



# 2017 Forest Health highlights

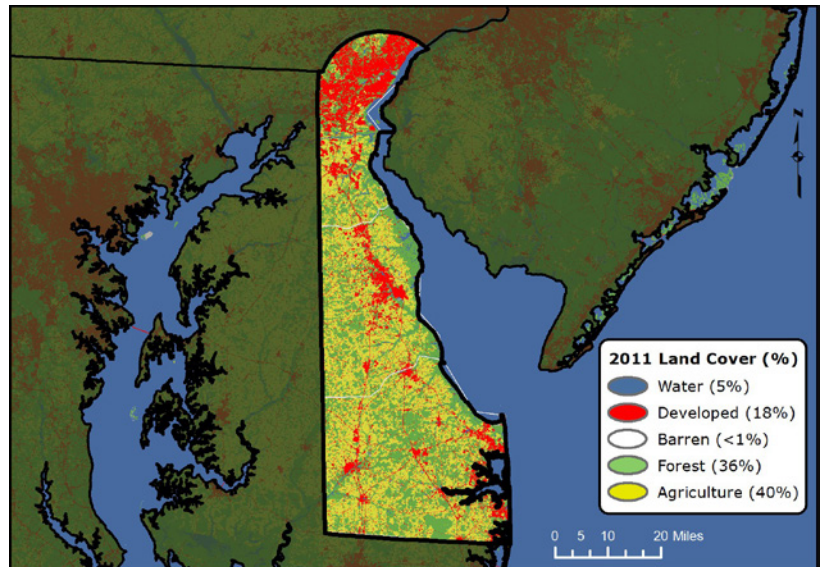
## DELAWARE

### Forest Resource Summary

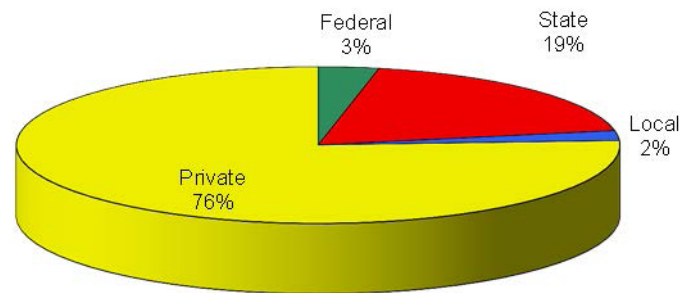
Delaware’s forests presently cover approximately 371,000 acres, roughly one-third of the land area in the State. Delaware has experienced a rapid conversion of forests and agricultural lands to residential and other urban uses since the 1980s.

### Weather Conditions

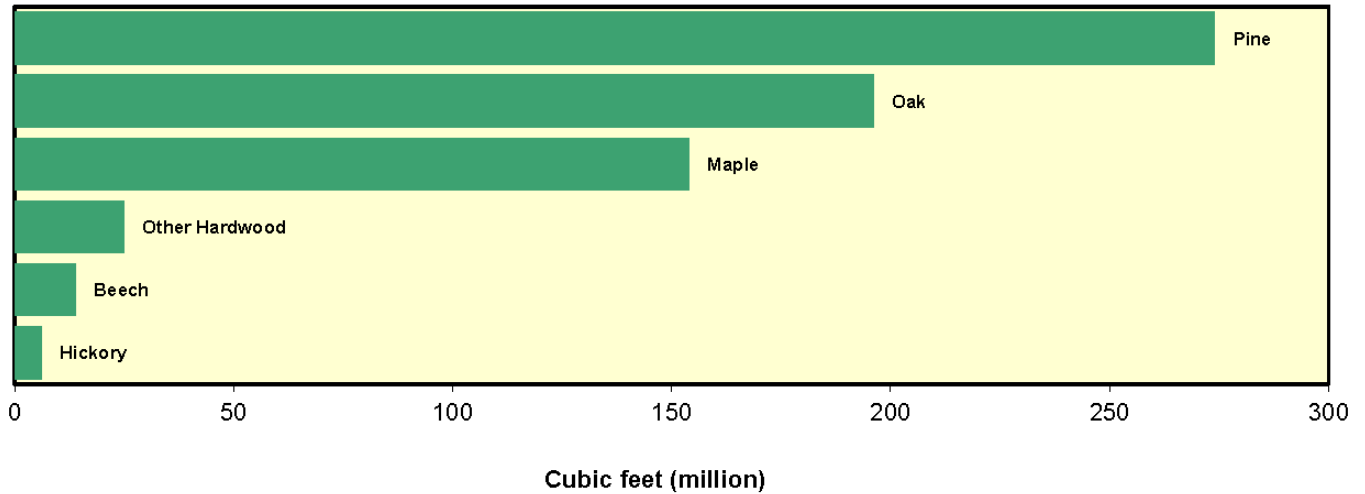
Delaware’s 2016/2017 winter was again mild. The only exception was the night of January 9, which had lows down around 0 °F. February was exceptionally warm, which led to some early bud break. A cold snap followed around March 3-6, which caused some damage to young leaves and flowers, particularly those in the rose family. There were steady rains and good temperatures throughout most of the summer growing season.



### Forest Land Ownership in Delaware, 2012



## Net Volume of Growing Stock on Timberland by Species in Delaware, 2012



## Forest Health Surveys

About 80 percent of Delaware was flown on 2 days in 2017: June 15 and 20. The primary forest health issues noted as new damage for 2017 were 1) freshwater and tidal flooding mortality, and 2) discoloration on a few dozen acres. Some frost and anthracnose damage was mapped as well.



