

IDENTIFYING TREES AT RISK FROM ICE AND WIND

By Douglas C. Allen

Since the "microburst" of 1995, New York's forests have experienced additional episodes of severe wind and a devastating ice storm. Natural disturbances like these have always played a major role in shaping our forested landscapes and will continue to do so. Because of their infrequency, however, most forest owners were surprised at the intensity and geographic extent of these recent events. After examining a number of wind and ice damaged stands this past summer, it became obvious that soil conditions, tree health and tree form often determined the degree to which individual trees were affected.

There are many situations where it would be to a forest owners advantage if he or she was able to identify trees which are most vulnerable to this type of damage before it occurred. This knowledge could help when making decisions about trees to remove during certain forest management operations. Even if there is no desire to actively manage for wood products, it still might be advantageous to be able to identify trees that have a high risk of sustaining severe damage from excessive wind and ice in contrast to trees with relatively low risk. For example, one might want to remove high risk trees adjacent to trails in stands managed principally for recreational purposes or in sugarbushes where damage to tubing and other equipment would be costly.

Soil characteristics - trees located on very thin soil have a higher risk of being uprooted compared to trees with a well established root system on relatively deep soils. Perpetual wet spots or seeps often prevent tree roots from penetrating to adequate depths, especially when soils have a high clay content. Failure to establish deep roots also occurs when a tree straddles a large boulder or occurs over bedrock that comes close to the surface (Fig. 1)

Tree health and form - when a tree bole is extensively damaged by an insect or decay fungus, it is likely to break at the point of injury when exposed to high, gusty winds. Agents commonly encountered in northern hardwood stands are sugar maple borer (Fig. 2), fungi that cause cankers (Fig. 3) and other types of decay or injury. Damage such as this often renders a tree bole susceptible to "windsnap" at the point of injury (Fig. 4).

When a tree bole forks it is likely to split under the weight of excessive ice or when exposed to high winds, especially when decay exists where the two bole sections converge (Fig. 5) or the bole forks at a wide angle.

Management implications - there is no way to prevent wind or ice damage. The best we can do is try to minimize the impact of these natural events. A tree's sus-

ceptibility to damage is directly related to storm intensity and is often influenced by aspect, elevation and location (i.e., edge of an opening vs. stand interior). Under the right conditions even healthy and well rooted trees exposed to extreme winds or heavy ice deposits may be blown over or severely damaged. We know some species (e.g., willow and aspen) are especially brittle and more likely to break up than others. Similarly, any tree whose crown extends above the general canopy or has unusually wide spreading branches (i.e., a typical "wolf" tree) is more likely to bear the brunt of excessive wind or ice. Some of these situations can be addressed through forest management activities. Certainly



Fig. 1. Left. Typical blowdown—shallow rooted sugar maple growing on thin soil.

Fig. 2. Above. Bole damage caused by sugar maple borer.


Fig. 3. Below. Bole weakened by a canker fungus.



Fig. 4. Sugar maple bole broken or "snapped" at point of injury.



Fig. 5. Decay weakened the right hand fork of this maple bole. Arrow indicates original point of attachment and location of decay.

identifying and removing trees that are in a condition or situation which makes them highly vulnerable may decrease the overall effect of these natural disturbances and will help to preserve the character of a stand. 

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