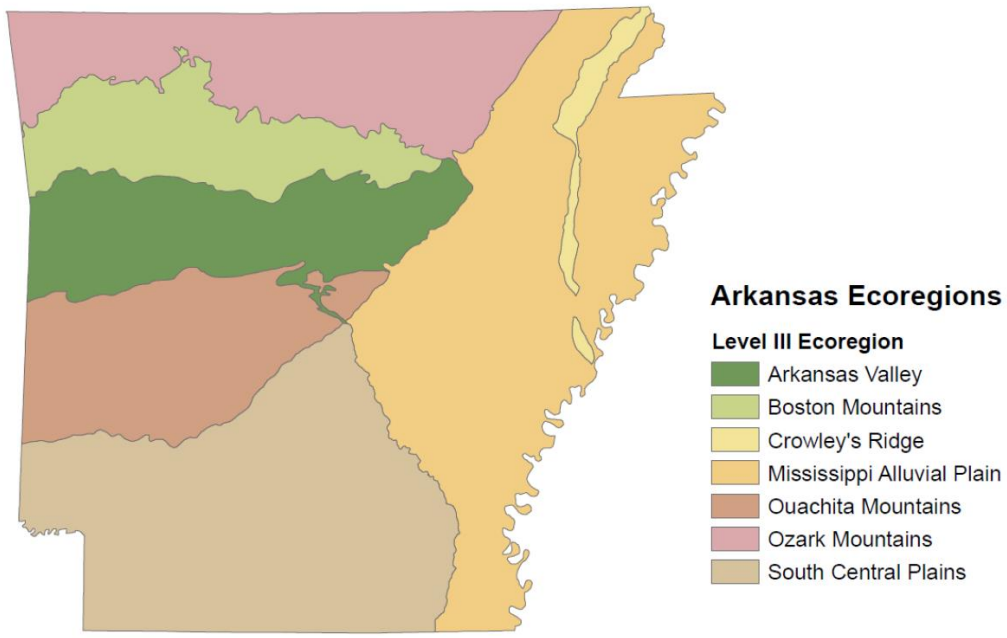
FOREST HEALTH HIGHLIGHTS FOR 2020

The Arkansas Department of Agriculture – Forestry Division (hereafter simply the Forestry Division) assists nonindustrial private landowners with forest management decisions. Forestry Division field personnel make forest health recommendations and can respond to reports of tree mortality caused by forest disturbances, such as insects and diseases. This report briefly summarizes the forest insect and disease issues in Arkansas that were identified during the 2020 calendar year.

Forest Resource Introduction

Arkansas's forests cover 19 million acres, which is approximately 56% percent of the state's land area. The majority of the state's forested land, some 13.1 million acres, is in non-industrial private ownership, while approximately 2.5 million acres is national forest. Major forest types in the state include oak-hickory, loblolly-shortleaf pine, oak-pine, and bottomland hardwood. This report will reference the Level III Ecoregions shown in the map below. Loblolly pine dominates the South Central Plains ecoregion and it is the most abundant tree species by volume, and shortleaf pine follows second in statewide volume estimates. Shortleaf pine is abundant in the Ouachita Mountains. The most abundant hardwood species, listed in order of greatest volume, are white oak, sweetgum, post oak, northern red oak, black oak, and southern red oak.



