

Tree Mortality in Eastern CT: A Preliminary Report

Thomas E. Worthley

Associate Extension Professor, UConn Extension

“The Slow Storm”



Severe canopy loss/oak mortality at Beaver Brook State Park in Chaplin – mid June 2018

UCONN | COLLEGE OF AGRICULTURE,
HEALTH AND NATURAL RESOURCES

EXTENSION

Acknowledgements:

Assistance and contributions to this report were generously provided by:

CT-DEEP Forestry Division

CT DOT

Eversource

CT Agricultural Experiment Station

Town of Canterbury

Town of East Haddam

CIRMA

UConn Forest Crew

Tennett Tree Service

Iselin Tree Experts

Distinctive Tree

NECOG

CT Tree Wardens

The Slow Storm: Tree Mortality in CT from Invasive Insect Pests.

by Thomas E Worthley, UConn Associate Extension Professor, Forestry

During the early summer of 2018 it became apparent that numerous trees throughout eastern and southern Connecticut, including Haddam and Higganum, did not produce leaves this spring, having died sometime during the winter. It is not unusual to lose a tree or two to natural causes here and there at any time of year, but the massive scale and extent of oak tree (*Quercus spp.*) mortality during the winter of 2017 to 2018 is striking and concerning. This mortality is the result of a combination of recent gypsy moth (*Lymantria dispar*) infestations (defoliations) and associated with drought conditions in 2016 and 2017. Many trees, after being defoliated, simply were not able to produce sufficient carbohydrate reserves to survive. Combined with the anticipated loss of ash trees (*Fraxinus spp.*) in our area due to the invasive emerald ash borer (*Agrillus planipennis*) which has been moving across Connecticut, the sheer numbers of LARGE standing dead trees throughout Haddam and East Haddam and other parts of the state presents what might be described as a slow-moving environmental disaster.

Emerald ash borer first appeared in the Connecticut landscape in 2012 after a slow but relentless spread across the country and has been gradually decimating the ash population in CT since that time. A long period of detection sampling and information dissemination has raised the awareness about this pest with professionals, elected officials and members of the public. We've known it was coming and in many ways arborists, foresters, town staffs, CT-DOT and utilities have been preparing for it.

The sheer degree and extent of oak tree mortality in central and southeastern CT, on the other hand, was unexpected and unprecedented and has overwhelmed many homeowners, Tree Wardens, foresters and others.

Many adult citizens recall severe gypsy moth defoliations during the early 1980s. At that time the forest took on a winter-like appearance across a large portion of the state for a couple summers in a row as the population of gypsy moth caterpillars exploded into our vast oak forest canopy. The caterpillar population then crashed as quickly as it grew (due to caterpillar disease factors) and since that time fungal and viral diseases, among an assortment of other caterpillar predators, has kept the population in check. Those of us that take note would see only spot infestations in various locations since that time. During the 1980s, as expected, trees produced a second set of leaves each of those summers, and while there was some mortality, its severity was not as intense or as wide-spread.

Currently in some places a secondary mortality event is also evident. Early and mid-season browning of leaves on individual trees that leafed-out and seemed fine this spring indicates that other pests or diseases are continuing to affect previously stressed trees. Among the factors that might be responsible are two-lined chestnut borer, a native pest, and armillaria fungus, also known as "shoestring" fungus.

The current problem is two-fold:

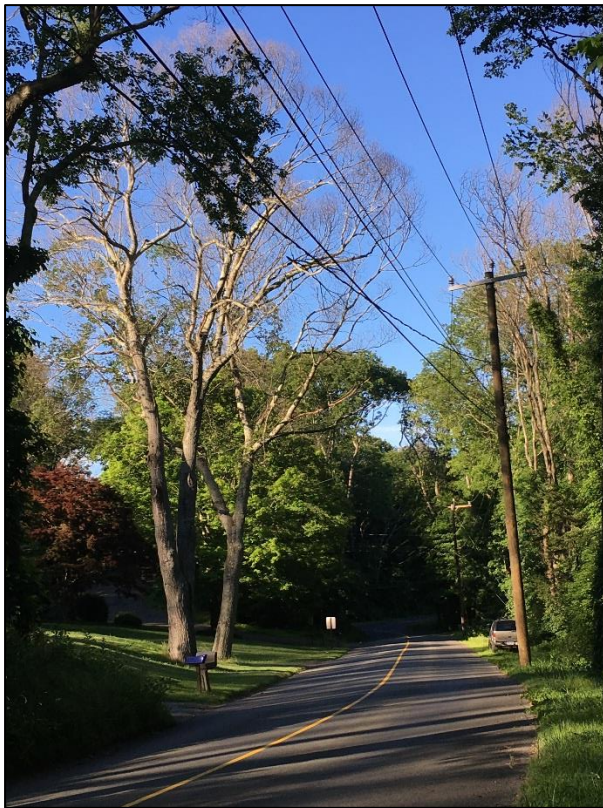
First, very large dead trees with wide spreading crowns are very numerous along some roadways in eastern Connecticut. These conditions seem quite variable. One can drive several miles along a local road and not see any dead trees and then pass a stretch that has as many as 30 or 40 dead trees per mile. Implications for public safety are apparent. Most of us have seen the numerous dead trees along Rt.154 north of Seven Falls.

