

Lodgepole Pine Dwarf Mistletoe

Common cause of brooming in lodgepole pine

Pathogen—Lodgepole pine dwarf mistletoe (*Arceuthobium americanum*) is the most widely distributed, one of the most damaging, and one of the best studied dwarf mistletoes in North America. Aerial shoots are yellowish to olive green, 2-3 1/2 inches (5-9 cm) long (maximum 12 inches [30 cm]) and up to 1/25-1/8 inch (1-3 mm) diameter (figs. 1-2). The distribution generally follows that of its principal host, lodgepole pine, in the Rocky Mountain Region (fig. 3).

Hosts—Lodgepole pine dwarf mistletoe infects primarily its namesake, but ponderosa pine is considered a secondary host of this species. However, lodgepole pine dwarf mistletoe can sustain itself and even be aggressive in pure stands of Rocky Mountain ponderosa pine in northern Colorado and southern Wyoming sometimes a mile or more away from infected lodgepole pine. This infection generally occurs in areas outside the range of ponderosa pine's usual parasite, southwestern dwarf mistletoe.



Figure 1. Flowering male lodgepole pine dwarf mistletoe plant parasitizing lodgepole pine. Photo: Brian Howell, USDA Forest Service.



Figure 2. Female lodgepole pine dwarf mistletoe plant with immature fruit parasitizing lodgepole pine. Note the basal cups left behind where old shoots have fallen off. Photo: Brian Howell, USDA Forest Service.

Signs and Symptoms—Signs of infection are shoots and basal cups (fig. 2) found at infection sites. Symptoms include witches' brooms, swelling of infected branches, and dieback. Lodgepole pine dwarf mistletoe infections grow systemically with the branches they infect, sometimes causing large witches' brooms with elongated, loosely hanging branches.

Impact—Heavily infected trees experience reduced diameter and growth, reduced cone production, and eventual mortality (fig. 4).

Spread rate in even-aged stands can be about 1.7 ft (50 cm) per year in open stands and 1.2 ft (36 cm) per year in dense stands. Intensification (increase in number of infections over time) occurs most quickly in stands 15-60 years old in Colorado. During that time, DMR increased one class in 14 years (see "Management" in the Introduction to Dwarf Mistletoes entry). A feature of this species that is potentially useful in management is that the upper elevational limit is usually about 600-650 ft (185-200 m) below the upper elevational limit of lodgepole pine for a given latitude. Experiments have shown that the mistletoe can survive at higher elevations but it cannot reproduce because the fruit is killed by early autumn frosts before it can mature.

Please see the Introduction to Dwarf Mistletoes entry for disease cycle and management information.

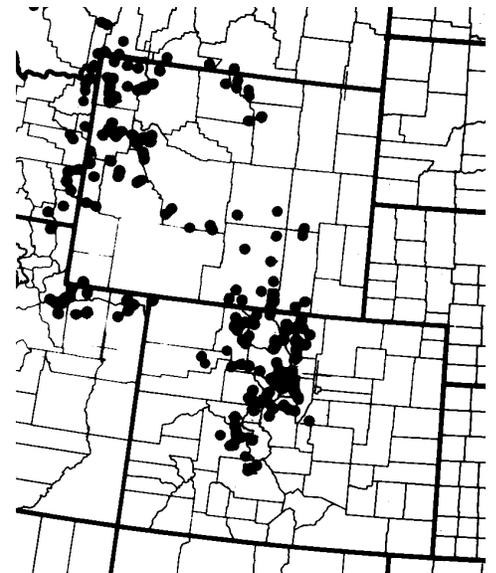


Figure 3. Distribution of lodgepole pine dwarf mistletoe in the Rocky Mountain Region (from Hawksworth and Wiens 1996).

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Figure 4. Dead and dying lodgepole pine heavily infected by lodgepole pine dwarf mistletoe. *Photo: Brian Howell, USDA Forest Service.*

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1. Hawksworth F.G.; Johnson, D.W. 1989. Biology and management of dwarf mistletoe in lodgepole pine in the Rocky Mountains. Gen. Tech. Rep. RM-169. Fort Collins, CO: U.S. Department of Agriculture, Forest Service, Rocky Mountain Forest and Range Experiment Station. 38 p.
 2. Hawksworth, F.G.; Wiens, D. 1996. Dwarf mistletoes: biology, pathology and systematics. Agricultural Handbook 709. Washington, DC: U.S. Department of Agriculture, Forest Service. 410 p.