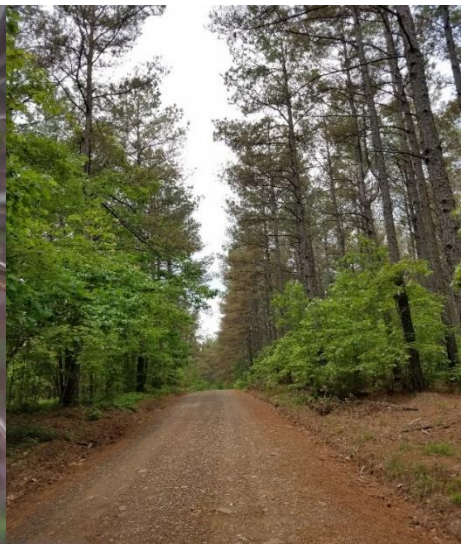
Needlecast

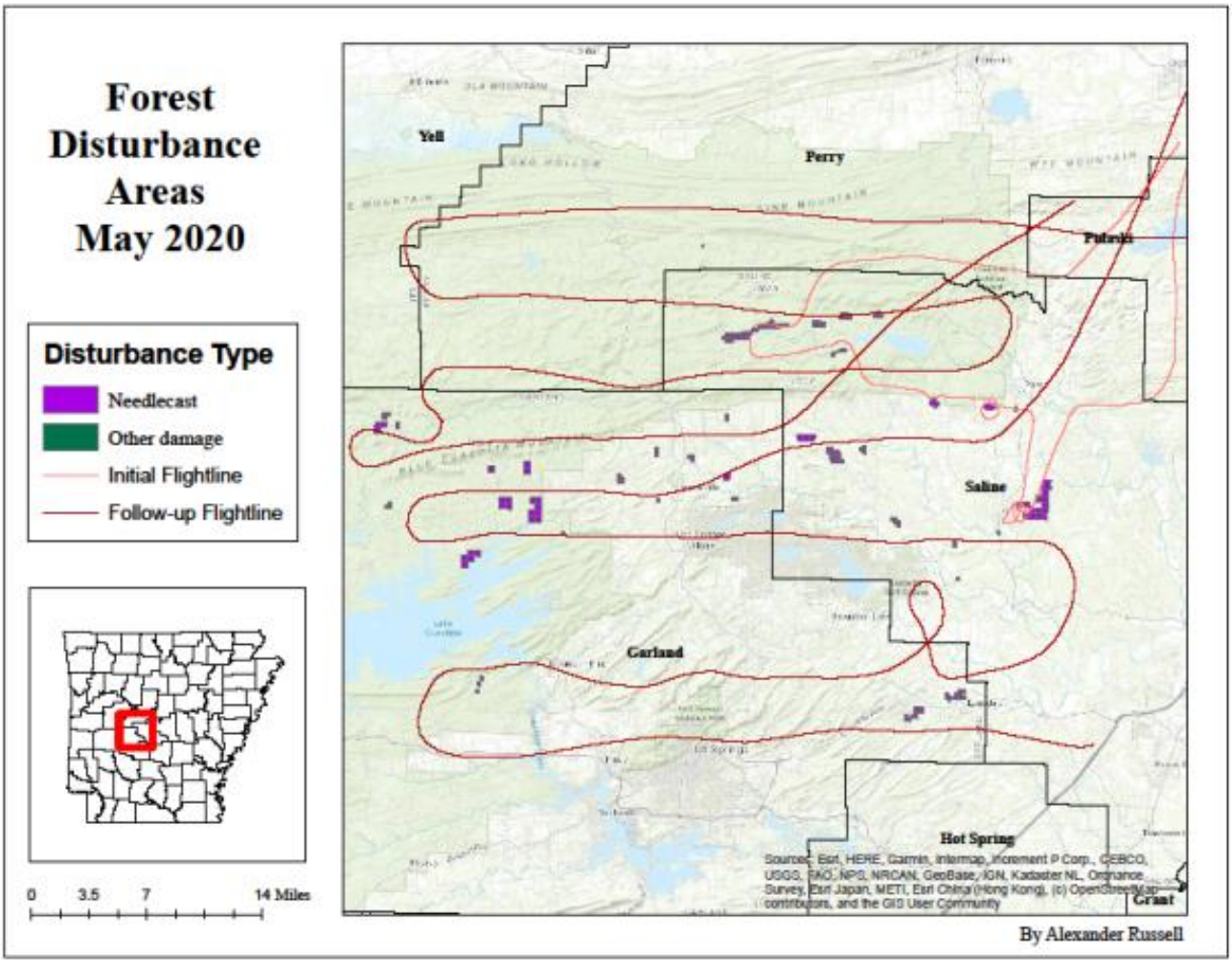
Browning needles were reported in the eastern Ouachita Mountains around Lake Winona and on private lands in Saline and Garland Counties. The unhealthy appearance of these pine stands could be viewed by aerial survey (see the locations of affected stands in the following map) and a ground survey was needed to determine the cause. Samples were collected and sent to pathologists for laboratory diagnosis. Through genetic analyses, researchers in Georgia and Florida confirmed the presence of brown spot needle blight, (*Lecanosticta acicola*), and the pathogen is presumed to be the cause. *Lecanosticta acicola*, previously known as *Mycosphaerella dearnessii*, is a morphologically distinct anamorph and a serious pest in longleaf pine as well as Christmas tree plantings of Scots pine. Needlecast fungi were also confirmed to be present (*Lophodermium* sp.). These

researchers are working to determine the factors responsible for outbreaks of needle blight in loblolly pine. Severe landscape-scale issues with needle blight are not discussed in scientific literature, especially with respect to loblolly pine.