Second, there are forest stands throughout the affected area experiencing severe mortality rates. This author has been in stands in eastern CT ranging from a few more dead oaks than usual to as much as 80-90% canopy loss. And these are not necessarily the poor-growing, stressed and uncompetitive trees, but are often tall magnificent trees with large crowns that seemed most robust and healthy. Assessment efforts are underway to ascertain the degree and special extent of mortality in forest stands, but in our area some stands of trees exhibit 20 to 50% mortality rates. In most cases loss of oak forests from the landscape is not anticipated, but many mature oak stands will become young oak stands and some areas will transition to mixed species stands.

From a timber value standpoint the potential for economic loss for woodland owners is potentially severe. Problem is that the current total volume of commercially valuable standing dead timber that might be salvaged is beyond the capacity of the timber industry to address it.

From a public safety point of view, the numbers of dead trees that have the potential to ultimately impact roadways and power lines is well beyond the capacity of property owners, town budgets, CT-DOT and/or utilities to address.

Initial data from a random sampling of 160 miles of local roads in numerous Eastern CT towns from Sprague to Durham has indicated an average of 14 dead roadside trees per mile, half of which can be categorized as high potential risk. This survey is being conducted by student crews from UConn.



High-potential-risk trees photographed in Higganum and Brooklyn, CT in mid-June, 2018

During roadside tree mortality surveys, a tree is characterized as high potential risk if it is a large tree, with slight to severe lean toward the road and/or with most of its limbs and branches over the road, such that if not removed, half or more of the mass of the tree will, over time, eventually drop in the road. A sampling of local roads in Haddam for example, where mortality from both gypsy moth and emerald ash borer is occurring, counted 157 such high-potential-risk trees on a 22 mile sampling of road segments for an average of about 7 problem trees per mile (smaller, less-potentially risky trees are not included, but are much more numerous). Estimates of conditions in East Haddam are similar. At a cost of somewhere between \$500.00 and \$1000.00 per tree, just those 157 trees will cost upwards of \$75,000, perhaps over \$100,000 for removal. State data for local road mileage estimates just under 100 miles of local roadway in Haddam, so the problem projects to five times the sample size and dwarfs the annual budget allocated by the towns for tree issues. One or two or a half-dozen dead trees along roads in town might be “acceptable” risk, but if the sampling data is accurate and we estimate over 700 high-potential-risk trees in Haddam it will (if not addressed) become downright risky to drive or walk in the community or in the woods over the next few years. The towns do not have a full-time tree crew and rely, like most communities, on contract arborists. The severity of the problem in towns from here to Rhode Island makes it likely that contracting with tree crews will involve a wait. CT-DOT will work as quickly as possible to address problem trees along state highways, and Eversource will remove some trees during their trimming rotation, but given the large affected area, utility crews are operating at full capacity.

Key are the phrases “potentially problematic” and “over the next few years”. Unlike ash trees, dead oak trees do not decay and disintegrate in a short period of time. The first heavy, wet snow will bring down small twigs and branches this winter. Next summer, larger limbs and branches will decay and drop, a few at a time. Larger limbs and trunks of oak trees might retain some structural integrity for another 3 to 5 years, but eventually the root system will rot and, gravity being the law, the entire remainder of tree will topple in whichever direction it leans. The more severe the lean, the sooner it will happen. Liability for possible damage or injury, even a few years from now when gypsy moth is old news, is likely to rest with whoever owns or is responsible for the tree in question.

Recommendations for homeowners and landowners with dead trees near boundary lines or roadways are to obtain the help of an arborist or qualified tree service as soon as possible. Dead trees are hazardous trees and the owners of hazardous trees can be liable for damage or injury they might cause. The sheer number of trees that need attention has made it difficult to contract with arborists, so be persistent, but also be careful about engaging inexperienced or unlicensed contractors. Check references. A listing of licensed arborists can be found at the web site of the CT Tree Protective Association, www.CTPA.org.

Woodland owners are advised to consult with a CT Certified Forester about the condition of trees on their properties. Recommendations for management actions will vary depending on mortality severity and size of that affected area. A listing of Foresters can be found at the CT-DEEP Forestry Division web page. Look for the “Certified Forest Practitioners” listing. Text within the document explains the roles and authorizations for different levels of certification, and is important to note. Landowners should be aware, however, that trees can lose some commercial value once they have died, and that stands with numerous dead trees to harvest are likely to be extremely dangerous to work, again potentially affecting value.

