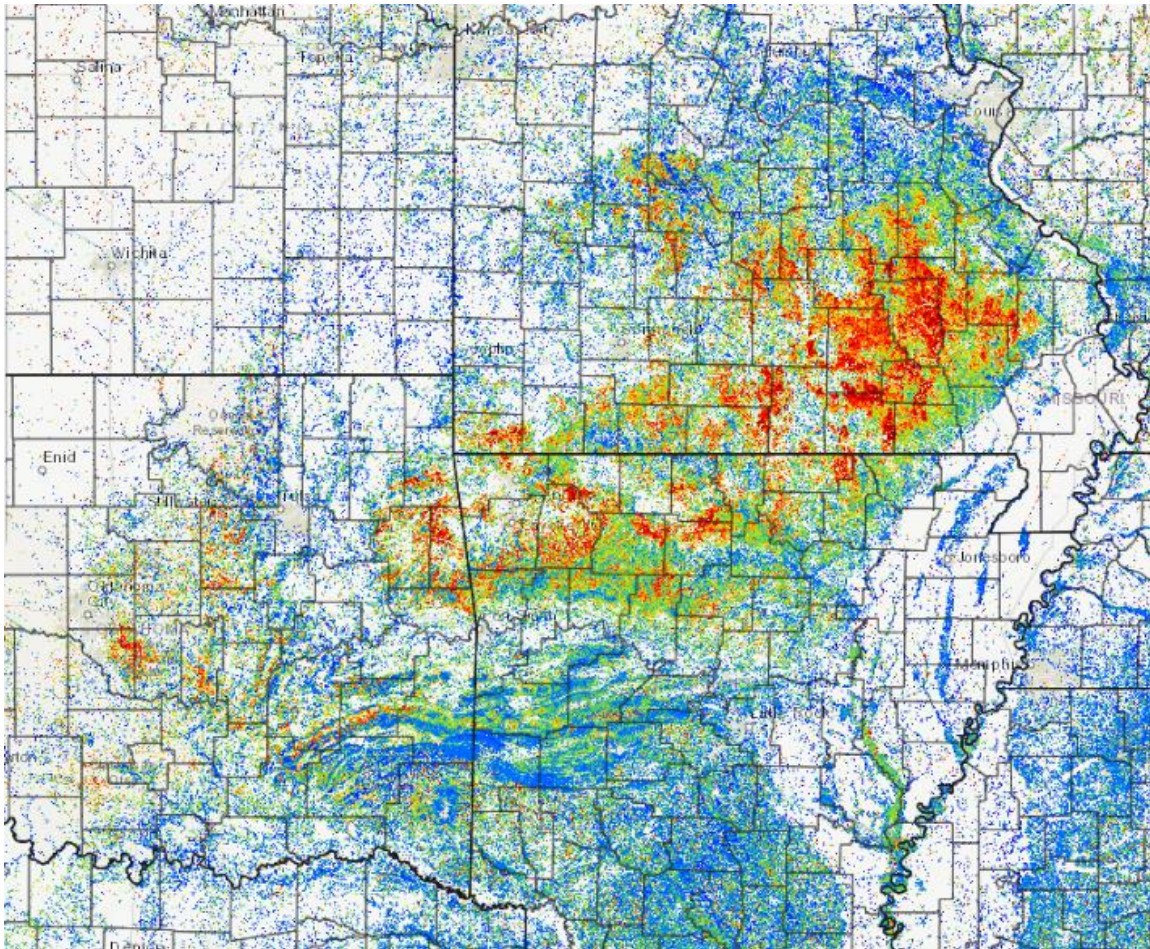


Figure 3: Areas across three states showing the effects of the April Freeze

Non-Native insects of concern

- ✚ Emerald Ash Borer
- ✚ Thousand Canker Disease (Walnut twig Beetle)
- ✚ Gypsy Moth
- ✚ Asian Long-Horn Beetle
- ✚ Asian Gypsy Moth
- ✚ Mexican soapberry borer

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 4: Area Forester 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. To date roughly 10 acres have been managed for privet. A multiple-resource management plan, including burn plans, has been written for the entire property. A prescribed fire is planned to

happen in December 2021 or January 2022 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.

Forest Stewardship Program

There were 61 Stewardship Plans reported covering 12,763 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 Pest Action Council

The Council is comprised of plant health specialist from Universities, Federal and State partners. It was primarily formed to produce a collaborative Emerald Ash Borer Preparedness Plan for Oklahoma.

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

Forest-type	Area of timberland by forest-type and ownership group, East Oklahoma, 2008					
	All ownerships	U.S. Forest Service		State and local government	Forest industry	Nonindustrial private
	<i>thousand acres</i>					
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