Interestingly, specific loblolly stands near Lake Winona were affected while pines in the adjacent oak-shortleaf stands did not show symptoms. The open structure of these planted loblolly stands allows wind to pass through with little interruption. The dispersal and success of needle blight and needlecast spores could be increased from this lack of wind protection in open vs. closed loblolly stands. It could also be assumed that these planted loblolly stands feature susceptible genetic properties. Below is aerial survey data collected in May of 2020.

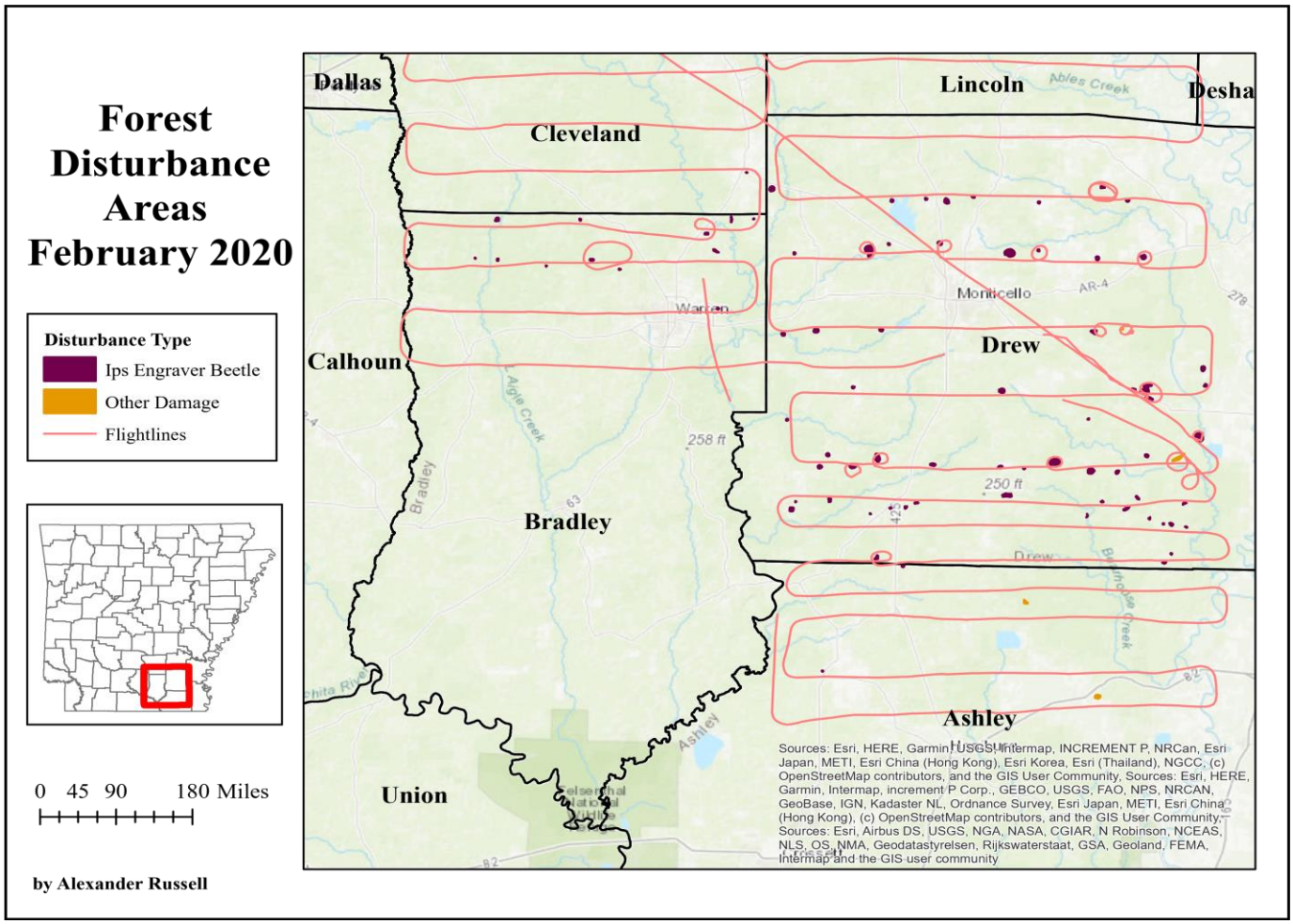
Right: characteristic brown needles of needle blight and needlecast infections with black sporulating structures. Note that the base of needles can still be green. Far Right*: brown discolored crowns of loblolly pine near Lake Winona on the Ouachita National Forest, photo credit: C. Barton 2020.*





