2025 Forest Health Highlights

The Connecticut Agricultural Experiment Station

CAES
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1. Aerial Survey

We documented 240,732 acres of new damage in the 2025 aerial survey, nearly three times as much as last year. Similar to 2024, beech leaf disease was the greatest damage causing agent damage followed by oak defoliation and discoloration by spongy moth. White pine needle disease affected nearly all white pine throughout Connecticut. Winter moth caused significant defoliation of maple and oak species in the east. Hemlock woolly adelgid damage was substantially higher compared to 2024 and primarily affected eastern hemlock in northwestern CT. Emerald ash borer continues to cause substantial ash mortality in the northeastern and northwestern corners, which were invaded in 2019-2020.

DAMAGE CAUSING AGENT	ACRES
Beech Leaf Disease	158,717
Spongy Moth	45,414
White Pine Needle Disease	9,955
Winter Moth	9,551
Hemlock Woolly Adelgid	7,643
Emerald Ash Borer	6,353
Argyrotaenia spp.	955
Flooding – High Water	71
Fall Cankerworm	12
Unknown	2,061
TOTAL:	240,732

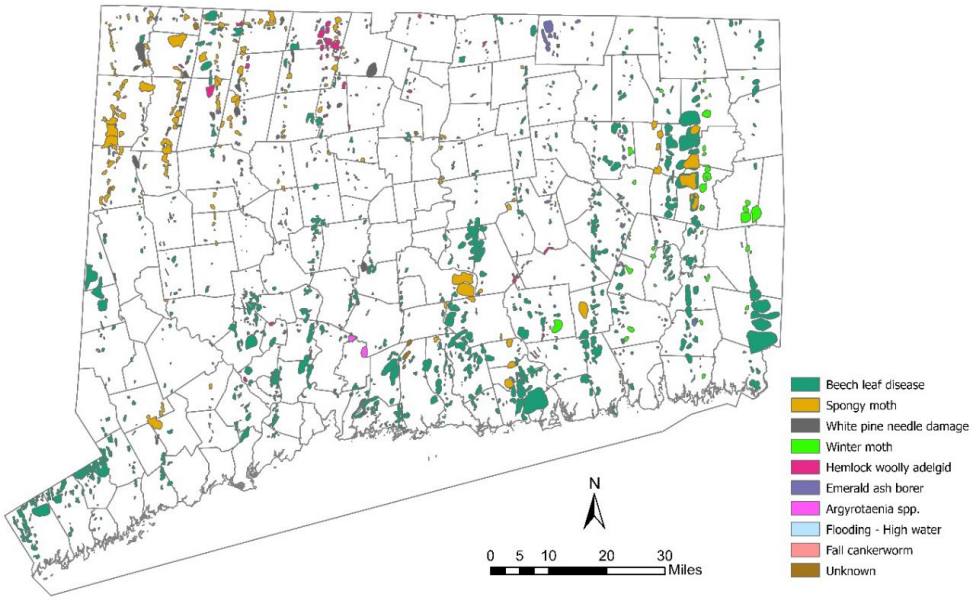


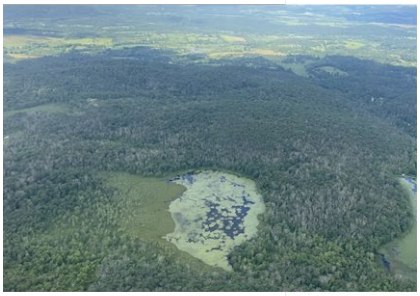
Figure 1 Forest damage documented in the 2025 aerial survey.

Like in 2024, we note that the acreage reported through the aerial detection survey is likely to greatly underestimate the true extent of damage, particularly for certain agents. For instance, all beech trees in Connecticut are being affected by beech leaf disease and show signs of severe defoliation. However, beech is primarily present in the subcanopy in Connecticut's forests, making its detection through aerial surveys difficult. Areas with reported damage are therefore

restricted to areas where beech make up a bigger component of the canopy in eastern Connecticut. Likewise, damage caused by diseases that affect species that typically occur as single individuals in mixed species stands, such as white pine needle disease and emerald ash borer, are also likely to be underestimated given the high number of stressors affecting different species in these forests and the difficulty of simultaneously reporting them all. Given these challenges, we are continuing to look into ways to improve the rigor of Connecticut's aerial survey data in future years.

2. Spongy Moth

Defoliation from spongy moth continues to cause substantial oak defoliation and mortality in western Connecticut. Since the onset of the current outbreak in 2016, spongy moth damage gradually spread from the eastern to western portions of the state. Overall, however, the 2024-2025 winter egg mass counts remain relatively low compared to past outbreaks in 2016-2017 and 2021 and are primarily restricted to sites in the vicinity of New Milford and Danbury. We observed about half the number of egg masses through our surveys compared to 2024, and they were present in three less scouting locations.



