

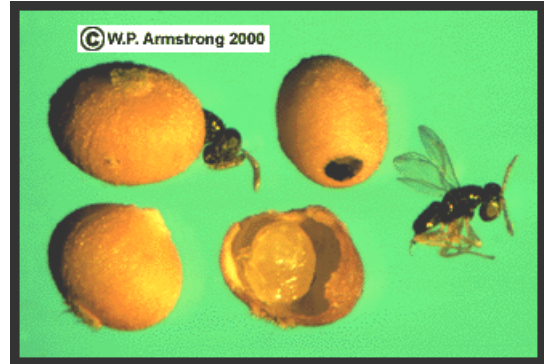


Jumping Oak Galls & other Mysteries

Every summer at this time people call or come by our office asking about the tiny hopping balls that show up on the ground under oak trees. These are called jumping oak galls. They are caused by insects that lay eggs on oak leaves. Plant hormones released by the insects cause the leaves to form protective structures around the larva – the “gall”. Most galls, especially on oaks, are caused by tiny wasps called cynipids. The adults, the size of fruit flies, don’t sting people and are seldom noticed. The eggs hatch on the leaves and the larvae cause the galls to form around them. Each larva lives in the gall, pupates and hatches out of the gall as an adult.

It isn’t fully known how the insects hijack the cellular machinery of the plant to such an extent that they force the plant to create a structure it would never make on its own.

Jumping oak galls, unlike other plant galls, fall off the tree and then mysteriously hop around on the ground, like a Mexican jumping bean. Apparently, the larva is able to move inside the gall with enough force to make the gall hop. Why do they hop? Sometimes they look like they’re hopping off hot pavement, but they also jump in the shade. Jumping may be useful to move them into leaf litter where they are more protected. Many of them end up as prey for ants anyway. I often see ant hills with empty galls scattered around the opening.



Jumping oak galls and adult



Jumping oak galls on leaf

Other Oak Galls

Oak trees in California support a wide array of galls. The best-known is the oak apple gall, which is also caused by a cynipid wasp. These are the large, tan-colored growths on the leaves of many oak species. Although these are the largest galls and are sometimes very numerous, they don’t hurt the tree, beyond taking some nutrients from it.



Other insects can cause gall formation as well, including midges, flies, moths, beetles and mites. The grape erineum mite causes blister-like growths on grape leaves that look like a plant disease, but are actually galls, and not harmful to the plant.



Oak Apple Galls

Here are some other peculiar oak galls sometimes seen in this area:



The Red Cone Gall, also caused by cynipid wasps, and the;



Urchin Gall.



Grape Erineum Mite Galls

One of the more peculiar galls I've seen is the



Elm Cockscomb Gall.

Non-insect Galls

While it is poorly understood how insects can reprogram plant cells to produce such specific and intricate gall forms, one of the strangest mysteries of gall formation is caused by the crown gall bacterium (*Agrobacterium tumefaciens*) which causes crown gall disease

on walnuts, among other things. This economically serious plant disease is caused by the transfer of a small piece of DNA from the bacterium to the tree, where it produces plant hormones and causes the tree cells to grow rapidly, like a tumor. Genetic engineering perpetrated by a bacterium!



Crown Gall on Walnut Tree