***Ips* Engraver Beetle**

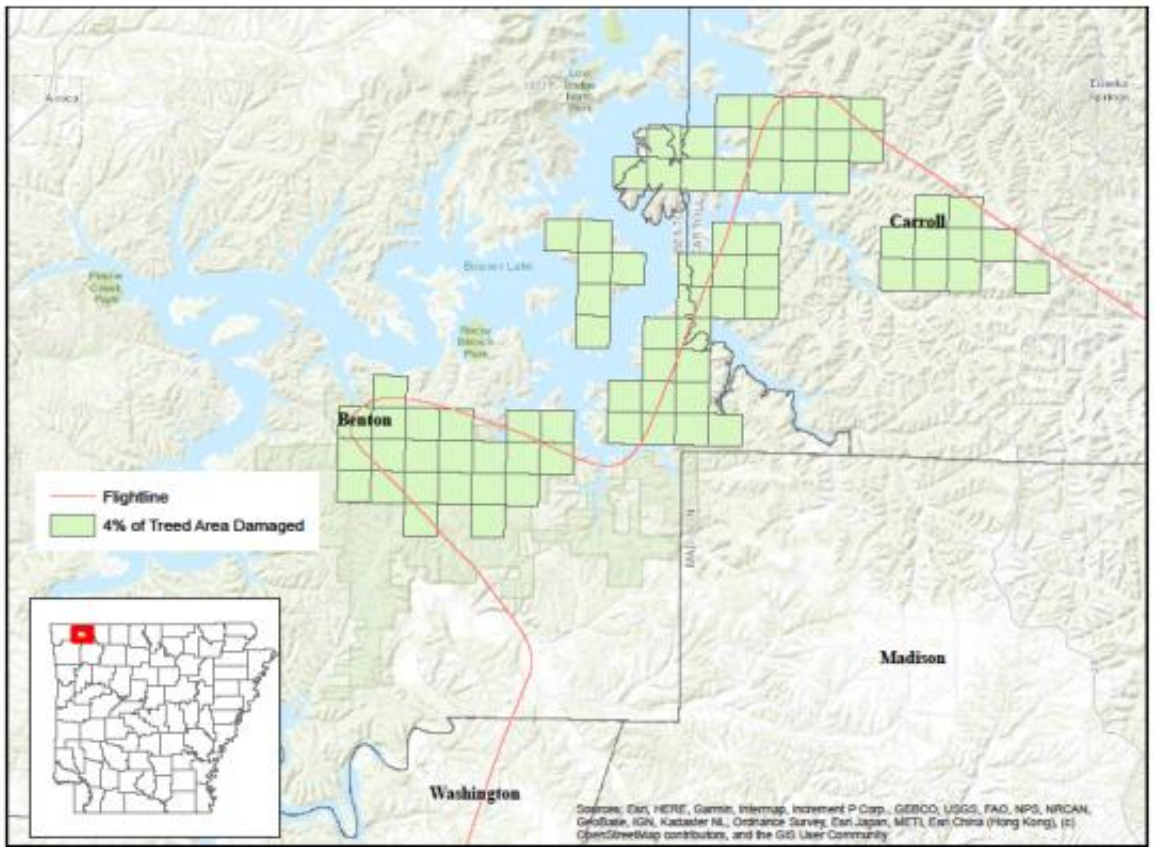
Ips spp. are regularly observed in Arkansas on single trees or small groups of trees. However, minimal timber losses occurred in 2020 from this pest. Unlike SPB, Ips beetles (*Ips calligraphus*, *Ips grandicollis*, and *Ips avulsus*) are considered secondary invaders that target injured or stressed trees. The beginning of the year saw lots of rainfall and mild temperatures causing trees in the southeastern part of the state to experience stress. Areas in and around Drew county were most affected by Ips beetles. As soils became less waterlogged, reports of Ips infested trees slowed down. Below are instances recorded by aerial survey in February of 2020.