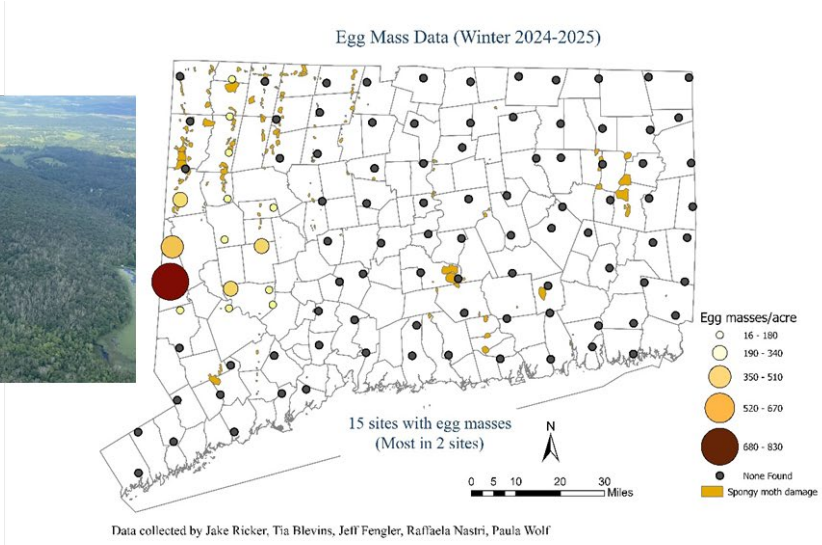


Figure 2: Map of 2025 spongy moth damage to oaks documented in the aerial survey overlain with the 2024-2025 winter egg mass survey results. Photo shows oak mortality in Sharon, CT.

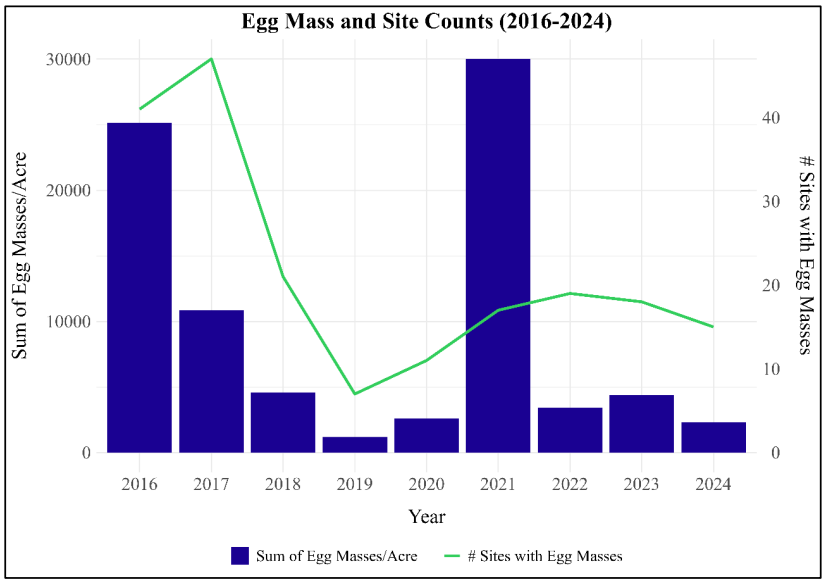


Figure 3: Spongy moth egg masses/acre and number of sites with egg masses from 2016-2024 (*n* = 103 sites).

Year	# Sites with egg masses	Egg masses/acre
2016	41	25136
2017	47	10848
2018	21	3775
2019	7	1184
2020	11	2592
2021	17	30016
2022	19	3408
2023	18	4400
2024	15	2320

3. Beech leaf disease (BLD)

Beech leaf disease continues to be a leading forest health concern in Connecticut. The first detection of BLD was in Fairfield County in 2019, and by 2021 BLD was present in all remaining counties. Since 2021, the severity of BLD has rapidly increased and now affects all beech trees in the state.

For the past several years, scientists at the Connecticut Agricultural Experiment Station have been monitoring the effects of tree size, canopy light exposure, co-occurrence with beech bark disease (BBD), and forest management history on changes in tree growth and mortality from BLD. The assessment includes annual remeasurement of ~2,400 beech trees at 16 sites from five long-term studies to compare changes in tree growth and mortality to historic trends. This project

is funded through the Infrastructure Investment and Jobs Act High Priority Invasive Species Grant program and will continue for the next 5 years.



Figure 4: Example of a typical beech stand in Connecticut dominated by subcanopy beech thickets with severe leaf deformation and defoliation.

