

# NEWS RELEASE



USDA Forest Service  
Northeastern Area State and Private Forestry  
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## **White Spruce Declining on the Chequamegon Nicolet National Forest**

You might have noticed that the evergreens are not so green on the Chequamegon-Nicolet National Forest. Over 8,000 acres of plantation white spruce are dead or dying from an epidemic outbreak of insects and diseases along with environmental factors. The name for this complicated interaction of factors is called ‘decline’. According to Joseph O’Brien, Plant Pathologist with the USDA Forest Service Northeastern Area, the prognosis for the trees is not good, “What happens is that trees already stressed from being planted out of their natural range and further stressed from drought – like these spruce—become natural targets for insects and disease causing pathogens. In this case, at least two pathogens – a needle-killing fungus and a root rot – and one insect – eastern spruce budworm – have attacked the declining trees. This doesn’t bode well for the spruce. In my opinion, many of the white spruce in the affected plantations will be dead within 1-3 years.”

How did this happen? White spruce’s native range is a bit north of where these trees were planted. Their struggle to survive outside their natural climatic conditions has left them stressed and weak. “Trees growing at the extremes of their natural ranges are often subject to insect and disease attacks that would not necessarily be a problem if they were planted in their native range” says O’Brien. “The trees were further weakened by severe droughts in 1976 and 1987-1989 making them even more susceptible to health problems.” With their natural defense mechanisms diminished, the white spruce are showing visible signs of insect and disease attacks.

A fungal disease called spruce needle drop causes the trees to lose their needles prematurely. First, needles growing near the bottom of a tree turn brown and drop. Eventually, the lower branches of a tree die and the symptoms progress up the stem, sometimes killing even large

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trees. A common root rot caused by fungi in the genus *Armillaria* is also at work in these stands, impacting spruce by rapidly killing the roots and decaying the wood at the base of the tree. Signs of root rot include premature needle drop, thin crowns, and branch die-back. Spruce budworm, an insect native to Wisconsin, is also present and feeds on the new spring growth, resulting in a tree with a “scorched” appearance. Needle loss is usually most noticeable at the tops of the trees, but the entire crown can be affected. The combination of drought, root rot, and repeated defoliation is quickly overwhelming the trees’ ability to survive.

Spruce decline affects other species as well as white spruce. In landscape settings, Norway spruce, Colorado blue spruce, and others can also be affected. There are no magic treatments for decline. Once insects and disease pests become established on weakened trees, it is unlikely the trees will recover. Keeping trees as healthy as possible is key. To optimize the health of your trees in the future, always select an appropriate seed source, plant trees within their native range and preferred soil type, and avoid wounding or damaging the trees. For high quality landscape trees, water during droughts and follow proper pruning and maintenance guidelines. If you notice symptoms of decline in spruce trees at your home, contact a consulting forester or an arborist. Directories are available at:

<http://www.dnr.wi.gov/org/land/forestry/UF/resources/consulth.htm>

If you have questions about your woodland of ten or more acres, contact a Wisconsin Department of Natural Resources forester or a consulting forester for information and advice. Contact information available at:

<http://www.dnr.wi.gov/org/land/forestry/Private/Assist/index.htm>

For downloadable photos of spruce decline on the Chequamegon-Nicolet, visit:

<http://na.fs.fed.us/temp/sd/sprucedecline.htm>

For additional information about the following insects and diseases please visit our corresponding web-based publications:

Premature Needle Loss of Spruce [http://www.na.fs.fed.us/spfo/pubs/pest\\_al/needleloss/spruce.htm](http://www.na.fs.fed.us/spfo/pubs/pest_al/needleloss/spruce.htm)

*Armillaria* Root Disease <http://www.na.fs.fed.us/spfo/pubs/fidls/armillaria/armillaria.htm>

Spruce Budworm in the Eastern U.S. <http://www.na.fs.fed.us/spfo/pubs/fidls/sbw/budworm.htm>