Ips beetles also heavily infested pine trees in the southern portion of the Mississippi Alluvial Plain. Homeowners in towns such as McGehee, Dermott, and Lake Village reported pine tree mortality and expensive removal in some cases. This is the second consecutive year for this issue. The initial cause of decline is unknown, but Ips beetles are considered a contributing factor to the mortality. The result is a loss of an already limited residential tree canopy in this sparsely forested area of the state.

Jumping Oak Gall

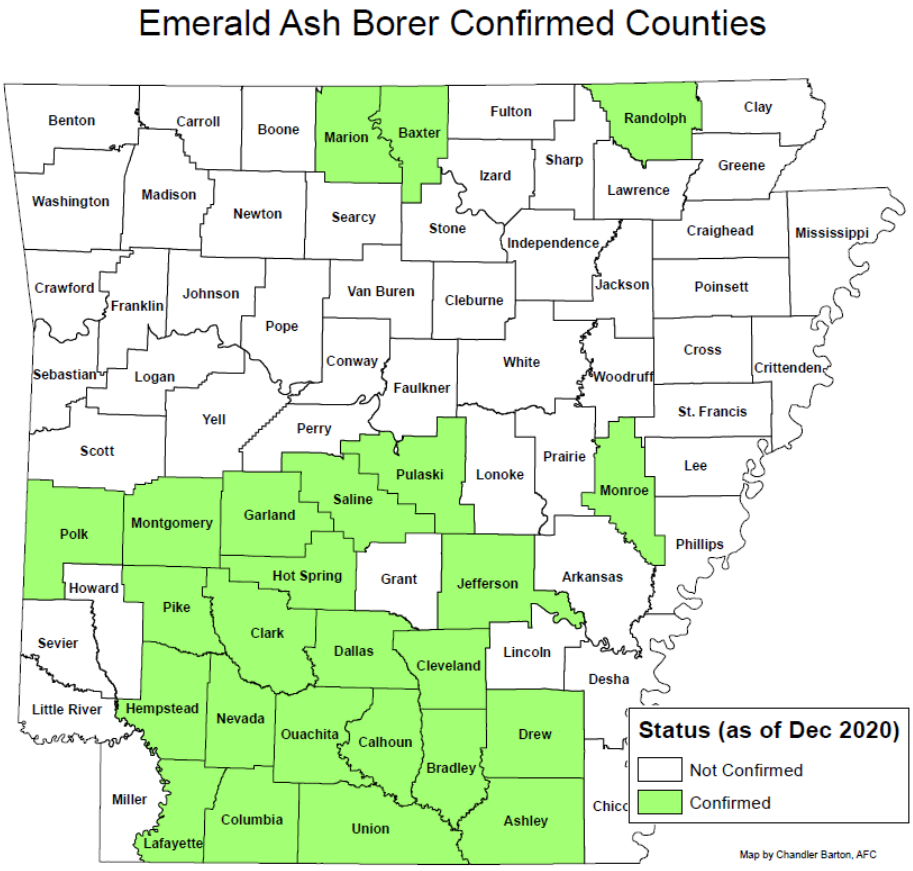
During late-spring and summer months of 2019, Arkansans across the state reported white oaks (*Quercus alba*) with unsightly appearances. In 2020, homeowners in northwest Arkansas observed damage, particularly the communities in Bella Vista and the area around Beaver Lake. During an aerial survey on June 17th, white oak discoloration was mapped near Beaver Lake (map on next page). Jumping oak gall was determined responsible for the condition of these trees in the northwestern and north-central counties of Arkansas. Hundreds of galls can be made on each leaf and, subsequently, leaves turn brown, curl, and may defoliate. It is not expected to kill the affected white oaks, but the extreme stress could push some trees toward death. The galls fully develop in May and drop to the ground to overwinter in the duff layer. The galls are formed by a Cynipid wasp in the genus *Neuroterus*, but the species is not yet confirmed by a specialist.



White oak crown discoloration was mapped during an aerial survey in the areas labeled green.

