

Delaware 2019

Forest Health Highlights

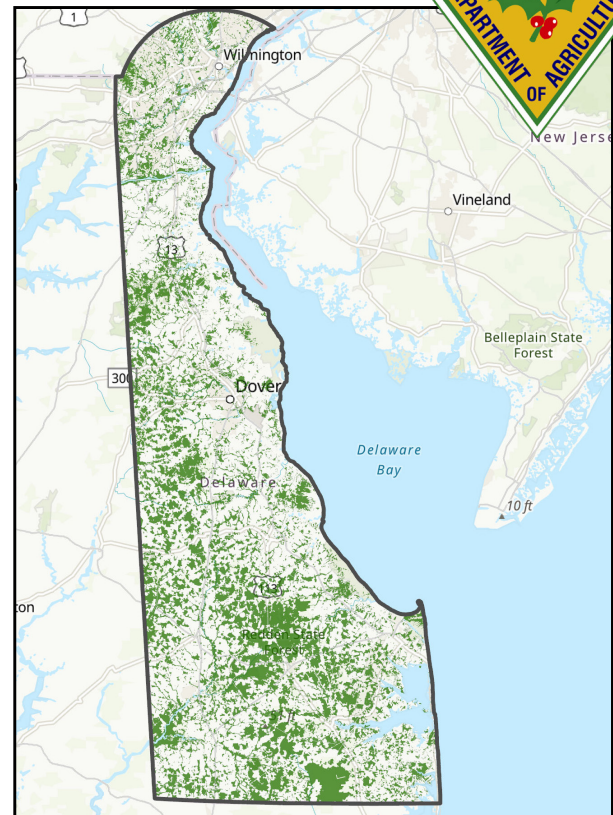


The Resource

Delaware's forests presently cover approximately 382,000 acres, roughly one third of the land area in the State. Delaware has experienced a rapid conversion of forests and agricultural lands to residential and other urban uses since the 1980s.

Weather Conditions

The 2018-19 Delaware winter was mild with only one cold snap with single digit lows from January 30 through February 2. A warm and wet spring allowed for another year of fungal and bacterial infection in the early part of the growing season. However, rainfall for most of the state after July 23 was very low, with 75 percent of Delaware classified as being in moderate drought by October 8, according to drought.gov. This was due to the low rain totals of approximately two inches for August and 1.5 inches for September along with many hot days that reached into the 90s. Some relief came with about 1.5 inches of rain on October 16, bringing yearly total rainfall for the Dover area to 35.2 inches as of that date.



Forests cover approximately 382,000 acres of Delaware, or roughly one-third of its area.

Forest Insect Issues

Emerald Ash Borer (EAB)

Emerald ash borer is established in northern Delaware as of 2019, with more trees continuing to show signs and symptoms, particularly in the Newark area. Early July monitoring using *Cerceris fumipennis* (Smokey Winged Beetle Bandit) was successful in finding about 18 adult EAB from two locations in the Newark and Stanton areas.

Seasonal employee Trevor Christian (at right) is shown conducting biosurveillance for emerald ash borer, looking at the prey items of ground nesting smokey winged beetle bandit wasps. (Photo by Bill Seybold, Delaware Forest Service)



Asian Longhorned Beetle (ALB)

ALB is a serious threat to a variety of hardwood species, especially the rural and urban maples throughout Delaware. Trapping that began in 2012 was continued in 2019. Shantung Maple (*Acer truncatum*) seedlings planted in six New Castle County parks have grown into large saplings and were inspected for ALB signs and symptoms again this year. No ALB was detected.

Sirex woodwasp (*Sirex noctilio*)

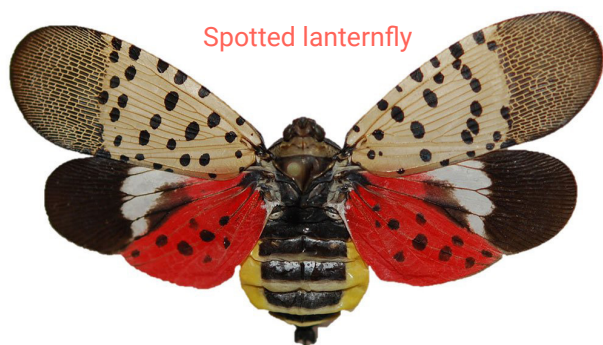
Sirex noctilio presents a threat to loblolly pine, the mainstay of the forest products industry in southern Delaware. In late-August 2019, eighteen lindgren traps baited with a Sirex blend were hung at nine sites throughout the state. Sirex has yet to be detected in Delaware. The traps are typically checked up until a hard frost hits some time in November or December.

Southern Pine Beetle

No additional southern pine beetle (SPB) outbreaks were discovered in 2019. Delaware participated in the annual spring SPB survey with trap data from five sites, gathered from April 15 to May 28. The average SPB and checkered beetle (predator) numbers trapped predicted a low or declining population for the coming year; 0.2 SPB per day and 0.8 checkered beetle per day.

Spotted Lanternfly (SLF)

Spotted lanternfly (*Lycorma delicatula*) was first detected in Wilmington in November 2017. As of October 2019, Delaware's Department of Agriculture had quarantined the area of the state north of the C & D canal. The Plant Industries section continues to run a task force for eradication of this insect and the Delaware Forest Service is involved in public education and monitoring with sticky traps.