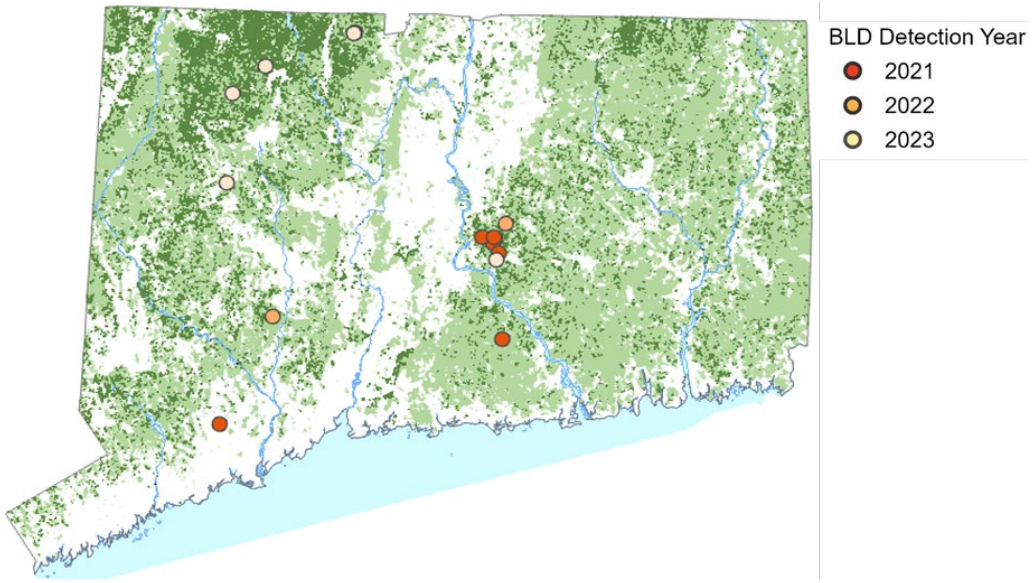


Figure 5: Locations of 16 long-term monitoring sites used to assess the effects of tree size, canopy light exposure.

Beech leaf disease severity and the percent of normal foliage have continued to decline in 2025 relative to 2024. As a result, beech growth has stagnated over the past couple of years. Growth rates are slightly higher for upper canopy trees and trees released from competition compared to subcanopy trees and unreleased trees due to higher crown light exposure. However, growth also substantially declined for these individuals, suggesting that these effects are likely to be short-lived. Compared to pre-BLD rates, average growth of beech has declined by 85% for dominant individuals (5.8 mm/yr compared to 0.9 mm/yr) and by 98% for suppressed individuals (1.4 mm/yr compared to 0.03 mm/yr). Surprisingly, we still have not seen a substantial uptick in beech mortality in the long-term plots.

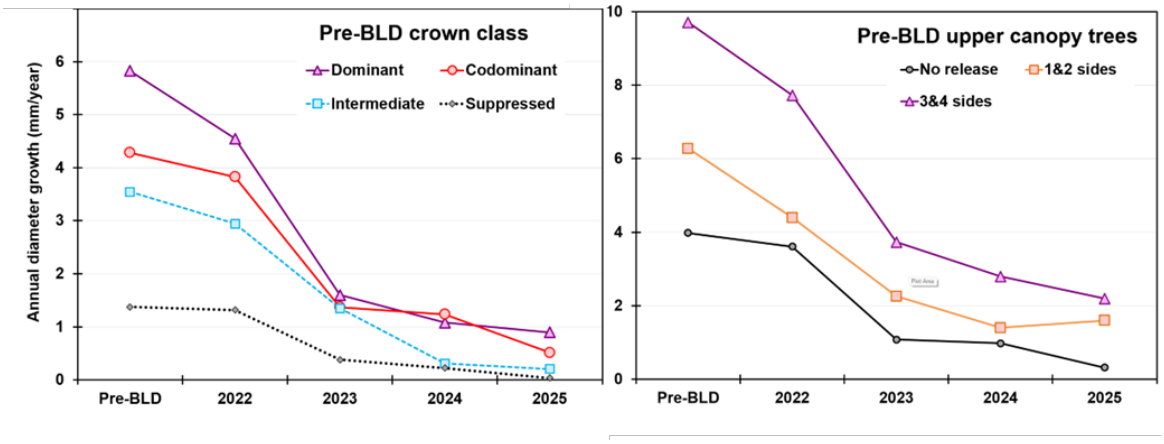


Figure 6: Changes in beech growth rates over time in response to BLD. Panel on the left shows differences by crown class and panel on the right shows differences in response to forest management that increases crown light exposure by releasing trees from competition.

4. Emerald ash borer (EAB)



Figure 7: Spathius galinae in an ash tree in Cromwell, CT in 2019

Emerald ash borer was first detected in northern New Haven County, Connecticut in 2012 and spread steadily to the rest of the state. Connecticut began releasing biological control agents starting in 2013 in collaboration with the national EAB biological control program. Since that time, releases have been made at 17 sites. Over 175,000 *Tetrastichus planipennisi*, 62,000 *Oobius agrili* and, since starting releases in 2016, 14,793 *Spathius galinae* have been released. Parasitoids have been recovered from all but 2 of the release sites. We have documented parasitoid spread from release sites up to 14 km and have captured individual *Spathius galinae* 28 km from their release sites. Studies in 2020-2022 recovered parasitoids at release sites regardless of age, and EAB larval density. We also found that even at extremely low larval densities, parasitism rates were similar

to parasitism rates in areas with high EAB larval densities. We are currently engaged in long-term studies of ash recovery.

Much of the monitoring of EAB populations has been done using the native wasp, *Cerceris fumipennis*. This wasp uses adult buprestid beetles to provision their nests, and the proportion of EAB in their prey is indicative of the level of EAB in the landscape within a kilometer of their nests.