Emerald Ash Borer (EAB)

EAB was confirmed in Jefferson County in late-2019. No additional confirmations were made until Dec. 2020 when EAB infested trees were found in Pulaski County. Arkansas now has 25 EAB confirmed counties. Little Rock, in Pulaski County, is the most populated city in Arkansas, and Pine Bluff, in Jefferson County, is the tenth most populated city. Ash mortality is easily observed in the South Central Plains; it is possible to spot ash killed by EAB along interstate 30 between Arkadelphia and Hope. While APHIS-PPQ are responsible for quarantine regulation, multiple agencies as well as University of Arkansas – Monticello assist with the detection and monitoring of EAB expansion. The Forestry Division investigated reported sightings across the state and used visual surveys.



Southern Pine Beetle (SPB) Survey Update

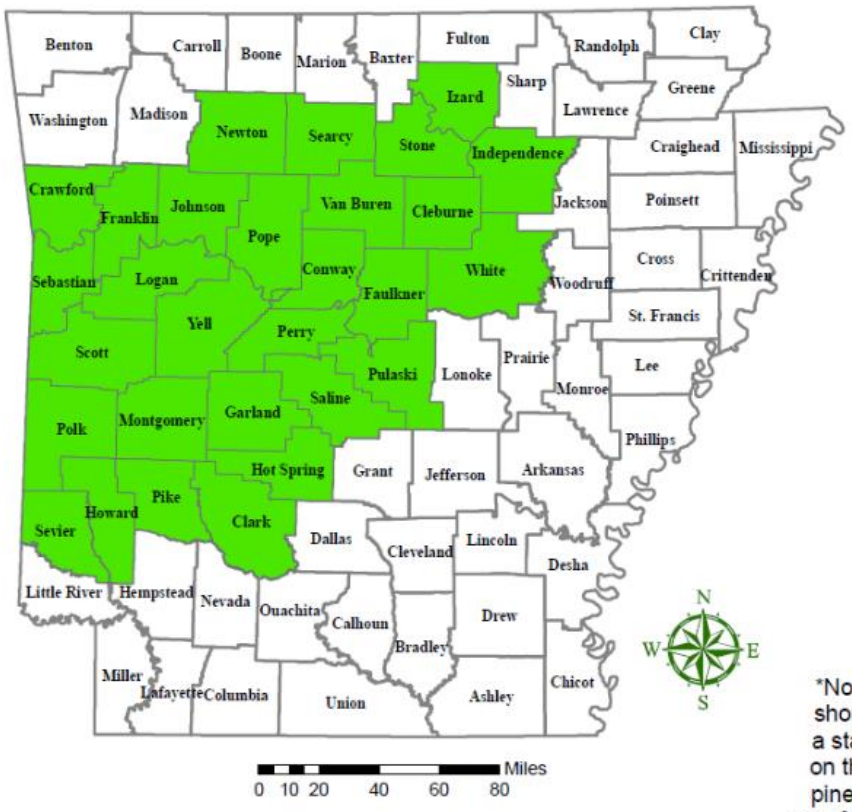
An outbreak of SPB has not occurred in Arkansas or the states west of the Mississippi for over two decades. In AR, spring trap catches subsided around 2005 and now traps rarely have a positive catch. Forestry Division uses pheromone traps to detect increases in SPB abundance. Eighteen traps are set annually in the South Central Plains. Back in 2018, 26 were captured in Ashley County and one was captured in Columbia County. In 2019, zero SPB were captured. In 2020, zero SPB were captured again.

Southern Pine Beetle Prevention Program

The best defense against any future SPB outbreaks is a more resilient forest structure. The Southern Pine Beetle Prevention Program continues to offer monetary incentives to landowners who thin overly dense pine forests. Landowners can apply for the program through local Forestry Division offices. The program currently offers incentives for first commercial thinnings, non-commercial thinnings, prescribed burns, and in-woods chipping. New for 2020, the program will cost share the planting costs of shortleaf pine in stands that are well suited for shortleaf over loblolly pine (eligible counties shown in the map below). Logger incentives are also available for thinning harvests on tracts less than 40 acres.

Southern Pine Beetle Prevention Program – Eligible Counties for Shortleaf Pine Planting Practices*

FORESTRY DIVISION



*Note: A forester should be consulted to consider if shortleaf pine meets the desired future condition of a stand. These eligible counties were chosen based on the presence of habitat that can support shortleaf pine more favorably than loblolly pine. Also eligibility was further considered by presence of SPB hazard risk.

