Weston Trees and Tropical Storm ISAIAS – August 4, 2020

Wind Throws and Branch Snaps

By Dr. Tom Failla, August 8, 2020

This is a brief report on tree resilience and failure based on the Weston Tree Warden's observations during and after tropical storm Isaias.

While scores of trees were damaged or completely felled by the storm, most trees weathered the peak gusts of 70 miles per hour. In pulsing and also sustained winds ranging from 45-to-65 miles per hour that moved into our area around 11 a.m. Tuesday and continued for about five hours, some may have noticed how trees moved in an asymmetrical fashion as if in a dance. Trees behave in this fashion to avoid creating harmonic pendulum-like movement that builds rocking momentum that would break or fell the tree. In addition, wooded stands of trees tend to dampen the wind effects as each tree does its part to shed wind energy. Many of the problems with branches and trees crashing on wires and poles came about because they are at edge of tree stands or stand alone. Also, their root structures may have been compromised by paved areas, compacted ground, walls and other structures, lawn cover, mechanical injury to bark and very importantly, the lack moisture in the past year. Less rainfall makes tree branches and even trunks less pliable and prone to snapping. This was particularly so in this storm for maples and red oaks, which are heavy hard woods that cause much damage when they hit structures. Some trees also grow taller than those around them or are in high points of the terrain and their leaves act like sails taking the full brunt of the wind and thus get topped or toppled.

Currently, Fairfield County from August 2019 to July 2020 had 47 inches of rainfall versus the 50.2 norm or a seven percent deficit. Since January, the area has experienced a 13 percent deficit from normal conditions 25 inches versus 28.5 inches. As a result, this summer, the Connecticut Drought Information Center declared Connecticut in Stage 1 – Below Normal Conditions and the federal Drought Monitor identifies southwestern Connecticut as Abnormally Dry.

Other reasons why trees fail in winds above 45 miles per hour is because they may be shallow rooted and in soft soil. Some trees simply have aged out. They may also be weakened by disease, physical damage to trunks, and increasing decay and insect attack. In Isaias winds came in from the east and north east which attacks trees in this area on their weak side, as most prevailing breezes come into this area from the south and southwest. Another reason for failures are co-dominant trunks with v-formations rather than a u-formation at the point of union. The v-formation has included bark and this is an inherent weakness for one or the other leaders. Some trees may have decay hidden by bark in the base or up the trunk 20 feet or more feet. Mushrooms growing from the bark may indicate a decayed or weakened condition. Crossing branches that rub or interfere with one other can also weaken a branch making it prone to snap and flight some distance from the tree thus hitting roofs and utility poles. Good pruning can prevent many problems. Prompt removal of diseased, damaged or dead plant parts helps limit the spread of harmful insects and disease, as well as reduce the possibility of future storm damage. Licensed arborists can assist homeowners in assessing the condition of trees on their property and remedial steps to increase tree health and decrease tree failure. In some cases, the proximity of trees to structures and utility wires may require prudent removal, especially as the tree gets larger and heavier with each passing year. Replacing them with appropriate trees and shrubs less likely to create future problems may be the best approach.

While many of the trees that fell were living, healthy trees, few, if any dead or dying ashes around town were taken down by the storm. This is because they have lost their leaves and winds could not gain leverage on the trees but rather flowed through them even though many are brittle. These dead and dying ash have been a problem along our roadways for more than three years, as the emerald ash borer (EAB) continues attacking the species which has no natural defense for this insect from northeast Asia. We expect to be dealing with this problem for at least another 3-to-4 years until all the mature ashes are dead. When the ash suffers infestation the tree decays from the top and the bottom including roots. So, branches fall by the force of gravity and eventually with roots decayed the tree loses its purchase in the earth and topples over. The town and the utilities have had a concerted effort to remove the dead ashes and hundreds have been taken down but funds and resources are limited and we are not always able to remove the tree before it fails. Researchers are experimenting with a number of natural organisms to combat the EAB and perhaps in the future young ashes will grow again and have a healthier life.

Following are pictures showing different types of tree failure during the storm. These were taken by Tree Warden Dr. Tom Failla mostly in the forest on Fromson-Strassler Town Property at elevations of approximately 500 feet, one of the highest points in town. The trees pictured were the only ones with significant damage or failure within more than a mile radius covered on a walk August 8, 2020.

Top snapped off this chestnut oak tree 18 inches in diameter and more than 70 feet in height.

White oak (left) on lower trail at Aspetuck Land Trust Honey Hill-Belknap Preserve and red oak hanger on ridge of neaby Fromson Strassler town property. These may drop at some point. When walking on trails in our woods please be sure to look up and be vigilient over the next many months until these and other hangers like them fall.

This 36-inch diameter red oak snapped at decay point about 25 feet up the trunk. No prior evidence of the decay


This co-dominant red oak shed the weaker leader. Note decay at the point of union. The tree base was nearly 48-inches wide. Now it is about half that in size.


Red oak suffered from unseen rotted base. The felled tree was 15 inches in diameter and more than 60 feet in height.


Red oak 18 inches in diameter lost its purchase on a rock ledge. Earth uplifted stood more than six feet.



Study in contrast. On the left and middle is a 24-inch hickory that has compartmentalized decay through middle of its trunk (see daylight on other side) and still stands more than 60 feet tall only eight feet from a utility pole well below the ridge at Fromson Strassler. It survived the Aug. 4 storm. Meanwhile on the right, this 24-inh hickory near the paved road on Kettletown had suffered numerous mechanical injuries through the years and toppled onto a stone wall as Isiais winds started.

Tree wardens are appointed public officials. Each municipality is required to have a tree warden. Under Conn. State General Statute Sec. 23-59 Powers and Duties, the tree warden is responsible for "the care and control of all trees and shrubs" along town public roads or on town grounds except those along state highways under the Control of Commissioner of Transportation. The tree warden is also responsible for assessing the need for the removal or pruning of town trees as matter of public safety. In Weston, Dr. Tom Failla, was appointed tree warden effective July 1, 2020 by the Board of Selectman.

References for his article:

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Patterns of Storm Injury and Tree Response by Kevin T. Smith, Walter C. Shortle, and Kenneth R. Dudzik USDA Forest Service Northeastern Research Station

https://portal.ct.gov/-/media/DEEP/forestry/icestorm/PatternStormInjuriespdf.pdf

National Drought Monitor

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https://portal.ct.gov/Water/Drought/Drought-Home

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