

Leafy Mistletoe

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Kissing under the mistletoe at Christmas time is a long held tradition with its origins in old English folklore. Since mistletoe, an evergreen plant, conspicuously contrasts with seasonally defoliated trees, it was bestowed with the power to protect loved ones from evil. Leafy or Christmas mistletoes are actually parasitic higher plants in the genus *Phoradendron*.

Identification

True mistletoes (*Phoradendron* species) are woody, parasitic plants that form shrubby mounds on branches or trunks of a myriad of tree hosts. Many individual plants can be found growing on branches of their host (Figure 1). Each mistletoe plant canopy can grow up to 18 inches in diameter. Most have waxy, green shoots and leaves (Figure 2), although some have more scale-like leaves and appear leafless (*Phoradendron juniperinum* and *P. californicum*) [1]. Mistletoe flowers are generally insignificant, and fruit are small berries that can be white, red or pink (Figure 3) and may be harmful to pets if eaten.

Biology and Significance

Seven species of *Phoradendron* have been identified in the United States based on morphology and genetic differences. Species may differ in host preference and geographic distribution [1]. All true mistletoes are considered obligate hemiparasites. This means that they require a living host to complete their life cycle, but because they have chlorophyll, they obtain some of their nutrition through photosynthesis and the remainder from the host plant. Often the host tissue surrounding the infection, or where the mistletoe has “rooted,” will swell (Figure 4). *Phoradendron* fruit provides a food source for birds, and bird-dispersed seed is the primary means of tree-to-tree spread.

Figure 1: Heavy infestation of mistletoe (*Phoradendron leucarpum*) growing throughout the crowns of two oaks (*Quercus hemisphaerica*)



Figure 2: Close-up of the green leaves and shoots of mistletoe (*Phoradendron leucarpum*)



Figure 3: White berries of *Phoradendron leucarpum*



A few mistletoes in a large tree will not cause significant damage. However, severe infestations can result in reduced growth, stunting, branch mortality and tree decline. More significant damage occurs when host trees are drought-stressed or declining due to other reasons. In heavy infections, mistletoe plants in a tree canopy can increase wind resistance, resulting in an increased likelihood of branch failure, especially where other defects (e.g., branch decay) are present.

Figure 4: Infection point associated swelling of a trunk infection on an elm (*Ulmus parvifolia*)



Management

When mistletoe is growing on small branches, the entire branch hosting the leafy mistletoe can be removed with reduction or removal pruning cuts. On larger branches where pruning is not a good option, **Leafy Mistletoe**

the mistletoe can be cut at the base where it emerges from the tree. Mistletoe can quickly sprout and re-grow from the portion of the plant that remains in the tree branch. Research at the Bartlett Tree Research Laboratory supports tightly wrapping the branch to reduce resprouting. The best material tested for this purpose is a long-lasting, weather-resistant duct tape such as Gorilla® tape. To reduce future infections, pruning should be completed prior to the fruiting period (mostly in the winter months). Applications of herbicides and plant growth regulators can suppress mistletoe, but often do not provide an acceptable level of mistletoe reduction or take more than a year to be effective. Improving tree health with these actions may reduce damage from mistletoe:

- 1) collect soil nutrient samples and apply nutrients, if needed.
- 2) apply or maintain an organic mulch level at 2 to 4 inches (5-10 cm) to reduce root damage and conserve soil moisture.
- 3) irrigate during droughts.
- 4) inspect for other pests and treat as needed.

Consult your Bartlett Tree Experts Arborist Representative to discuss the specific management options that are needed for your landscape.



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Reference

- [1] D. L. Nickrent, "The Christmas Mistletoe Family," in *Flora of North America*. vol. 12, ed New York, New York: Oxford University Press, 2016, pp. 422-440.