



Arid Zone Trees

MISTLETOE and DESERT TREES

While we may use it during the holidays for stealing kisses, mistletoe, as a parasitic plant, is specially adapted to stealing nutrients and water from host trees and shrubs. It is not surprising that the genus of the two mistletoes species commonly found in the desert southwest, *Phorodendron*, literally translated mean tree thief. These two mistletoes are *P. californicum* (a narrow leafed type) and *P. tementosum* var. *macrophyllum* (a broad-leafed type).

Landscapes that are immediately adjacent to undisturbed desert (golf courses, residential or commercial properties) may wish to control mistletoe in infested trees for cosmetic reasons or in an effort to limit spread to other trees. It is instructive to think of mistletoe as a weed and as such control strategies revolve around removing the target plant, controlling seed sources or chemical control. Simply removing the stems of the mistletoe will not effect the "roots" (haustoria) embedded within the branch. Ultimately new stems will be produced. Stem removal will slow the growth of individual plants within a tree and have the added benefit of reduce seed production but will not eradicate the plant from infested trees. Removing infested branches is another option but such pruning may only further disfigure the tree or generate other problem often associated with heavy pruning. Appreciate that other infested trees in the surrounding desert will still be a significant source of seeds for new infestations. Chemical control has never proven effective experimentally and there are no labeled herbicides for the control of mistletoe. In short, control is difficult, time consuming and usually ineffective.

Mistletoes are seed plants that grow either as a parasite (extract all nutrients for growth, including sugars, from the host) or a semi-parasite (capable of photosynthesis but depends on its host for water and mineral salts). Flowers are petal-less, inconspicuous and produce large numbers of sticky seeds. The seeds are coated with a gelatinous material that makes them stick to the beaks of birds and the feet of animals. Birds are the primary carriers of seeds from infested to healthy trees. Seeds can germinate anywhere but can only penetrate young, thin bark. Once inside the tree, small root-like growths called haustoria grow in the spaces between the host plant cells. It is through these haustoria that mistletoe extract needed water and nutrient from the host plant. The age of a mistletoe plant can be calculated by counting the tree rings from the region of the first haustoria to the surface of the bark. Many mistletoe plants are 60 to 70 years old and one has been reported as living 419 years.

The aerial portions of mistletoe are leafy, evergreen clusters of shoots (stems) that appear to emerge from the branches of host trees. Stems and leaves contain chlorophyll and are generally green in color though often with yellowish, brown or olive tints. Plants have opposite leaves with round, segmented stems. Growth is initially



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slow but tufts can grow to 3 feet across in 6 to 8 years. Aerial portions do not live much longer than that but new clusters can arise from haustoria surviving within the tree.

Phorodendron californicum has small, narrow, nearly inconspicuous leaves, making the plant look like a cluster of short, densely packed, green stems. *P. californicum* is typically found on desert legumes, especially native and screwbean mesquites but is also common on cat claw, palo verde species, and occasionally on creosote and desert ironwood. In contrast, *P. tomentosum* var. *macrophyllum* has broad, thick leaves arranged opposite each other along the stem. It is typically found on stream-bank trees such as cottonwoods, willows, sycamores and ashes but also on walnut, Mesquite, and Hackberries. Both are found throughout the desert southwest.

Mistletoes are commonly found in native stands of mature desert trees but rarely, if ever, in cultivated trees. Obviously it can be introduced into the landscape on desert salvaged or relocated trees. Mistletoes can damage and weaken older trees, cause unattractive branch swellings and in rare cases the weight of the plants can cause branches to break. The impact of mistletoe on the appearance of trees is highly subjective. Some people find the infestations unattractive while others find they add color, density and character to maturing trees.

The relationship between mistletoes and host desert trees is ancient. Over the millennia they have learned to tolerate each other and safely co-exist. Perhaps desert horticultural professionals should take a lesson from the native mesquite and just learn to live with mistletoes.