2025 data shows that EAB populations are continuing to decline in Connecticut. Biosurveillance conducted in 2025 had very little catch of EAB in the center of the state where the infestation was first detected in 2012. The largest remaining populations are in the north- western and eastern corners of the state, but they have begun to decline as well (Figure 10). There is no evidence of a second introduction into the state.

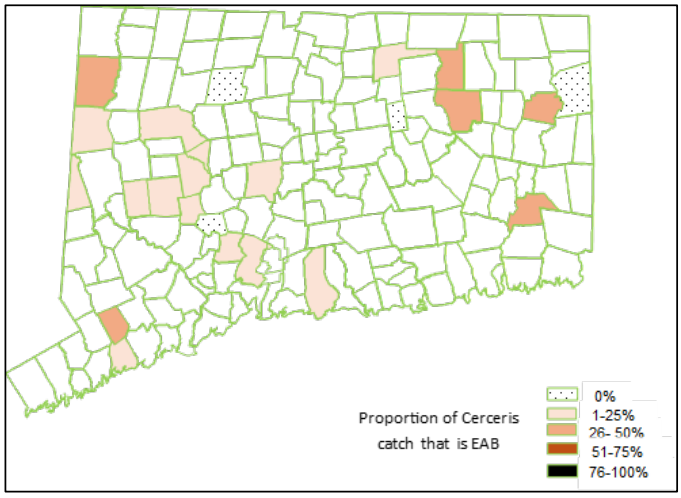


Figure 7: Proportion of *Cerceris* catch that is EAB in 2025.

To assess the longer-term impacts of EAB on understory plant composition (e.g. the relative abundance of native versus non-native species), tree regeneration, and stand dynamics, we established 81 plots at 27 sites in aftermath forests across an estimated time since EAB detection gradient in 2024. This sampling effort included 3 sites per EAB detection year from 2012 through 2020, and within each site, we established 3 plots that ranged in relative ash basal area (<30%, 30-50%, ≥50%) to capture differences in canopy gap sizes and understory light regimes following overstory ash mortality. At each of the 81 plots, we characterized overstory, midstory, and understory forest structure and composition and measured environmental variables, including canopy transparency and soil conditions.

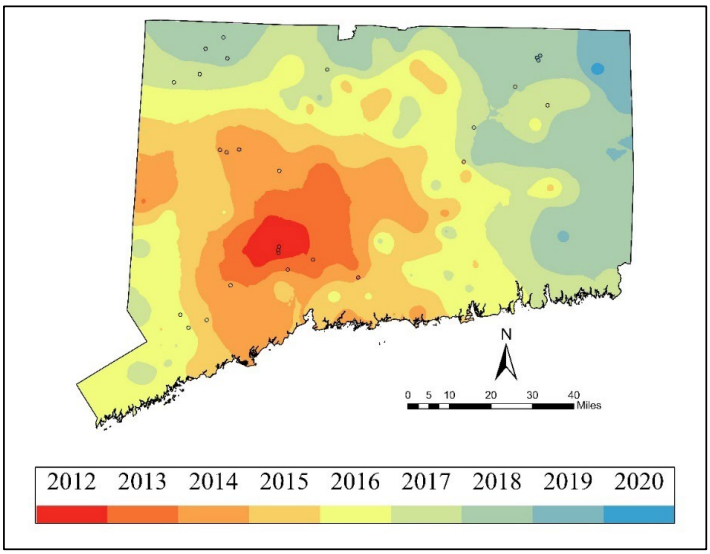


Figure 8: Locations of the 27 sites arrayed across a time since EAB detection gradient that we are using to assess the impacts of EAB on tree regeneration, understory plant dynamics, and forest development. Data for estimating the time since EAB detection year was provided by Dr. Claire Rutledge. Figure was made by Jack Hatajik.

In total, this sampling effort included 386 ash trees, the vast majority of which were in the overstory (diameter at breast heigh [DBH] ≥ 10 cm; *n* = 382) rather than the midstory (DBH = 1-10 cm; *n* = 4). Of the 386 ash trees, 63 were alive and 323 were dead, and the percentage of living trees increased in later EAB detection years. We observed no living overstory or midstory ash in sites where EAB was first detected in 2012 or 2013. From 2014 through 2019, the average percentage of surviving ash ranged from 5 to 23%, and in the 2020 sites, 78% of ash were still alive. Of the 63 living ash, 26% had resprouts (*n* = 15) but only 6.8% of dead ash had resprouts (*n* = 20). Through these analyses, we have identified several potential "lingering ash" to continue monitoring for potential EAB resistance.

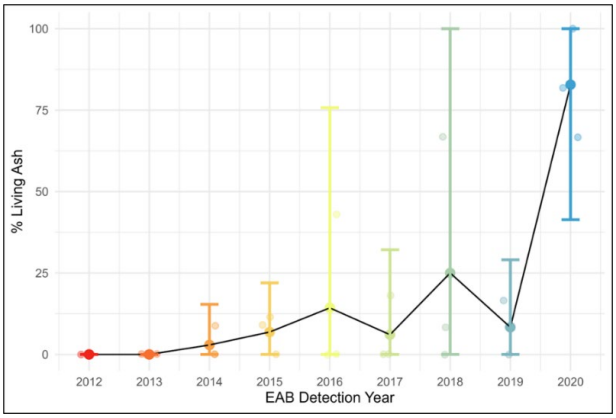


Figure 9: The percentage of remaining living ash trees by estimated EAB detection year.

