
Vermont Forest Health Update

White Pine Needle Damage

*Reported by the Vermont Department of
Forests, Parks, and Recreation
June, 2010*



*Damage is generally more
severe near bodies of water.*

Where is the damage? Brown and yellow foliage on white pines has been observed statewide. Neighboring states have reported similar observations. The damage is generally most severe near bodies of water, at the edge of openings, and on wet sites. It has also been particularly noticeable on dry, steep hillsides.

What does the damage look like? One-year old needles changed color suddenly in May, especially on lower branches. Needles on current year shoots are green and most are growing normally. All tree sizes are affected, though the tops of larger trees usually remain green. Symptom severity varies considerably, even between adjacent trees.

What is causing the damage? The cause of the damage is under investigation, but it appears to be have been a combination of spring weather and disease fungi.



Current year shoots are green.

White pine foliage was affected by the same spring frosts that defoliated hardwoods statewide. With the early warm weather, last year's needles lost their cold-hardiness and were vulnerable to the freezing conditions.

It's likely that the foliage was especially vulnerable to freezing temperatures because many needles were already damaged by fungal disease. Thanks to a succession of wet springs, these have been widespread on white pine in Vermont since 2005. At least two different needlecast diseases have been identified on symptomatic pines. One is the Brown Spot Needle Blight caused by *Scirrhia acicola*. The other is a white pine needlecast caused by *Canavirgella banfieldii*.

Fungal diseases symptoms in 2010 reflect above average precipitation in May and June of 2009. The interior needles were infected with fungus spores last spring when they were developing out of new shoots.

An insect, the Pine Leaf Adelgid, has also been reported as being more common than usual on white pine. Feeding by this insect causes injury to young shoots.



*Brown Spot Needle Blight (left),
Pine Leaf Adelgid (right).*



Mostly lower branches are affected.

What will happen to the trees? Although the white pine needle damage looks serious, the trees aren't dying, and their new shoots should grow normally. The impact on tree health is usually not life-threatening because topmost branches are rarely affected.

Trees will look better in early summer, once all the injured needles are cast. Their crowns may look thin. Since there was a heavy cone crop last year, many upper branches already have sparse foliage. This will intensify the thin appearance of many trees.

Mortality of lower branches may accelerate. Foliage is the "pump" that draws water into the branches. With little foliage remaining, the water supply to growing shoots may decrease dramatically.



In early summer, once injured needles are cast, crowns may look thin

Needle damage may initiate decline in wet areas. On these sites, the fungal diseases can be particularly severe and trees are already under stress. Mortality is likely if pines under severe stress are also attacked by bark beetles.

In locations where trees have had up to six consecutive years of needlecast, there have likely been impacts on tree growth and vigor.

Late spring weather will play a role in tree recovery. Spores germinate when there is a layer of water on the needles, so emerging needles are much more likely to be infected when spring weather is wet. The weather has been generally dry during needle elongation this spring. If dry weather continues through June, there should be less needlecast in 2011.

Recommendations: Landowners and others concerned about discolored white pines should watch them closely. By July, the symptomatic needles should have dropped, and remaining foliage should be green. If the needles on new shoots are brown, look for other sources of tree stress.

**For more information,
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