

Report RCSC-20-03

November 5, 2019

First Report of *Diplodia* in Wyoming

James T Blodgett, Plant Pathologist

The fungal pathogen, *Diplodia sapinea*, causes shoot blights and cankers in pines in much of the United States.¹ Pines are affected from seedling stage to maturity. Damage from *Diplodia* shoot blight and canker disease can be severe. Symptoms ranging from a few dead needles, death of new shoots, extensive branch and top mortality, to tree mortality. Newly infected shoots frequently contain short, light brown, wilting needles that fade to gray and remain attached to stems. Both needles and stems can become stunted or crooked, and underlying xylem is often stained blue.

During the USDA Forest Service aerial survey, *Diplodia* type symptoms were detected in ponderosa pine (*Pinus ponderosa*) at several locations in Crook County, Wyoming on August 20 to 21, 2018 (**Figure 1**). Approximately 4,100 acres of trees were affected.² This disease has been reported in Nebraska and South Dakota for years. In 2018, approximately 2,600 and 5,400 acres were affected, respectively. However, *Diplodia* shoot blight and canker disease has never been reported in Wyoming. The objectives of this report were to: ground-check for the presence of the pathogen in Wyoming and determine species. Since there are no prior reports of this disease in Wyoming, confirming the presences of the pathogen is critical.

On May 8, 2019, three locations were ground-checked in Wyoming (**Figure 1**). Shoot blight symptoms typical of *Diplodia* were confirmed in thousands of ponderosa pines at and around the three locations. This disease often affects trees wounded by hail. Hail damage was common at all three locations. Most of the ponderosa pine in the areas were affected, including seedlings, saplings (**Figure 2, left**), and larger trees (**Figure 2, right**). Distinct branch symptoms were common including fading needles with drooping branches (**Figure 3, left**). Blue staining, another common symptom (**Figure 3, right**), was observed in 21 of the 23 branches collected.

Diplodia was isolated and confirmed using traditional mycology from all collected branches. *Diplodia sapinea* fruiting bodies (pycnidia) and spores (conidia) were confirmed from branches or in culture. Denise R Smith (Plant Pathology, University of

¹ Blodgett, J.T. and Stanosz, G.R. 2016. *Diplodia* shoot blight and canker disease. pp. 180-183. In Bergdahl, Aaron D.; Hill, Alison, tech. coords. *Diseases of trees in the Great Plains*. Gen. Tech. Rep. RMRS-GTR-335. Fort Collins, CO: U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station. 229 p.

² Anonymous. 2018. Aerial Detection Survey. USDA For. Serv., Rocky Mountain Region, For. Health Protection and partners.

Wisconsin–Madison) ran DNA sequence-based diagnostics (ITS with species-specific primers) and confirmed 3 isolates were *D. sapinea*.

To confirm this pathogen caused the observed damage, Koch's postulates will be performed using the molecularly confirmed isolates (with wounded controls). Tests will be conducted in spring 2020 in two trials at the Charles E Bessey Nursery, Halsey, NE. A report will follow.

Management recommendations

Management options in forested sites are limited. Reducing water stress and maintaining tree vigor are the best options to control Diplodia shoot blight and canker disease. In forested sites, this can be done by stand thinning and/or managing competing vegetation. The selection of non-host species might be an option in some areas.

