Galls: Strange Growths on Trees and Other Plants

A few weeks ago I wrote a column about lichens, ball moss and other things that grow on trees. Galls don't fit in that category because they are not things that grow ON trees, but rather abnormal growths that are part OF the tree.

The most commonly seen around here are small round brown balls on oak tree twigs, but there are many different forms and colors of galls and they are not limited to oaks or even to trees—galls can be found on flowers, shrubs and even vegetables.

Galls are not like tumors that are caused by an abnormality in the cells of the plant such as caused by a cell mutation. Galls are caused by external agents. Most often galls are caused by insects, although fungi and bacteria can also cause some galls.

Most commonly, galls are caused by an insect, frequently a tiny (1-8 millimeters) gall wasp or gall fly of the genus *Cynipidae*. When the wasp pierces a part of the tree in order to lay its egg, something in this process apparently induces the tree hormones in the locality of the sting to cause abnormal growth, and it is this abnormal growth that results in the gall. The insect is really looking for a host on which to lay its egg, and the egg becomes encased in the gall.

Galls are generally composed of resins, tannins and cellulose, and it is this material that becomes the food for the growing larva. The larva will eventually emerge from the gall as a gall wasp and the life cycle will repeat itself. When fresh, galls are solid and fairly hard. Once the larva emerges what is usually left is a light, hollow shell.

The gall wasps usually find fast-growing tissue such as new spring growth to lay their eggs. This may be because the new growth is softer, but it is also the part of the plant that is growing the fastest and thus has the most growth hormones. There are an estimated 800 species of gall wasp in North America. Most of them only form galls on specific tree species and only on specific parts of that tree. And it appears that the size, shape and color of the gall is unique to a particular species of wasp laying eggs on a particular part of a particular species of tree.

The accompanying photograph shows several different types of dark brown galls that were formed last year. The small gall on the underside of a live oak leaf was obviously formed this year, as was the large (1 inch diameter) light-tan galls. One of the latter was split open (it's quite hard) and you can see the small larva in the center.

Interestingly, this year for the first time in 12 years, we have a large number of the large light tan galls growing on blackjack oaks. They are large enough and light enough in color to be conspicuous. Many are now falling off. They are all growing on the cup of the much smaller (next year's) acorns—not on twigs or on the acorns, just on the cups.

There are tiny parasitic wasps that find galls and deposit their own eggs in the gall. The new larva then consumes the original larva and the rest of the gall as well.

While most of the galls I have seen in this area were on oak trees, and oaks are apparently more likely to have galls than other trees, it would be misleading the leave the impression that all galls are on trees. The next most common place to find galls is not on twigs (or acorns) but on the underside of leaves. This type of gall can be found on just about any kind of vegetation and usually looks like a collection of bumps or warts or balls stuck to the underside of the leaf. They can often be mistaken for a bunch of insect eggs, but if you try to scrape them off you will find the are indeed not something attached to the leaf, but are part of the leaf—galls.

While it may appear that these growths are detrimental to the plants, most galls, and certainly those on trees, represent such a tiny fraction of the biomass of the tree that their effect is insignificant. Some galls, formed by fungi, especially on crops, are indeed destructive.

Until next time…

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