

## **OAK MISTLETOE - *PHORADENDRON VILLOSUM* AT JASPER RIDGE BY TONI CORELLI**

Oak mistletoe at Jasper Ridge can be found living on valley oaks (*Quercus lobata*) and blue oaks (*Quercus douglasii*). Mistletoe is a parasitic plant that can only live on another live plant. It sends modified branches called haustoria into the host's phloem and helps itself to water, minerals, and probably sugars as well. However, it has green leaves and manufactures much of its own food materials by photosynthesis, which indicates that true plant parasites such as mistletoe can also be hemiparasitic or partially parasitic if they have green leaves. The genus *Phoradendron* means, "tree thief" because it draws nourishment from its host tree and *villosum* meaning "hairy" referring to the hairs on the leaves and stems. Its common name "mistletoe" is derived from ancient observations that mistletoe would often "spontaneously" appear on a branch or twig where birds had left droppings. "Mistel" is an Anglo-Saxon word meaning "dung," and "tan" is the word for "twig." So, mistletoe literally means "dung-on-a-twig."

Oak mistletoe is considered a woody shrub in *The Jepson Manual*. It is a flowering plant in the Viscaceae (Mistletoe) Family. There are over 1,000 mistletoe species worldwide. Our mistletoe is dioecious which means two houses, the male and female flowers are found on separate plants. The flowers are small and non-showy, however the state flower of Oklahoma is mistletoe, the species *Phoradendron serotinum*. The female flower produces round white berries in the winter that are about one-quarter inch in diameter. The berry usually holds a single seed surrounded by a sticky pulp.

Seed dispersal is mostly by birds. The berries are eaten by birds that digest the pulp of the berry and excrete the living seed onto the tree branches. Sometimes the sticky seeds get stuck on the bills and feathers of birds and the seed is removed by wiping them off on the tree branch. The sticky pulp on the outer surface of the seeds stick to the tree branches where the seeds germinate. Young or small trees are seldom infected by mistletoe since the birds prefer to perch in the tops of taller, older trees. However, severe buildup of mistletoe often occurs within a tree that already has a lot of mistletoe because birds are attracted to and spend prolonged periods of time feeding on the mistletoe berries therefore excreting the sticky seeds on the same tree. The birds in our area responsible for seed dispersal are robins, bluebirds, thrushes, cedar waxwings, and phainopeplas. The great blue hairstreak butterfly uses our mistletoe as its host plant for egg laying and as food for its larvae.

Several years are required for a new seed bearing mistletoe plant to develop from seed. Once a plant is established, the root system gradually extends up and down the branch of the plant it is growing on. Defoliation or destruction of the aerial portion of the mistletoe plant does not kill it. New shoots may be produced from the root system or the mistletoe may survive and grow entirely within the infected host tissues. Not until the tree dies, or the parasitic portion dies or is removed, is the mistletoe killed.

There is general agreement in the literature that mistletoe does not kill the host tree. However, trees heavily infected by mistletoe may be weakened and therefore predisposed to attack by insects. They may be more stressed during periods of drought and branches heavily laden with mistletoe can break off during storms and high wind that can leave the tree susceptible to an entrance point for decay fungi.

Since the earliest of times, mistletoe has been one of the most magical, mysterious and sacred plants in nature. The European mistletoe, *Viscum album* is the species referred to with regard to these legends. This species has been well known for thousands of years. Mistletoe may be the “golden bough” described by Virgil and written about in *The Golden Bough*, by Sir James George Frazer (unabridged version 1890). The golden color referred to comes from the mistletoe plants that have been cut and kept for some months. This species was also used medicinally in ancient times and has held interest as a possible anticancer agent since the 1920’s. This is because extracts derived from it have been shown to kill cancer cells and to stimulate immune system cells. However most mistletoe species are poisonous including our species.

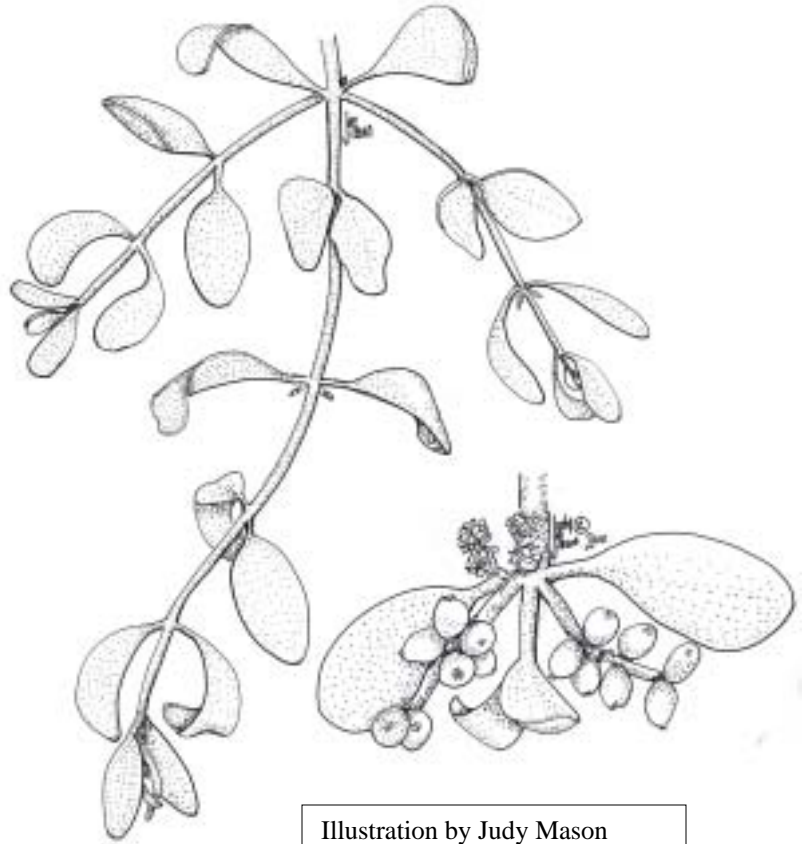


Illustration by Judy Mason

One well-known use is at Christmas time when mistletoe is hung and those standing under it can be kissed. This is first found associated with the Roman festival of Saturnalia celebrating the winter solstice. Later in the eighteenth-century the English are credited with creating the mistletoe kissing ball tradition. “At Christmas time a young lady standing under a ball of mistletoe could not refuse to be kissed. Such a kiss could mean deep romance or lasting friendship and goodwill.” The mistletoe that is commonly used as a Christmas decoration is *Phoradendron leucarpum*, native to southeastern North America.

Web References:

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