Asian longhorned beetle

Other Insects

An extensive area of forest tent caterpillar – roughly 1,300 acres of heavy defoliation with more areas of moderate or less defoliation – was found on sweetgums around the Cypress Swamp on the south edge of the state. Pheromone lures and traps for the detection of walnut twig beetle were set up in six locations in New Castle County are still being sorted at this time, though the spring catch did not show any WTB. Another heavy population of fall webworm affected tree aesthetics across much of the state in August/September, and particularly in northwestern New Castle County. Although the larva of this insect defoliates trees late in the summer, it is not of much concern to tree health.



Forest tent caterpillar damage in Cypress Swamp.
(Photo by Bill Seybold, Delaware Forest Service)

Disease Concerns

Anthracnose

Another warm and wet spring led to another heavy infection of anthracnose and fungal and bacterial leaf spots and patches. A swing to a very hot and droughty late summer led to much leaf damage, scorch and early drop on many hardwood species in 2019.

Bacterial Leaf Scorch (BLS)

Ample moisture over the last two years, including up to the mid-summer of 2019, appears to have relieved much of the BLS symptoms on red oak leaves on the three state forest test plots. Average percent of canopy scorch symptoms for all measured red oaks was at 0.016 percent for Blackbird State Forest (3.62 percent running average over 12 years), 0.37 percent for Taber State Forest (2.95 percent running average over 10 years), and 3.261 percent for Redden State Forest (3.65 percent running average over 5 years). One additional 22.7-inch dbh red oak died at Blackbird State Forest in 2019. One additional 6.7-inch dbh red oak died at Taber State Forest in 2019. No additional trees died at Redden State Forest in 2019. Since the plots were set up, 11 out of 73 red oak trees of at least 11.0 inch dbh (about 15 percent) have died. The average length of study for the three plots is 8.5 years, so the average rate of mortality per year has been about 1.8 percent for the 11-inch plus red oaks.

Forest Health Monitoring

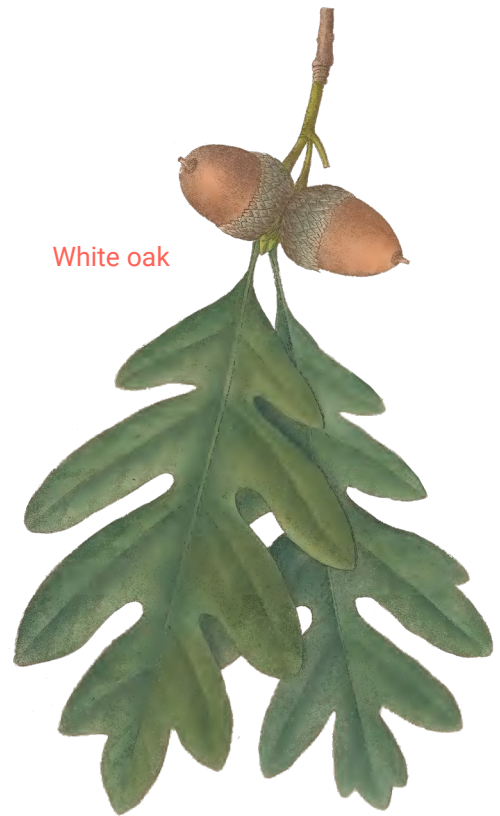
White Oak Decline Study

A permanent plot study was set up in 2014 in response to concerns over scattered mortality and extensive crown thinning in white oaks. Crown dieback percentage, symptoms and general health issues have been tracked over the last five years at 10 plots in two tracts of Blackbird State Forest. 2019 was the fifth year of data collection.

Experimental plot average of crown dieback for non-suppressed oak (red and white) was 7.6 percent for the Oak Hill Tract (5.4 percent for the control), and 3.25 percent for Tybout Tract (4.3 percent for the control). These are very close to 2018 percentages and lower than percentages for the first three years of the study (around 10 percent on average). One additional suppressed *Quercus alba* of 4.3" dbh died in 2019 on the Oak Hill Tract and no additional plot oaks died on Tybout in 2019. However, a 13-inch *Quercus alba* near one plot did die in 2019 showing similar sudden browning of the leaves when the plot was visited on July 25. Since 2014, only one additional tracked tree of the dominant or co-dominant oaks has died.



Bacterial leaf scorch symptoms in red oak species.



White oak

The Delaware Forest Service has gathered five years of data during a study of scattered white oak mortality and crown thinning at two plots in Blackbird State Forest.



Typical floodplain forest damage seen along many of Delaware's waterways and coastal areas in recent years.
(Photo by Bill Seybold, Delaware Forest Service)

Aerial Surveys

An annual aerial survey was conducted over Sussex, Kent, and some of New Castle County from June 17 to June 24. Over the course of more than 12 hours of flying, 25 damage areas were detected. Of those, 12 areas (totaling 1,255 acres) were due to flooding, either new damage or occurring recently. Forest tent caterpillar accounted for about 1,252 acres mapped as heavy defoliation all around or in the Cypress Swamp in Sussex County. Three areas were damaged by herbicide, with a total of 44 acres affected. Another area near Laurel, Delaware was affected by an April tornado that damaged approximately 40 acres of woodlands. Upon ground checking, one of the apparent flood-damaged areas turned out to be primarily white oak mortality that had symptoms similar to sudden white oak mortality in other regions in recent years. This area, totaling about 15 acres in a low-lying mixed hardwood stand, will be monitored next year.



Forest health specialist Bill Seybold examines an American beech for signs of beech bark disease.

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