*View on June 15, 2017, during an aerial survey showing the Atlantic Coast near Cape Henlopen and some high water levels inland. (Courtesy photo by Delaware Forest Service)*

## Forest Pest Issues

### Gypsy Moth

The New Castle County 3-acre gypsy moth defoliation area from 2016 went through egg hatch by April 18, 2017. By mid- to late June, however, most of those caterpillars had been killed and were found hanging on the bark of the hardwood trees. Visual evidence for the fungal parasite *Entomophaga maimaiga* and viral infection was seen at that time.

### Emerald Ash Borer

The search continued for ash trees infested by the emerald ash borer (EAB), with negative results for a followup to 2016's adult beetle find. The Delaware Forest Service continued *Cerceris* wasp biosurveillance efforts and ground surveys again this summer, although EAB was not discovered among the native buprestid prey items.

### Asian Longhorned Beetle

Asian longhorned beetle (ALB) is a serious threat to a variety of hardwood species, especially the rural and urban maples throughout Delaware. Trapping begun in 2012 was continued in 2017. No ALB was detected in 2017. Shantung maple (*Acer truncatum*) seedlings planted in six New Castle County parks became established and will serve as sentinel trees for ALB in future years.

### 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 2017, 18 Lindgren traps baited with a Sirex blend were hung at 9 sites throughout the State. Sirex has yet to be detected in Delaware.

## Other Insects

With the finds of walnut twig beetle (WTB) in recent years in nearby Pennsylvania and Maryland, an increased number of WTB traps were set up in northwest New Castle County in 2016; trapping continued at those same 10 sites for spring and fall of 2017. No WTB was discovered this year. Far fewer eastern tent caterpillars were seen in April when compared to caterpillar levels in the last 3 years. Fall webworm was encountered by late July, and within a month, heavy populations were seen on black cherry and black gum, as well as the usual walnuts and hickories. Mimosa webworm was found on many honeylocust trees by August as well.

## Disease Concerns

### Bacterial Leaf Scorch

The usual bacterial leaf scorch (BLS) symptoms appeared to be lighter than previous years. The BLS survey on permanent red oak plots this year showed a much lower percentage of canopy scorch as compared to the running average. The percent scorch for Blackbird State Forest and Taber State Forest was well below half the running average. Scorch symptoms observed at Redden State Forest in Sussex County were slightly below the previous 2 years' average. BLS data has been taken since 2008 (10 years) at Blackbird State Forest and since 2010 (8 years) at Taber State Forest.





Northern red oak leaf with bacterial leaf scorch symptoms at White Clay Creek State Park. (Courtesy photo by Delaware Forest Service)



Bill Seybold looks at a beech during a beech bark disease plot survey. (Courtesy photo by Delaware Forest Service)

## Other Diseases

Anthracnose and fungal and bacterial leaf infections were high, probably due to the wet spring and summer. Sycamores were hit hard again with anthracnose across most of the State.

## Forest Health Monitoring

### White Oak Decline Study

In the third year of data collection for a white oak study at Blackbird State Forest, crews noted d.b.h., crown dieback, and any adverse health signs or symptoms for marked trees. A total of 149 oaks (primarily white) are marked at 10 plots on two tracts at Blackbird State Forest. Dieback percentage was estimated at levels slightly lower than those recorded in

2015 and 2016, indicating recovering crown health from a past incident. A yellow leaf spotting of unknown cause and much leaf anthracnose were noted when checked in early June of 2017. One additional canopy-dominant white oak of 23.7 inches d.b.h. died this summer.

### Southern Pine Beetle

No additional southern pine beetle (SPB) outbreaks were discovered in 2017. Delaware participated in the Southwide SPB Pheromone Study again this year. Trapping started April 20 and ran until May 18. No adult SPB were trapped in the four traps this year, down from the 9 SPB trapped in 2016.

## References

### Land Cover Map:

Jin, S.; Yang, L.; Danielson, P.; Homer, C.; Fry, J.; Xian, G. 2013. A comprehensive change detection method for updating the National Land Cover Database to circa 2011. *Remote Sensing of Environment*. 132: 159–175.

<http://www.sciencedirect.com/science/article/pii/S0034425713000242>. (1 March 2016).

### Forest Land Ownership:

Oswalt, Sonja N.; Smith, W. Brad; Miles, Patrick D.; Pugh, Scott A. 2014. Forest resources of the United States, 2012: a technical document supporting the Forest Service update of the 2010 RPA Assessment. Gen. Tech. Rep. WO-91. Washington, DC: U.S. Department of Agriculture, Forest Service, Washington Office. Table 2.

[http://www.fs.fed.us/sites/default/files/media/types/publication/field\\_pdf/GTR-WO-91.pdf](http://www.fs.fed.us/sites/default/files/media/types/publication/field_pdf/GTR-WO-91.pdf). (1 March 2016).

### Net Volume of Growing Stock on Timberland by Species:

Oswalt, Sonja N.; Smith, W. Brad; Miles, Patrick D.; Pugh, Scott A. 2014. Forest resources of the United States, 2012: a technical document supporting the Forest Service update of the 2010 RPA Assessment. Gen. Tech. Rep. WO-91. Washington, DC: U.S. Department of Agriculture, Forest Service, Washington Office. Table 23 & 24.

[http://www.fs.fed.us/sites/default/files/media/types/publication/field\\_pdf/GTR-WO-91.pdf](http://www.fs.fed.us/sites/default/files/media/types/publication/field_pdf/GTR-WO-91.pdf). (1 March 2016).



### Forest Health Programs

State forestry agencies work in partnership with the U.S. Forest Service to monitor forest conditions and trends in their State and respond to pest outbreaks to protect the forest resource.

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