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Maine Experiencing White Pine Needle Damage

By Jennifer Hicks

Since early June, the Maine Forest Service (MFS) Forest Health and Monitoring office has been flooded with reports from woodland owners about signs of struggle among eastern white pines (Pinus strobus). The symptoms, including needle discoloration/ yellowing and needle drop (Figs 1 and 2), come from a disease complex called white pine needle damage (WPND), typically caused by brown spot needle blight (although there are other similar fungi that can also cause this). When infected, trees drop their older needles prematurely.

Fig 1: Thin and small crowns of white pine trees severely infected with WPND.

Fig 2: Close-up of symptomatic needles and (inset) a spore-producing structure of the brown spot needle blight fungus

According to Aaron Bergdahl, MFS forest pathologist, the pines in several areas of Maine have been suffering from this disease complex for several years to varying extents – in fact, needle disease impacts to white pines have been documented in Maine dating back to 2007. This year, however, the disease symptoms are quite severe and widespread throughout the entire Northeast region due the extraordinary amount of rain received in June 2023. At that time, the fungi responsible for infecting the white pines, which thrive in wet weather, were able to spread while the tree's new needles were starting to grow. It's not until the following year (this year) that symptoms of the infection are displayed. That is also the time when the fungal spores that infect the current year's new growth (Fig. 2) are released and complete the disease life cycle.

The future of infected trees is uncertain. Complete needle loss will likely kill the tree. Bergdahl explained that what is typically seen with WPND is a loss of older needles and trees holding their current-year needles. In that case, the trees will appear more green (but will have thin-looking crowns) when the infected and the yellow needles drop. Bergdahl said the remaining new-growth needles are often enough to help the trees get through the season, but this is not great for general tree health and growth. In some cases the stress that WPND causes makes white pines vulnerable to secondary pests, for example root disease and/or insect attack.

Because this disease is now widely found throughout the state, MFS no longer needs woodland owners to report their findings. Rather, it is crucial that people monitor their white pines and keep track of any signs of secondary impacts including bark damage, limb dieback, or other signs of poor health.

Woodland owners can also employ management strategies to help address the prevalence of WPND. The MFS suggests low-density stand management on trees with an average of more than a 30% live crown ratio to reduce competition, favor crown development and promote canopy drying. The key is to create drier conditions to prevent the establishment of the disease.

For more information visit the Forest Health and Monitoring page: *www.maine.gov/foresthealth*. While there, click on "Forest Insect & Disease Conditions Reports" to see annual reports, and information about how to sign up to receive emails with monthly forest health reports.

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