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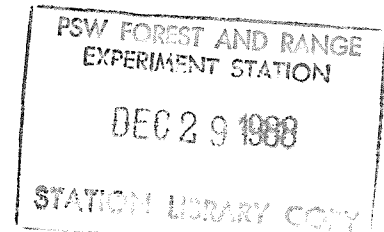
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# Avoid Planting Scotch Pine Near Dwarf Mistletoe-Infected California Pines



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**D**warf mistletoe (*Arceuthobium occidentale* Engelm.) infects several native species of pine in California, including Digger pine (*Pinus sabiniana* Dougl.), Monterey pine (*P. radiata* D. Don), Bishop pine (*P. muricata* D. Don), Coulter pine (*P. coulteri* D. Don), and knobcone pine (*P. attenuata* Lemm.).<sup>1</sup> In addition, three introduced pines, Aleppo pine (*P. halepensis* Mill.), Italian stone pine (*P. pinea* L.), and Japanese black pine (*P. thunbergiana* Franco) have also become infected when planted near dwarf mistletoe-infected native pines.<sup>2</sup>

This note reports the first known instance of Scotch pine (*P. sylvestris* L.) becoming infected by *A. occidentale*, and we recommend that Scotch pine not be planted near dwarf mistletoe-infected California pine stands.

The infected pines were located in a Christmas tree plantation about 5 miles east of Jackson, California at about 2200 feet elevation in the foothills of the northern Sierra Nevada. The plantation was established in 1982 with 2-0 Scotch pines and in 1984 with 2-0 knobcone x Monterey hybrid pines (*P. attenuata* x *P. radiata*). Both pine species ranged from about 4 to 6 feet in height in 1988. Large dwarf mistletoe-infected *P. sabiniana* adjacent to and within the plantation were the initial source of infection.

Examination of numerous plantation trees within range of nearby infected overstory showed that many Scotch pines were infected, but that the knobcone-Monterey

pines were free of dwarf mistletoe. The Scotch pines were often heavily infected, bearing numerous infections per tree. Abundant shoot development by many mistletoe plants also indicated a compatible host-parasite relationship. Also, some broom development on branches indicated infection may have occurred shortly after plantation establishment. The abundance of infections in the trees also suggests that intensification of the parasite is occurring within individual Scotch pines as well as from dwarf mistletoe in adjacent overstory. Because trees were planted only a few feet from one another, some lateral tree to tree spread may also have occurred.

The absence of infection in the knobcone-Monterey hybrid trees is puzzling in that both parent species of this hybrid are native hosts of *A. occidentale*. The trees may have been too young to be infected or show signs of infection. However, we believe some evidence of infection on some trees should have been present even though the hybrid pines are 2 years younger than the Scotch pines. Additional examinations should be made in the future to determine if the knobcone-Monterey hybrids remain free of infection.

Scotch pine appears highly susceptible to infection by *A. occidentale*, and is also infected by other North American dwarf mistletoes as well. *A. laricis* (Piper) St. John, *A. americanum* Nutt. ex Engelm., *A. campylopodum* Engelm., and *A. vaginatum* subsp. *cryptopodum* (Engelm.) Hawks. & Wiens have all been reported to infect

Scharpf, Robert F.; McCain, Arthur H. 1988. *Avoid planting Scotch pine near dwarf mistletoe-infected California pines*. Res. Note PSW-400. Berkeley, CA: Pacific Southwest Forest and Range Experiment Station, Forest Service, U.S. Department of Agriculture; 2 p.

Eight-year-old Scotch pine (*Pinus sylvestris*) were severely infected by dwarf mistletoe (*Arceuthobium occidentale*) when planted near infected Digger pine (*P. sabiniana*) in the foothills of the northern Sierra Nevada, in California. But 6-year-old knobcone x Monterey (*P. attenuata* x *P. radiata*) hybrid pines in the same plantation were uninfected. To prevent infection, avoid planting Scotch pines near native California pines bearing dwarf mistletoe.

**Retrieval Terms:** dwarf mistletoe, *Arceuthobium occidentale*, *Pinus sylvestris*, *P. attenuata* x *P. radiata*, Christmas trees

Scotch pine when planted near naturally infected hosts.<sup>1,3</sup>

Scotch pine appears to have little resistance to several North American species of dwarf mistletoe. Therefore, avoid growing Scotch pine in areas when nearby native hosts are naturally infected by dwarf mistletoes.

#### END NOTES AND REFERENCES

<sup>1</sup>Hawksworth, Frank G.; Wiens, Delbert. 1972. *Biology and classification of dwarf mistletoes (Arceuthobium)*. Agric. Handb. 401. Washington, DC: U.S. Department of Agriculture; 234 p.

<sup>2</sup>Scharpf, R. F.; Hawksworth, F. G. 1986. *Exotic pines infected by two dwarf mistletoes in southern California*. Plant Disease 70: 173.

<sup>3</sup>Hawksworth, F. G.; Laut, J. G. 1981. *Scots pine is susceptible to southwestern dwarf mistletoe*. Plant Disease 65: 163.

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