We observed a strong, positive association between the relative dead ash basal area and years since first EAB detection. We also found a strong, positive association between the relative dead ash basal area and canopy openness. In other words, ash mortality is increasing over time, which is directly causing changes in light reaching the understory. Additionally, the response of understory plant composition may be dependent on the relative abundance of ash in a given stand. Ash mortality was strongly associated with groundstory plant composition and tree regeneration via changes in light. The relative dead ash basal area was positively associated with non-native plant cover and negatively associated with the abundance of native tree seedlings. These results suggest that EAB-induced ash mortality is shifting groundstory composition towards a higher abundance of non-native plant species and reducing native tree regeneration.

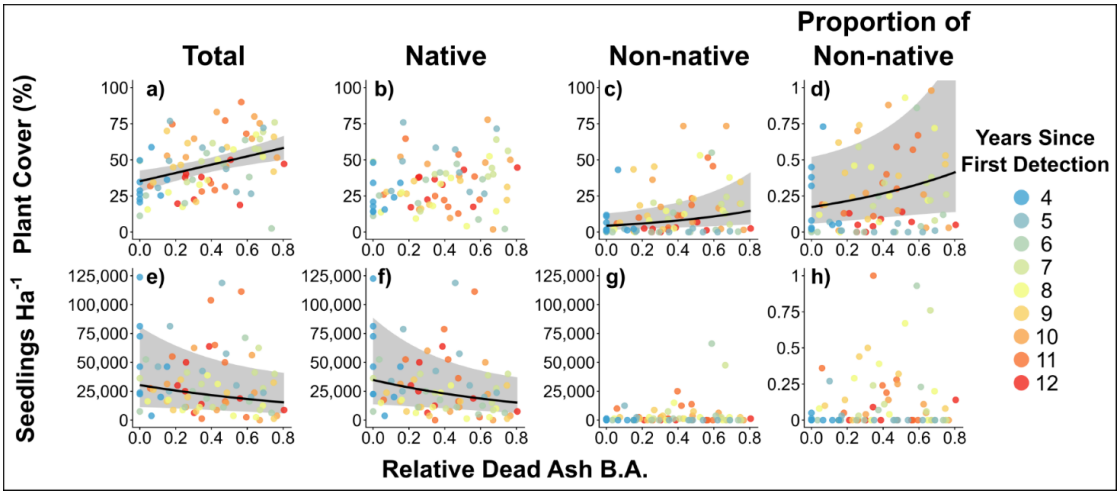


Figure 10: Modeled relationship of the fixed effect of the relative dead ash basal area (B.A.) in linear and generalized mixed effect models with response variables related to plant cover and tree seedling count, with site (n = 27) as a random effect. Points are color-coded by their years since 1st EAB detection. Trend lines and confidence intervals (CI = 95%) were added to models that were significant ($p < 0.05$) or marginally significant ($p < 0.10$).

In 2024 and 2025, we supplemented our monitoring of the impacts of EAB on forest composition by extending our sampling to sites that have undergone recent management in response to EAB (n = 11). This sampling effort will allow us to directly compare the plant composition and tree regeneration following EAB ash mortality in unmanaged and managed stands. Results will provide information for land managers on where proactive management might be best directed following EAB infestation.

5. Elm zigzag sawfly (EZS)

Elm zigzag sawfly was first detected in Connecticut in 2024. Inspectors continued to scout for signs and symptoms across sites in seven of the eight state counties (as of 2025, there is no evidence of EZS in New London County). There were nine positives in two counties (Fairfield and Litchfield), including one site with a cocoon.