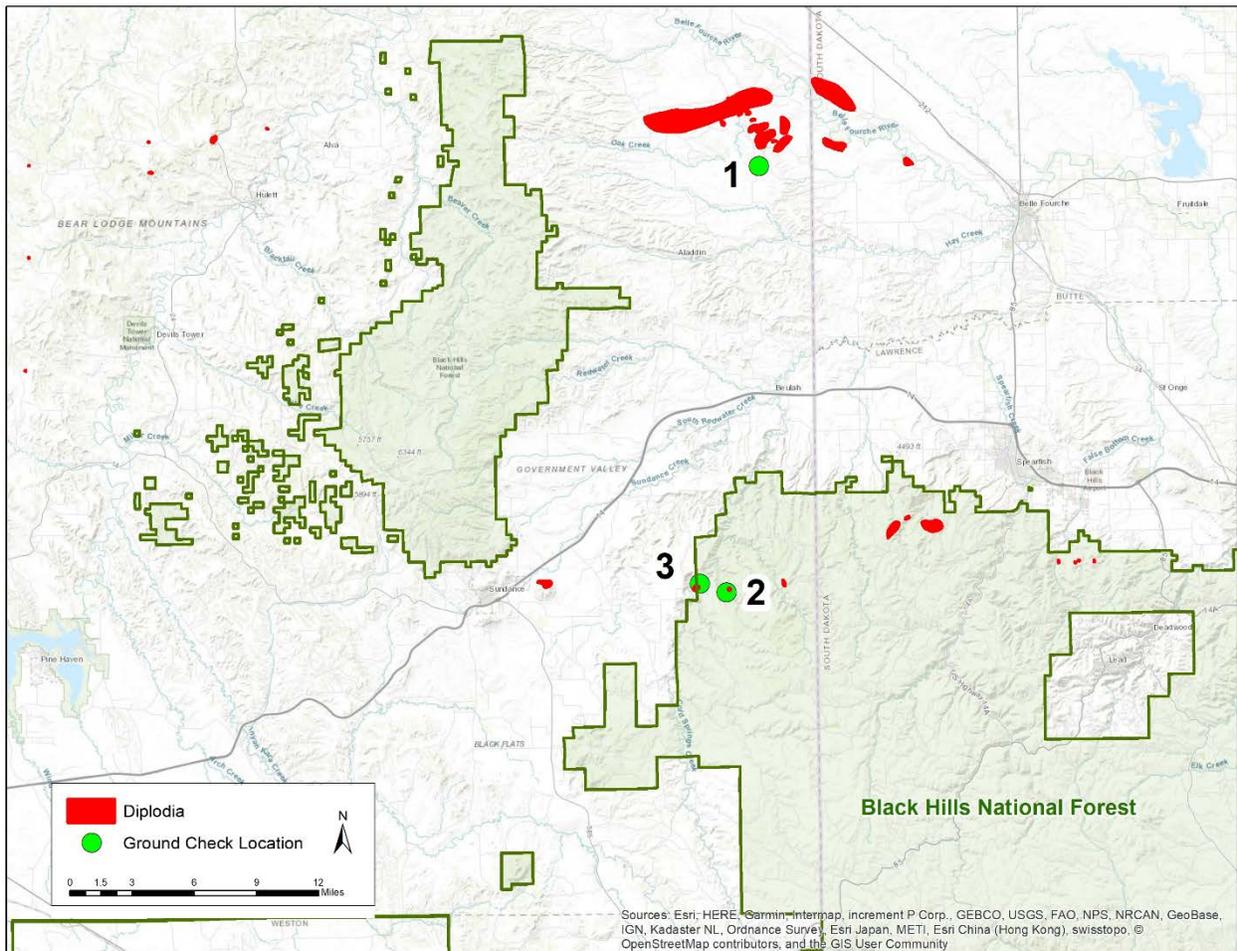


Figure 1. Areas in northeast Wyoming and part of South Dakota where Diplodia was reported in 2018 by USDA Forest Service aerial survey. The three green circles represent locations where the pathogen, *Diplodia sapinea* was confirmed in 2019.

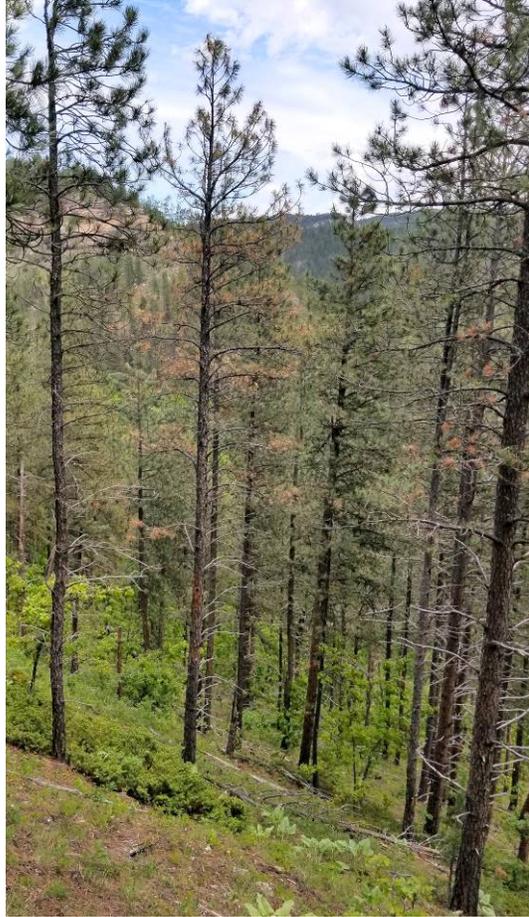
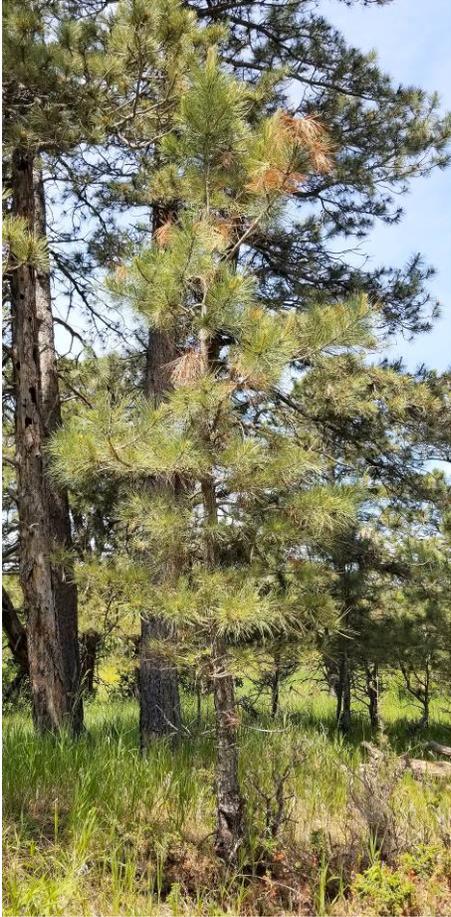


Figure 2. Symptoms of Diplodia shoot blight and canker disease on a sapling (**left**) and large tree (**right**).



Figure 3. Early symptoms of Diplodia shoot blight and canker disease on a branch (**left**) and blue stained branch wood (**right**).