Woodland owners with specific questions can contact me at thomas.worthley@uconn.edu.

Dead trees are dangerous. Please do not attempt to remove or harvest dead trees on your own without proper personal protective equipment, PPE (chaps, hardhat, eye and ear protection), and appropriate chain saw safety training. There are no chain saw experts or professionals that do not use PPE. If you are not an expert, why would you think you do not need it?

In short:

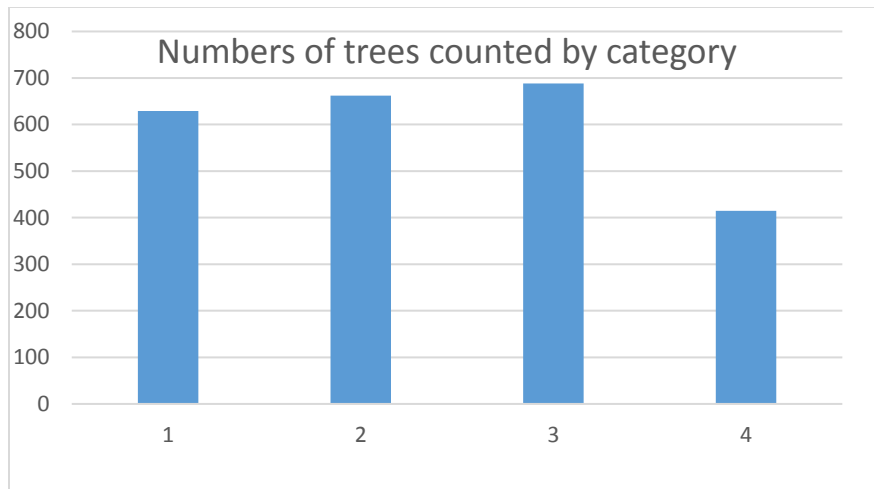
- If your tree did not produce leaves this year, it is most likely dead and won't produce leaves next year. This mortality is likely the result of invasive exotic insect pests in combination with drought conditions.
- Trees that produced leaves this spring, but turned brown this summer have also died, due to secondary opportunistic pathogens taking advantage of stressed trees.
- Ash trees that are dead decay quickly. Small twigs and branches will start dropping immediately, with larger branches dropping over the next several months. Depending on lean, the trunk might drop any time during the coming year or two.
- Oak trees decay more slowly. Small twigs and branches will begin to drop this fall and winter, with larger branches dropping over the next year or two. The main trunk and limbs of oaks might retain some structural integrity for several years, but again, depending on lean, the trunk will tip over eventually as the root system rots away.
- **Removing dead trees is dangerous.** Without proper training and safety equipment, people are easily injured. Professional help is strongly encouraged. Near houses and structures, seek the help of an arborist. A listing can be found at the web site of the CT Tree Protective Association, www.CTPA.org.
- To address affected stands on forested lands, the help of a CT Certified Forester is suggested. A listing can be found at <http://www.depdata.ct.gov/forestry/ForestPractitioner/directry.pdf>. Be patient and persistent. The problem of tree mortality in our area has arborists and forestry firms working at full capacity, and they're likely to be fully booked for some time.
- If you are planning to use dead trees for firewood, please do not transport the wood to other states. Use it/burn it near where it has been harvested.
- If you are cutting wood for your own use, equip yourself with personal protective equipment. Chaps, hard hat, ear and eye protection at a minimum. A chain-saw injury is a life-changing experience.

In July of 2018 two ad-hoc meetings were held by concerned stakeholders to exchange information and discuss roadside tree mortality. Attendees at these meetings included representatives from CT-DEEP, CT-DOT, Eversource, UConn, some town elected officials, CIRMA, Tree Wardens and members of the forestry and arboricultural communities. The discussion was wide-ranging and thorough. Major points of agreement amongst attendees included the following:

- Roadside tree mortality presents a serious potential public safety hazard.
- The scale and scope of the problem is beyond the capacity of CT-DOT, Eversource and many towns to address the issue.
- Time is of the essence. Dead trees are unpredictable and dangerous for tree workers and timber operators, and become more dangerous the longer they stand.
- Additional assessment data is essential, plans to continue that effort should be encouraged.
- Emergency funding and logistical support should be sought. Is FEMA an alternative?
- Additional effort in this regard is planned.

Road Segment Tree Mortality Survey Results:

Random road segments totaling 160 miles, 2384 trees counted.



Category 1: Nuisance only, small tree, minimal potential impact on road or infrastructure

Category 2: If left alone 25% or more of the mass of the tree would eventually drop in the road

Category 3: Large tree, 50% or more has the potential to impact the road and/or power lines

Category 4: Large spreading tree, clearly leaning toward roadway, 75% or more of the mass of the tree would drop in the road