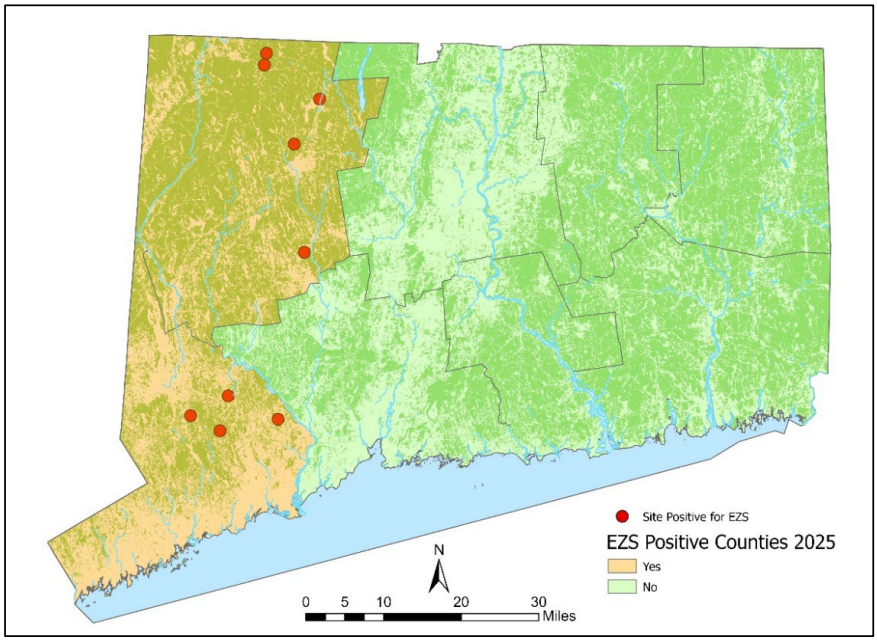


Figure 11: Locations of sites where elm zigzag sawfly was found in 2025.

6. Hemlock woolly adelgid (HWA)

There was highly variable HWA winter mortality in Connecticut in 2025 due to a polar vortex which brought sub-zero arctic air south in late January 2025 to the upper half of CT. Due to elevation effects, greater HWA survival was recorded at higher elevations while significant HWA winter mortality (>80%) was recorded at lower elevations along rivers and streams. Coastal areas of CT did not experience sub-zero winter temperatures in 2025 and there was HWA population expansion.



Figure 12: Crown thinning and discoloration of eastern hemlock during the July 2025 aerial detection survey

For the second consecutive year, Connecticut experienced severe to extreme drought in late summer into fall. Drought stress and thinning crowns were evident in many hemlock stands. However, hemlocks in several recent riparian biocontrol release areas are showing signs of good recovery. Assessments are ongoing currently.

In 2025, approximately 28,100 *Sasajiscymnus tsugae* (*S. tsugae*) were acquired from the sole commercial producer, Tree Savers in PA, and released on state lands, town open space, land trusts and private game refuge lands, a lake community, and water company land. Tree Savers, PA also donated 1,300 *S. tsugae* for release on CT state lands. Additionally, there were many releases on individual homeowner properties in 25 Connecticut towns. Through the National Wild and Scenic Rivers Program, funded by the National Park Service, 5,000 S. tsugae were released in the Upper Farmington River watershed and 6,000 released in the Lower Farmington and Salmon Brook watershed in 2025. Releases were made at 30 sites in 12 towns along the Farmington River and its tributaries in Northern CT and constituted 39% of 2025 releases.

7. Winter moth

Eastern Connecticut experienced substantial winter moth defoliation on maples and other hardwoods in May and June 2025 prior to the aerial detection survey. Damage in Bolton, Canterbury, and Brooklyn, CT was particularly pronounced. Concurrent damage with oak leafroller was also noted.



Figure 13: Winter moth defoliation in eastern Connecticut.

8. White pine needle disease

Crown discoloration and needlecast from white pine needle disease continued to be widespread on the majority of white pine throughout the state in 2025, though we have not observed any notable increase in mortality.

9. Oak wilt

Like 2024, we continued to test suspect oak wilt samples in 2025 based on public inquiries, but to date no oak wilt has been confirmed in Connecticut. We have substantially increased outreach efforts given the proximity of recent detections in New York.

10. Southern pine beetle (SPB)

Southern pine beetle was first detected in the state in early 2015, the apparent result of a weather pattern that rained SPB down on Long Island, NY and southern New England. Initial detections were made in all 8 counties and impacted 5 species of conifers.

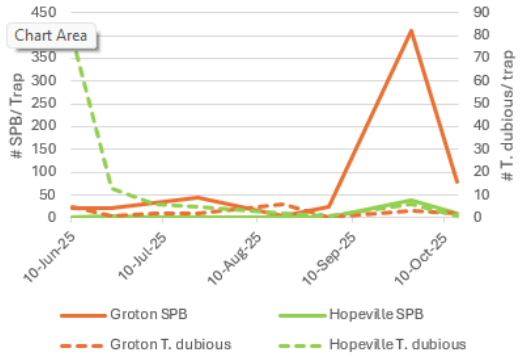


Figure 14: Changes in SPB trapping results over time for two sites in Connecticut.

In 2025, we continued trapping for SPB using standard Lindgren Funnel traps and the SPB combination lure from Synergy (Canada). We trapped biweekly starting in early June and will continue to trap through the end of November. We have not finished processing all the sites but Figure 15 shows the SPB and *Thanasimus dubius* numbers for 2025, for two of our sites, Candlewood Wildlife Management Area in Groton and Hopeville State Park in Griswold. Both sites have been trapped since 2017.

We have yet to see more infested trees, and the populations continue at endemic levels. Populations peaked in 2021, with the Groton site capturing 4,439 SPB in a season. By 2024 numbers had dropped to under 1,000. Numbers this year are comparable to last year. Although Groton has had the highest number of SPB of the sites trapped, the trends in numbers are similar among sites.

