

The History and Biology of American Mistletoe (*Phoradendron serotinum*)

History

We hear about it in our holiday songs and adorn our doorways with it, but did you know that before mistletoe was inspiring us to steal a kiss from our special loved ones, it was stealing water and nutrients from other trees? That's right! Our beloved holiday plant is what is considered a hemiparasite. Although mistletoe can photosynthesize and create energy, it relies on its host plant for water and nutrient uptake.

It is interesting that kissing under the mistletoe plant became associated with the Christmas holiday, as its origins are of a pagan nature. Many different cultures provide differing origin stories or use of the mistletoe, and details differ depending on the source you read. Norse mythology has us kissing under a mistletoe in remembrance of Baldur, whom Loki had Hödr kill with a mistletoe. Ancient Greek's Aeneas collected a Golden Bough (or Mistletoe) to travel to and from Hades. Ancient Druids, according to Pliny, collected mistletoes with golden sickles for rituals or medicines.

Riddled with interesting origins and meaning (we recommend reading more about them), the modern tradition of kissing under the mistletoe popularized during the Regency and Victorian Era. During a resurgence of druidic ideas the tradition became popularized as representation of fertility and good luck, but is completely unrelated to Christmas. In fact, the Christian Church banned mistletoes for a long time because of its pagan origins.

The mistletoe's symbolic representation of fertility arose because their presence in the canopy of deciduous trees. As trees drop their leaves, the evergreen mistletoe persisted throughout the winter; providing hope for the spring. There are hundreds of different mistletoe species, but we are most familiar with the Oak or American Mistletoe (*Phoradendron serotinum*) of the Santalaceae family (seriously, that's not a pun!).

Biology

Mistletoe can be identified most readily when the host plant loses its leaves in the winter. When the leaves drop the mistletoe remains and looks like dark green, shrubby bushes attached to the limbs (figure 1). If infection is heavy enough, mistletoe infection can make a tree look evergreen when in fact it is deciduous.

Leaves of mistletoe are oppositely arranged, are oval to lance-shaped, about two inches long and have a rough, leathery texture (figure 2). The berries produced are typically white but can also be orange to red.



Figure 1

Mistletoe will attach itself to a host plant via a penetrating root-like structure called a haustorium. The infectious roots penetrate the vascular cambium (growth ring) of the tree, which make it impossible to remove the mistletoe without injuring the host tree.

Host Plants

Mistletoe can be found growing naturally in the United States from New Mexico, up to Illinois and as far east as New York state. You can find it growing profusely in Florida. Its most common host is Laurel Oak trees although most oak species are susceptible. Other host trees include but are not limited to ash, cedar, elm, maple, sugarberry, sycamore and the nut trees like hickory, walnut and pecan.



Figure 2

Toxicity

Care should be taken when handling mistletoe as it does contain viscotoxins which can cause gastrointestinal issues as well as other symptoms. Always wash your hands with warm water and soap after handling and never ingest any parts of the plant.

Control

Trees that are infected with mistletoe rarely die as a result of the infection. However, if enough of the parasitic plants attach themselves to the tree, death can result. Furthermore, infected trees are more likely to succumb to other tree pests and diseases.

There are only two recommended methods for removing mistletoe. Pruning and applying growth regulating chemicals. Pruning can be an effective means of removal but requires the pruning cut to take place at least six inches below the point of infection. This ensures that you remove any of the infectious roots from the mistletoe plant. Unfortunately, intense pruning can ruin the aesthetic quality of a tree or cause a fruit or nut tree to lose productivity. When the host tree is dormant, plant growth regulating hormones can be applied to effectively kill mistletoe. However, these chemicals are restricted use and can only be purchased and applied by licensed individuals.

Authors

Dr. Kevin Korus is the Agriculture and Natural Resources Extension Agent and Dr. Taylor Clem is the Environmental & Community Horticulture Extension Agent for UF/IFAS Extension Alachua County. Contact them at kkorus@alachuacounty.us or tclem@alachuacounty.us or 352-955-2402.

Photo Credit:

Figure 1. Dr. Kevin Korus

Figure 2. Rebekah D. Wallace, University of Georgia, bugwood.com