



Mistletoe

Matthew Thorn and
Dr. John J. Riggins

It's that time of year again...holiday parties surrounded by family, friends, and food...and the ever present sprig of mistletoe hanging above it all. But other than helping folks spread good tidings and cheer, what is mistletoe? Perhaps you've also noticed it in the canopies of hardwood trees, particularly after the leaves fall in autumn and winter. These highly visible bushy green bunches in our trees can have an effect on tree health, although usually minor.

What is mistletoe?

Mistletoes are parasitic plants that grow on the outside of other plants, including both hardwood and conifer trees⁴. Mistletoes from two genera are native to North America, both in the family Viscaceae^{4,5}. *Phoradendron* (Figure 1) contains the leafy mistletoes and infects primarily hardwoods, while *Arceuthobium* (Figure 2) contains the dwarf mistletoes that are found on



Figure 1: Oak Mistletoe from Mississippi
Photo credit: Charles Bryson: USDA Forest Service

softwoods⁵. All mistletoes are parasites on their hosts, depending on them for all of their water and nutrients and varying amounts of photosynthetic products¹⁻⁵.

Distribution and Hosts

Leafy mistletoes parasitize a wide variety of hardwood hosts, and occur predominantly in the southeastern U.S. extending into southern New Mexico, Arizona, and coastal California⁴. The southwest and northeast are home to the dwarf mistletoes, which use trees in the families Pinaceae and Cupressaceae as hosts². The host specificity among both types of mistletoe varies greatly, with

some mistletoe species such as *Phoradendron leucarpum* attacking at least fifty genera of trees^{2,4,5}.

Identification

Mistletoes are most easily recognized after host leaves have dropped because mistletoes are evergreen. During summer, it can be difficult to see them among all of the other greenery on the tree. Identifying mistletoe to the species level can be difficult, usually requiring both the flower and fruit^{2,5}. Although, knowing the range and host species can simplify the process^{2,5}. The most commonly seen mistletoe in Mississippi is the oak



Figure 2: Pinyon dwarf mistletoe on singleleaf pinyon
 Photo credit: Brytten Steed; USDA Forest Service

mistletoe (*Phoradendron leucarpum*)⁵. It is also the most widely distributed mistletoe and occurs across much of the eastern U.S.⁵. Leafy mistletoes have obvious leaves that remain green year round, while dwarf mistletoes have leaves reduced to scales with reddish or orange stems^{2,4,5}. Mistletoe damage is most easily recognized by seeing the bushy mistletoe itself on the tree, but hypertrophy (branch or trunk swelling), branch dieback, and dead

tops in heavily infected trees are also indicators⁴.

Ecology of Mistletoes

All mistletoes are dependent on their host tree for water, nutrients, and varying amounts of carbohydrates¹⁻⁵. They steal these resources by tapping into the host's vascular system using their parasitic roots, also called haustoria⁴. Once attached to the host, the mistletoe will grow shoots and leaves^{2,4}. The time between haustoria development and the appearance of aerial shoots

can be several years^{2,4}. The fruit produced by leafy mistletoes is used by a wide variety of birds and some mammals, who disperse the sticky seeds onto other host plants⁴. Dwarf mistletoes rely on the forcible ejection of their seed from the parent plant for dispersal^{2,4}.

Mistletoes produced by dwarf mistletoe are favored nesting sites for many birds, and having mistletoes in a forest contributes to a greater bird diversity^{1,4}. Mistletoes also help to create patchiness in a stand, helping to kill older susceptible trees and pruning branches of others, creating habitats for many animals and plants and driving forest succession^{1,4}.

Management of Mistletoes

The management of mistletoes varies widely depending on objectives. If the forest is managed for wildlife, then mistletoes can be considered beneficial, but in timber production or urban forestry situations they are generally considered pests⁴. Mistletoes can persist for years inside the branches of its host

without any aerial shoots or leaves visible, only to emerge years later, making control difficult^{3,4}. Leafy mistletoes are generally less damaging than dwarf mistletoes, but still reduce tree vigor and heavily infested trees become more susceptible to other stressors^{4,5}. Dwarf mistletoes cause billions of dollars of damage every year to timber stands in the southwest and northeast^{2,4}. The mortality they can cause means that it is almost always advised to remove them from commercial stands⁴. Control of mistletoes usually consists of pruning the branches that are infected with mistletoe in order to ensure complete removal of the pest³⁻⁵. Branches must be pruned several feet inside (closer to the trunk) of the visible mistletoe plant, because any haustoria left behind can re-sprout. The mistletoe itself can also be cut off the branch, but most of the time it will grow back unless the

remaining stub is wrapped tightly with black plastic or sprayed with pruning paint, either of which can kill the parasite³. In forest stands, controlled burns can also help to control mistletoe populations by reducing the mistletoe seedbank⁴. Sprayed herbicidal treatments can kill mistletoe, but extreme care must be taken to not also harm the tree. Contact a certified arborist or your county forester for further information on specific herbicides, etc.

References:

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For additional information contact:

[Mississippi Forestry Commission Local Office](#)

or

Randy Chapin

Forest Health Coordinator
Southwest District Forester
P.O. Box 749
515 County Farm Lane NE
Brookhaven, Mississippi 39602-0749
Office: (601) 833-6621
Email: rchapin@mfc.state.ms.us

Dr. John J. Riggins

Associate Professor of Forest Entomology
Box 9775 Mississippi State, MS 39762
jriggins@entomology.msstate.edu
Office: 662-325-2984