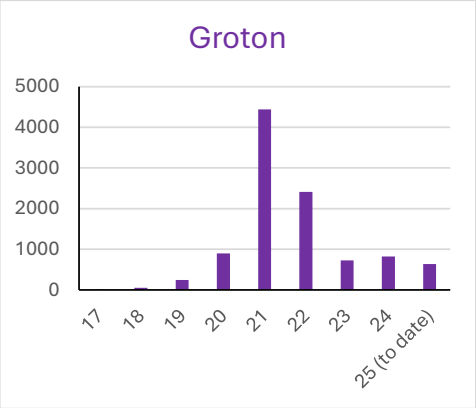


Figure 15: Changes in SPB trapping levels over time at one survey site in Groton, CT.

In addition to SPB trapping, we also conducted a pitch pine survey in 2025 to assess the effectiveness of pitch pine habitat restoration measures. Pitch pine populations in Connecticut have been reduced by 95% from their historic levels due to a combination of development and fire suppression. Stands can be found on the tops of ridges where the ground is arid enough to allow them to compete, and in some lowland sand plain areas (which, not coincidentally, have also been reduced by 95%). However, in those low-lying areas, hardwoods like oak have largely taken over. Connecticut's Department of Energy and Environmental Protection (DEEP) have targeted several of these small pitch pine preserves and used release cuts and controlled burns to help promote the growth of seedlings. This summer we did surveys in three of those areas, using an angle gauge, and fixed radius sampling to estimate the basal area of pitch pine and other tree species.



Figure 16: Ariel view of surveyed area at Wharton Brook. The red line shows the outline of the stand (6 acres) and the yellow pins show survey plot centers.

The below table shows survey results of one of those sites, Wharton Brook State Park in Wallingford, CT (41.426, -72.833). This park is located on the North Haven sand plain and was once dominated by pitch pine. This location is also the first site at which SPB was detected in Connecticut in 2015. In 2016 a release cut was done targeting the oak and other hardwoods in the pitch pine preserve of the park. There was a post-harvest inventory conducted of pitch pine and hardwoods in 2016 by DEEP. In 2018, a tornado passed through park and snaped many of the pitch pines in half, leading to a reduction in the number of mid-size pitch pine. The overall basal area of pitch pine in 2025 was 40% of that in 2016. The distribution of pitch pine size classes was also strikingly different, with trees distributed across all size classes (except >23.5). However, the smaller pitch pine were outnumbered by hardwoods by 7 to 1. The major hardwoods were black birch, black oak and red oak.

	2016 post-harvest		2025	
Size Class (inches)	Pitch Pine	Hardwoods	Pitch Pine	Hardwoods
< 5.5	0	0	6.67	28.33
5.5*11.5	3.6	3.6	6.67	10
11.5*17.5	43.2	6.6	3.33	5
17.5*23.5	0	0	1.67	3
>23.5	0	3.6	0	0
Total	46.8	13.8	18.3	46.6

Basal area per acre for pitch pine and hardwoods after the 2016 harvest and in 2025. The 2016 data was collected by Gerard Milne of the DEEP Division of Forestry.

11. Sugar maple early leaf drop

Over the last three years, we observed widespread premature fall browning and leaf drop by sugar maples, which is consistent with reports from other states in the Northeast. Although the cause is not currently known, we expect that it is related to wetter and warmer conditions in the late summer that could be promoting foliar pathogens.

12. Drought

Connecticut has been experiencing abnormally dry to severe drought conditions throughout much of 2025, that of which was particularly prevalent in mid-to-late summer. As a result, we observed significant early leaf senescence, discoloration, and leaf drop at the onset of autumn. Species of oak and hickory species appeared to be affected the greatest. This irregular response prompted an influx of mistaken public inquiries for oak wilt. Although national data may not officially characterize Connecticut as experiencing significant drought, the notable large-scale decline of many of our hardwoods suggest that 2025 brought on functional drought conditions that are having profound impacts in our forests.

