Ice Storm ’98 Revisited

By Karen Bennett

Introduction

Severe, unpredictable weather is as much a part of New England as stunning fall foliage, baked beans, seafood and maple syrup. On January 5-16, 1998, a series of freezing rainstorms blanketed three Canadian provinces and much of New Hampshire, Vermont, Maine, and New York. Ice developed when warm moist air from the Gulf of Mexico flowed over cold, dense arctic air. As the moisture fell, it cooled and froze. Homeowners in the most severely hit areas talk of hearing hours of thunderous “rifle shots” as tree limbs broke. An estimated 800,000 acres were damaged in New Hampshire.

Trees experienced three kinds of damage: leaning and bending, broken branches, and broken tops. The severity of the damage was related to the aspect and slope of the land. Trees on south and southeast slopes and at elevations of at least 1300 feet in the southern part of the state and 1600 feet in the north country were hardest hit Though some softwoods were affected, this storm damaged mostly hardwoods.

A Look Back and a Look Forward

Weather events become mythic, passing into legend because they are memorable, a little more extreme and unusual than the norm. Ice storm ‘98 is joining the hurricane of ‘38 and the blizzards of ‘69 and ‘78 as just such events. Does ice storm ‘98 signal a change in the earth’s climate? It’s natural to speculate after experiencing such an event. Though the January ice storm is the worse on record for this region, other storms are well-documented. Eight major ice storms have hit this area. The most similar storm in geography and severity occurred in 1929. At that time, *The Concord Monitor* reported that the storm was “...One of the most severe storms to hit New England for several years...did untold damage for several days.” A description that could have easily been written in 1998.

Though emerging consensus among the scientific community is that the global climate is changing, we don’t know if the ice storm of 1998 means anything more than the right (wrong) jet streams mixed at the right time. Regardless, the storm had an immediate and long lasting effect on New Hampshire’s forests and trees.

Assistance Available

The UNH Cooperative Extension, NH Division of Forests and Lands, and the USDA Forest Service are cooperating to help communities and landowners with long term recovery. Cost share assistance is available through the special ice Stewardship Incentive Program (SIP). This program helps landowners who own between 10 and 5,000 acres assess the damage and develop a long term recovery plan. Funds are also available for clearing debris from access roads and trails, marking storm damaged trees for removal, planting, fire reduction and other practices.

Assessing Trees and Forests

A decision to harvest damaged trees is based on the severity of the damage to individual trees, the number of trees, their location in relation to each other, landowner objectives, and opportunities for improved wildlife habitat.

Trees can survive the loss of much of their top. The likelihood that an individual tree will survive can be predicted by the amount of top that remains. Trees that lost more than 75% probably won't survive. However, not all trees with this amount of damage should be removed. Leaving them will certainly result in loss of timber value, but the contribution they may make to overall forest health, may far outweigh the economic loss, especially when they are scattered and in areas that are difficult to harvest. A variety of wildlife use standing dead and dying trees for nesting, roosting, and foraging. Hardwood and softwood trees that are over 18 inches in diameter have particular value. As trees of all sizes die and fall, they contribute to coarse woody debris on the forest floor that is important for nutrient recycling and wildlife habitat.

Most trees that lost between 50 and 75% of their top will survive with different degrees of internal infections and suppressed growth, depending on where the breakage occurred. Outer branch breakage results in limited infection. Breakage of large tops and lower branches results in more extensive infection.

Most of the trees that have lost less than 50% of their top have a good chance of full recovery. Growth in some trees slows because of crown loss, though growth in lightly or undamaged trees on the edges of disturbed areas may increase due to additional sunlight. Unless there is substantial damage to the main stems, it's probably not necessary to salvage. As long as the main stem is intact, loss of wood should be minimal.

Silvicultural Recommendations

This past growing season trees used starch and sugars that were stored from the previous year. This was a "crown building" year. Regardless of the amount of crown loss, whether or not trees survive will be evident in the next two or three years. Even trees that have more than 75% crown loss have one to three growing seasons before decay and discoloration fungi effects wood quality. Loss of tree value due to increased epicormic branching may prove more important than actual tree death.

Bill Leak, silviculturalist and researcher with the USDA Forest Service, stresses the need to assess and monitor. Light levels that reach the floor will tend to favor regeneration of moderate to tolerant species. For better sites this will mean sugar maple and for poorer sites, beech. To increase the amount of intolerant species, openings of as small as a 1/4 acre work. Partial cutting aimed at removing groups of trees more heavily damaged is probably an appropriate strategy in most stands.

Foresters and landowners have observed that those stands that were recently cut by thinning or selection were the most heavily damaged. This has raised the question, "Should we bother managing our forests?" Bill reminds us that a managed forest has the potential to produce twice

the volume and twice the quality as an unmanaged forest. Management appears to be worth the risk.

Lingering Concerns

Widespread scattered debris and impeded woodland access heightens hazards for anyone who works and recreates in the woods and increases the likelihood of wildfire. Using history to predict forest fires is complicated because this storm left debris in a different pattern than past hurricanes and windstorms. The ‘38 hurricane, for example, left heavy amounts of large, softwood fuel that took years to decay and set the stage for some of our most disastrous fires. However, this storm left primarily small to medium size hardwood fuel that should decay more quickly. This difference in fuel size and type may be in our favor, however, many more people live in and recreate in the forest than 50 years ago, increasing the chances of a forest fire and the damage that may result to life and property.

Opportunities for Research

The silver lining to the “ice” cloud is the unique opportunity for research. Dr Kim Babbitt of the University of New Hampshire Department of Natural Resources is examining how changes in the forest canopy effects the microhabitat features important to amphibians. Walter Shortle and Kevin Smith of the USDA Forest Service are monitoring individual tree growth, health, and insect and disease response of 500 individual trees. Practicing foresters are making observations and reporting them to each other “on the stump” and at professional meetings. These informal reports help build our collective knowledge, hopefully, putting us in a better position to respond to the next natural disaster.

For Additional Information

For more information about ice storm ‘98 and its effects on our forests and trees, visit our web site at http://ceinfo.unh.edu.icestorm.htm or call the University of New Hampshire Cooperative Extension Forestry Information Center at 1-800-444-8978.

Portions of the following references were adapted for this article:

An Evaluation of the Severity of the January 1998 Ice Storm in Northern New England- Report for FEMA Region 1 by K.F. Jones and N.D. Mulherin for the Cold Regions Research and Engineering Laboratory

Good Forestry in the Granite State: Recommended Voluntary Forest Management Practices for New Hampshire, presented by the New Hampshire Forest Sustainability Standards Work Team

Ice Storm 98 Information Sheets prepared by the USDA Forest Service
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