

## DWARF MISTLETOE IN GENESEE

Dwarf mistletoe (DM) species have been infecting and killing conifer trees in both the New and Old World for about 70 million years. They are the most highly advanced of the world's 42 mistletoe species. Proof of our own species (Arceuthobium vaginatum ssp.cryptopodum) co-habiting with Ponderosa pines goes back 10,000 years or more. The problems caused by DM are nothing new to the West, the Rockies or to Genesee.

**What is Dwarf Mistletoe?** It is a parasitic plant, male or female, that requires a host, Ponderosa pine, from which it draws water, nutrients, amino acids, sugars and amines for its own sustenance. Three to 5 years will elapse between infection and the outward appearance of yellowish-orange growths, 7 to 8 years between infection and seed production.

During all this time, DM is growing and spreading beneath the bark, resulting in a severe reduction in all growth parameters before death ensues. Oddly, infected branches often live longer than uninfected branches as the parasite continues to drain the rest of the tree of its lifeblood. The time between infection and death varies tremendously depending on the vigor of the tree, its age, number of subsequent infections, the development of and number of witch's brooms, climatic conditions and site characteristics (e.g. available water, slope, aspect, soil element status, etc.). Usually, DM does not actually kill the tree but so severely stresses it that it signals its weakened condition to Mountain pine beetles that ultimately serve the coupe de grace.

**How Does DM Spread?** Primarily it is spread via seeds that are expelled from the maternal plant at speeds of 60 mph for a maximum distance of 52 feet or, more typically only 30 feet. Most seeds, however, are intercepted by the host's needles within 6 to 12 feet and few escape the crown. Many rain down harmlessly to the ground or onto smaller pines beneath. The seed is extremely sticky and is easily carried by birds and occasionally mammals to satellite sites where new infections are begun on stems or small trunks 5 years of age or more old. Less than ½ % of each August's seed crop is successful in germinating that fall and causing a new infection.

**How Bad Is the Problem?** Approximately 300 acres are known to be infected in Genesee from sites as small as a single tree to the largest compromising 90 acres. This acreage represents more than 25% of our Ponderosa pine covered lands and directly affects more than 300 residences. Neighboring pines along 1.3 miles of our common borders are also infected. Most of our infected areas were mapped with detailed descriptions and prescriptions were provided to us by the Colorado State Forest Service (CSFS) in 1985. An updated map was completed last year showing the spread over the past 20 years. .

**Is There Any Good Associated with DM?** At least 11 species of birds and 4 species of mammals utilize DM for food and/or nesting. Numerous species of moths, butterflies, bugs, beetles, thrips and mites likewise utilize the parasite. At least 8 species of fungi exclusively parasitize the parasite.

## **If You Have DM – What Can You Do?**

1. Plant Other Native Trees: Colorado blue spruce- popular choice but ill-suited to most sites other than those permanently moist. Douglas fir – suitable for cooler, north facing sites with relatively moist soils; may be suitable for drier sites but not guaranteed without some vigilance to maintaining soil moisture. Aspen , cottonwoods and willows – moist soil sites only. While not native, Bristlecone and Limber pines are occasionally infected and Limber pine only rarely.
2. Help infected trees Live Longer: Do not injure tree by cutting or covering roots, or by damaging the bark or by compacting the soil over the root system. Do water the tree during dry periods.
3. Spray with Florel: This is the only approved chemical (ethephon gas releasing) that can help. When applied it causes **only** the exterior growths to fall off, thus eliminating seed production. It **does not** kill the DM inside the tree. While advertised as having a 2-3 year effect, latest research indicates that it may have to be applied yearly to eliminate seed production. Expect costs beginning at \$90.00 for a single tree, discounts usually are available for volume in addition to service call charges.
4. Cut Infected Limb: Cut off all infected limbs at the trunk. Once cut, the DM is effectively dead and cannot spread. Pay particular attention to witch's brooms. Follow-up observations in subsequent years usually reveal that a few limbs above and below the cut limb were also infected but only now reveal it. Cutting away more than half the crown seriously compromises the tree- see #5 below)
5. Rub Off the Exterior Growths: Same result as #4
6. Cut Down the Tree: (ARC approval necessary) DM dies.
7. Nothing: DM will continue to spread within the infected tree (hastening its demise) and probably to surrounding Ponderosa pines.

\*\* Each Situation is different. Example: an infected, but very valuable tree in the midst of a large group of other infected trees poses little or no harm.

## **What is Being Done On Open Space?**

Current efforts underway include identifying treatment areas, writing prescriptions and treatment in selected areas this coming fall. Prescriptions in open space will include removal, containment, isolation and pruning of infected trees.

Information and educational seminars are being conducted by the Forestry committee and include information for private property as well. Watch cable, web site and the Genescene for more information.

**Available Resources:** Self-help and other resources can be found in the Genesee Oxley library, at the Jeffco Co-op Extension Service office and at the Colorado State Forest Service. A mistletoe page on the Genesee web site is currently under construction. A detailed fact sheet on mistletoe can be found at <http://www.ext.colostate.edu/pubs/garden/02925.html> .

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**Open Space**

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