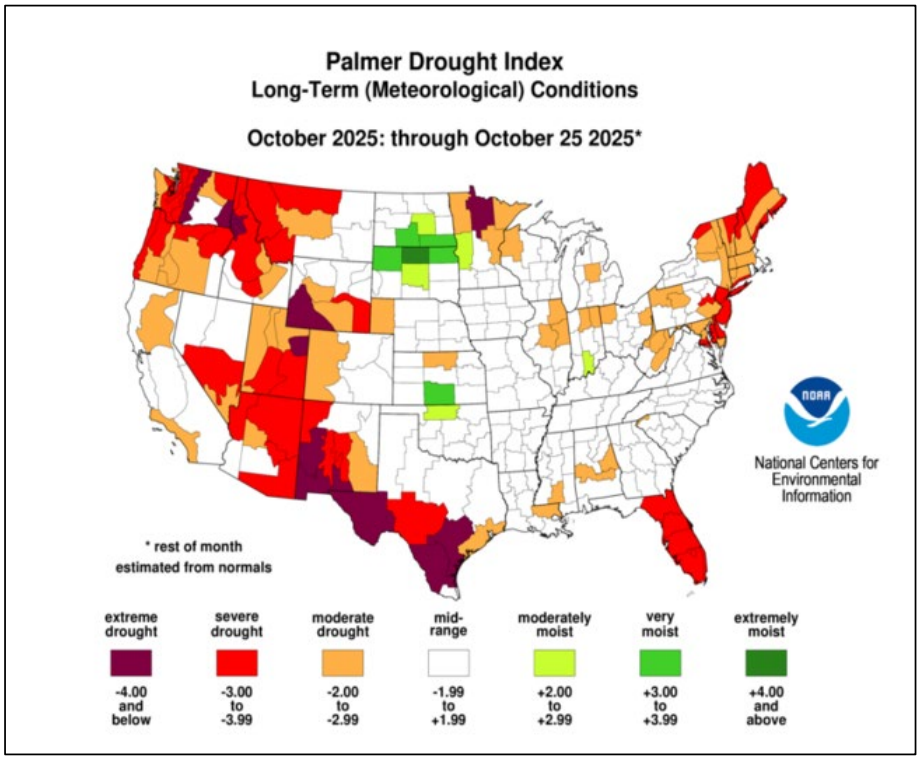


Figure 17:13 Palmer Drought Index map of the continental U.S. for October, 2025.

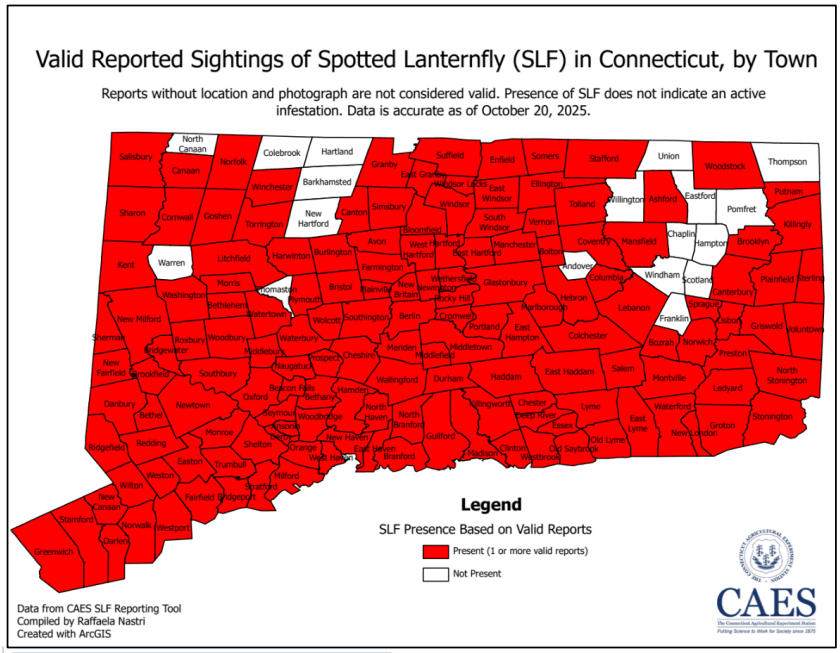
13. Spotted Lanternfly (SLF)

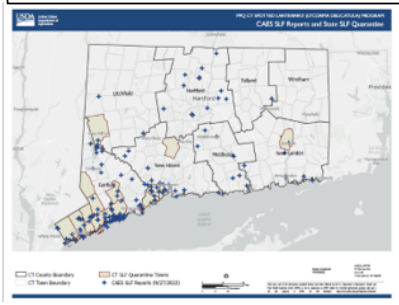
Spotted lanternfly (*Lycorma delicatula*), an invasive non-native insect, has been detected in every county in Connecticut. SLF was first detected in Connecticut in 2020 at the southwestern edge of the state. Citizen concern is high. SLF is a large, colorful insect, and its gregarious habit and copious honeydew make it conspicuous to all. Vineyards are also on high alert, and SLF have been seen in several in the coastal regions of the state. To date, there have not been reports of serious impact on grapes. It has been spreading quickly along transportation corridors like I-95 and I-91. Like many invasive insects, satellite populations have been created and grown to merge with the main population. Looking at the figures below you can see small, isolated populations in both New Milford, CT and Norwich, CT



Figure 18: Adult spotted lanternflies gathered on an overstory red maple tree in a forest within the Sunny Valley Preserve in Bridgewater, CT.

in 2022. By 2025, these two populations have grown and spread. It is interesting to note that for both of these sites, the direction of spread is not uniform, with many more sightings to the south than north. Although we do not know for sure why, it is likely due to the relatively small amount of traffic in that direction. It could also reflect population density, as there are fewer people living in those areas to make reports.





A graphic produced by APHIS/ PPQ and CAES showing confirmed sightings and established populations as of 2022.



The image on the left was captured on 11/17/2025 from the public reporting portal hosted by CAES and APHIS/PPQ.

Figure 19 Spotted lanternfly detections and spread across Connecticut.

The impact of SLF on forest health remains an open question, but injury to saplings seems the most likely concern. Although this insect has not yet been observed to negatively affect overstory trees, we have frequently observed a high quantity of adults coalescing primarily on tree of heaven (*Ailanthus altissima*), black birch (*Betula lenta*), and red maple (*Acer rubrum*) in forests across the state. We will continue to passively monitor SLF presence in forests.