Lodgepole Pine Dwarf Mistletoe and the Taylor Park Environmental Assessment

Lodgepole pine dwarf mistletoe (*Arceuthobium americanum*) is a flowering plant that parasitizes lodgepole pine. It causes witches' brooms, reduced growth, increased mortality, and increased severe fire behavior.

286,616 acres

Approximate area of lodgepole pine forest type on the Gunnison Ranger District (GRD).

52%

Portion of the lodgepole pine type on the GRD that is infested with dwarf mistletoe.

7.7%

Portion of infested lodgepole pine type on the GRD to receive proposed dwarf mistletoe treatments, including:

- 2.4% dwarf mistletoe strip or clearcut
- 1.0% overstory removal or shelterwood, which could be clearcut where DM is severe
- 4.3% young stands that could be thinned/sanitized

4.0%

Portion of all lodgepole pine type on the GRD to receive proposed dwarf mistletoe treatments.

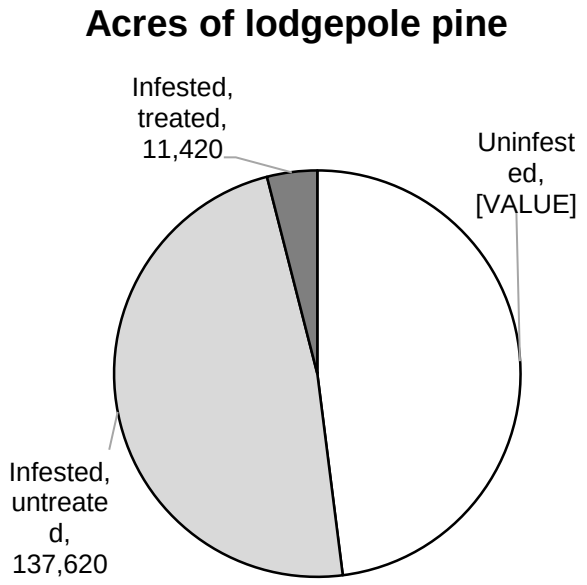

Figure 1. Acres of lodgepole pine type on GRD divided into uninfested and infested with dwarf mistletoe. The infested area is divided into untreated and treated where a primary goal is dwarf mistletoe reduction. Based on Johnson *et al.* 1981.

What are the impacts of dwarf mistletoe in lodgepole pine?

Fire: Because of low, resinous witches' brooms and increased mortality, fire in infested stands is more likely to exhibit torching, crown fire, and other severe fire behavior than in healthy stands.

Growth: When infection is severe, dwarf mistletoe causes substantial growth reduction, resulting in much smaller trees. After 70 years, heavily infected trees that survive are 23% of the size of healthy trees (as cubic-foot volume). Based on plots on the Gunnison Ranger District, total loss in the commercial lodgepole pine forest (147,769 acres) was estimated at 459,000 ft^3 of merchantable wood volume per year (Johnson *et al.* 1981).

Mortality: Heavily infested stands lose 8% of stems to mortality every decade, above and beyond mortality due to competition.

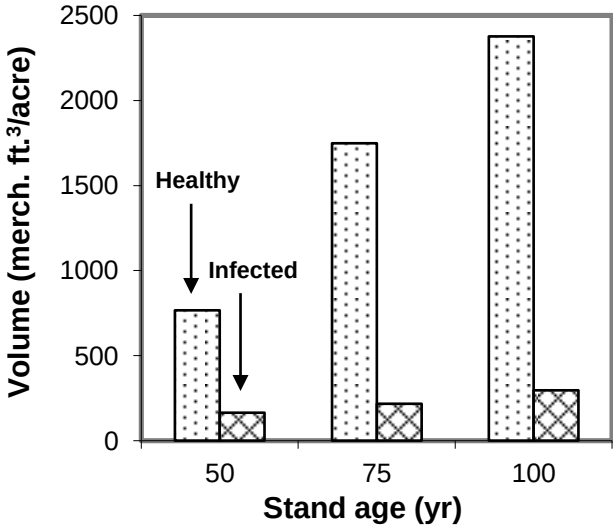

Figure 2. Effect of infection of lodgepole pine by dwarf mistle¬toe at an early age on volume (which integrates effects on height growth, diameter growth, and mortality). Data from Hawksworth & Hinds (1964).

Wildlife: Trees tend to die earlier and when smaller in infested stands compared to healthy stands. Small dead trees have much less value to wildlife than large dead trees.

Why do we need to treat dwarf mistletoe?

Timber resource: In lands designated for timber management, we have a responsibility to manage the timber resource. Dwarf mistletoe substantially reduces the productivity of infested stands, in some cases making them unmerchantable.

Fire: Increased likelihood of severe fire behavior in infested lodgepole pine poses increased risk to firefighters and communities.

Increased prevalence: There is evidence in the literature suggesting that, throughout the West, dwarf mistletoe is more severe and widespread than in pre-settlement times due to fire exclusion and past management practices.

Resilience: In the absence of recent, extensive wildfire, there is a side-benefit to regenerating stands: it promotes a diversity of age classes on the landscape and thus resilience to other agents, such as mountain pine beetle.

Hawksworth FG, Hinds TE. 1964. Effects of dwarf mistletoe on immature lodgepole pine stands in Colorado. Journal of Forestry 62: 27-32.

Johnson DW, Hawksworth FG, Drummond DB. 1981. Yield loss of lodgepole pine stands to dwarf mistletoe in Colorado and Wyoming National Forests. Plant Disease 65: 437-438.