



Oak Leaf Abnormalities are Very Normal

by Susan Sevier, Master Gardener

As the winter season returns, we are likely to notice both the structure of our tree limbs and the leaves that fall from them. Here in our valley this is most noticeable to the homeowner who is lucky enough to have an oak tree in the yard or to people who commonly take long walks. The bumps on the leaves, round balls on the twigs, scorched areas and white cocoons are completely unrelated to the severe outbreaks of sudden oak death which is devastating areas in Northern California. Be assured that sudden oak death manifests itself on the trunk and bark, and not on the leaves.

Most obvious, upon closer inspection of the leaves, the distortions, or galls, are discovered to be colorful swellings in the cells of the plant tissue, caused by tiny insects called gall wasps. There are hundreds of species of these Cynipid wasps, with the size, color, and shape of the galls determined by the species of the wasp, where the egg is laid on the oak, and the season. When the eggs hatch, the larvae feed under the plant tissue. As they feed their secretions promote the abnormal growth of the plant cells. The plant growth becomes a little protected habitat for the insect. Sometimes not only the single legless larva but various species of predators or parasites may be harbored within a single gall.



Fig1: Oak galls are diverse and often quite attractive. These pink spined turban galls (made by *Antron douglasii* wasps) and reddish oak cone galls (made by *Andricus kingi*) occur on the underside of valley oak leaves.

Common to our area is the jumping oak gall, which causes discolored spots on the upper side of the valley oak leaves and seedlike deformations on the underside of its leaves. Eventually the galls drop to the ground and movements of a tiny wasp larva inside cause the galls to jump an inch or more above the ground. Much to the delight of nearby children at the base of the tree there may be hundreds of jumping galls the size of sesame seeds. This is usually noticed in late summer and early fall.

Other types of galls common to our area are the pink-spined turban galls and the reddish oak cone galls. Neither is a threat to the health of the tree and both are quite unique and interesting. Cosmetic damage is more apparent, however, by the two-horned oak gall wasp, because an infestation of this wasp can cause leaves of both coast and interior live oak trees to drop prematurely and creates a scorched appearance on the leaves. This damage can be confused with oak twig blight fungi and oak branch dieback, but in those cases the entire twig would die as

would many adjacent leaves. Instead, the two-horned oak gall wasp destroys only portions of each leaf, and the same twig can have both affected and unaffected leaves. Intolerable damage by this gall can be decreased by careful pruning of affected areas.

Several other insects can damage oak leaves without forming galls. For example, the foliage mining insects which create holes, off-color patches, and even sinuous trails have larvae

which can be seen dripping from the foliage on silken threads. Both the oak skeletonizer, which creates a lacy pattern as it destroys the leaf's portions between its ribs, and the oakribbed casemaker which forms cigar-shaped cocoons, cause more aesthetic concern than actual damage.

The bottom line is that neither oak gall wasps nor other oak leaf insects pose a serious threat to oak trees. These insects are so small that they are rarely even noticed by people, only their abnormal structure. They coexist in a symbiotic relationship with our oak trees and seeing these structures on leaves is quite normal. As is often the case in our garden, beneficial enemies will prey upon the insects we do not want and it is best to let nature take its course.

Cynipid predators are many, and include fungi, other insects, and parasites within the galls, various birds including woodpeckers, and even rodents and other small mammals. There is no need to spray a toxic chemical. The broad spectrum foliar insecticide would do more harm than good, as it would kill the multitude of natural predators and thus increase the problem later.

In general it has been demonstrated that frequent shallow watering and poor drainage is the most common cause of landscape tree damage. Deep infrequent irrigation, in which the water's contact with the trunk is avoided along with careful attention to avoid abrasions of the bark by garden tools or lawn equipment, will insure a long life of the oak tree.



Fig 2: Oak Apple Galls - Young oak apple galls are green. Galls turn reddish or brown, then black after the tiny California gallfly (*Andricus californicus*) wasps inside mature and leave the galls.

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