Redbay Ambrosia Beetle and Laurel Wilt Disease

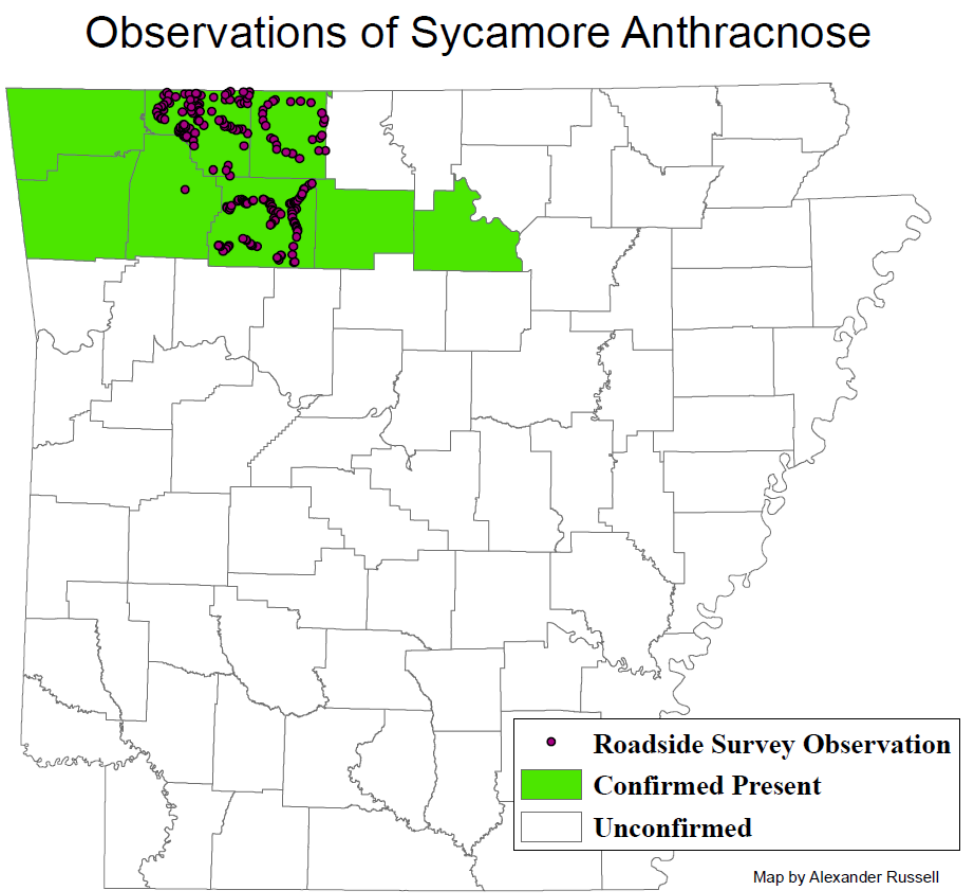
Laurel wilt is caused by a fungus (Raffaelea lauricola). In Arkansas, it was discovered in December of 2015 on symptomatic sassafras trees. Observations of dying sassafras trees are generally provided by attentive landowners and forest land managers. The tiny beetle that transmits the fungus, redbay ambrosia beetle (Xyleborus glabratus), was also identified at that time. Redbay trees are rare in Arkansas, but sassafras is a suitable host for the invasive disease and beetle. Sassafras is infrequent in southern Arkansas; however, it is common in the Ozark Mountains of northern Arkansas and Missouri. According to Forest Inventory and Analysis estimates, seedling and sapling size sassafras is more abundant in the Ozark highlands than anywhere else in the United States. The Forestry Division participated in a laurel wilt monitoring study led by the US Forest Service. Three permanent plots were established to measure disease progression and beetle presence. The disease has been confirmed in 11 Arkansas counties so far.

Sassafras tree in Logoly State Park with laurel wilt, photo credit: C. Barton 2020.

Anthracnose

Public reports of unhealthy sycamore were common in May of 2020. Many trees suffered from defoliation and misshapen leaves. The cause was attributed to sycamore anthracnose, *Apiognomonia venta*. As this disease was easily observed from the road, a quick survey was conducted to determine the extend of the damage; see map for the location of observations.

In fact, the wet spring season caused anthracnose diseases on many other tree species during this time, including maple (caused by *Gloeosporium apcrytum*), ash (caused by *Discula faxinea*), and oak (caused by *Apiognomonia errabunda*).



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