



Stem and Leaf Galls – Reference

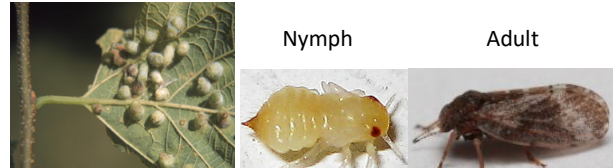


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In most cases galls are cosmetic problems and can be left alone. The galls can be caused by psyllids, flies, wasps, mites, gall-making aphids, adelgids, etc. Following are just some examples of the different types of galls found in Yavapai County.

Hackberry Gall Psyllid

Pachypsylla sp.



Description: Galls appear as 1/8 to 1/4-inch swellings of tissue on leaves or petioles. They can be carefully cut open to reveal the pale, developing psyllid inside.

Hackberry trees also harbor a number of gall-forming midge species (Diptera: Cecidomyiidae) such as the species that produces the **thorn gall**, *Celticis spiniformis* (Patton). Immature stages of these species, when carefully dissected out of galls, appear maggot or grub-like and have no legs or antennae as do psyllid immatures.

Life Cycle: Common leaf gall forming species overwinter in the adult stage in bark cracks and crevices. Adults mate in the spring and females lay eggs on the underside of expanding leaves. Nymphs hatch from eggs in about 10 days and begin feeding, which causes leaf tissue to expand rapidly into a pouch or gall around the insect. They develop through several stages (instars) before emerging as adults in the fall (September), although the hackberry bud gall maker overwinters inside the gall as a last stage (5th instar) nymph to emerge as an adult in early summer. One generation occurs annually.

Habitat and Food Source(s): A number of *Pachypsylla* psyllid species occur on hackberry (*Celtis* spp.), including the **hackberry nipple gall maker** (*P. celtidismamma* (Riley)), the **hackberry blister gall maker** (*P. celtidisvesicula* Riley), and the **hackberry bud gall maker** (*P. celtidisgemma* Riley).

Damage: Probably no hackberry tree is not infested with one of the gall-forming psyllids. Adults occasionally become a nuisance in and around the home in the fall but are medically harmless. Galls formed by these species are unsightly and occasionally cause premature leaf drop, but they do not appear to harm the health of the trees.

Management: None, not considered a major pest.

Poplar Twiggall Fly



Description: The poplar twiggall develops on the twigs of cottonwoods, poplars and, particularly, aspen. This gall is produced by the feeding of an insect, the poplar twiggall fly (*Hexomyza schineri*). The galls are smooth swellings on the current season's twigs. Obscured by leaves, the original galls are rarely noticed until leaves fall in autumn.

What attracts attention and concern is that galled tissues continue to grow and swell. During subsequent years, the galled area is incorporated into the growing twigs and branches and may ultimately appear as large swollen bands on trunks and branches. Although these old injuries produce a permanent disfigurement, they do not seem to threaten tree health.

Life History and Habits

The poplar twiggall fly overwinters within the gall as a full-grown, yellow-green maggot. Pupation occurs within the gall in late winter or early spring. The majority of the pupae then drop to the ground. At the time that new growth forms, the adult flies emerge from the pupae and become active. Adults are stout-bodied, shiny, dark flies about 1/6 inch long. During the day, they rest and sun themselves on leaves. After mating, females move to developing twigs and insert eggs into the stems. The larvae hatch from these eggs and produce the distinctive swelling in response to their feeding.

Management:

- A small parasitic wasp (*Eurytoma contractura*) parasitizes and commonly kills large numbers of the poplar twiggall fly.
- Removal of galls is commonly considered by homeowners. However, this has limited potential for control. Pruning often requires substantial branch destruction and creates wounds that can allow pathogens to enter. Furthermore, this practice can be counter-productive if it is done after flies emerge in late winter. Late pruning may remove only those galls that contain the natural enemies of the poplar twiggall fly, the most important being the parasitic wasp mentioned above.
- Because problems with poplar twiggall fly are most severe in succulent aspen, do not overwater or fertilize plantings. If aspen growth can be moderated, then gall production can be slowed.
- Insecticides applied as sprays have worked poorly to control this insect. However, soil applications of the systemic insecticide imidacloprid have provided good control in nursery settings. The insecticide should be applied as a drench to the soil over the root zone of the tree just prior to or at bud break. (Rake away mulches prior to application to expose the soil during application.) The treated area must be watered so that it remains moist for at least two weeks to allow adequate uptake by the roots.

Cynipid Wasp (Oak Trees) *Hymenoptera: Cynipidae*



Description: Two kinds of galls are produced by this wasp. The most notable are produced by the asexual generation that are spherical, corky, 1/8 to 1 inch in diameter and appear on twigs and branches of live oak in late summer and early fall. When first formed, they are pink to pinkish brown and the yellow-green tissue inside is moist and soft.

A number of cynipid wasps cause unique galls on oak trees: the **gouty oak** and **horned oak gall (woody twig galls)**, *Callirhytis* spp.; **hedgehog gall**, *Acraspis erinacei* Beutenmuller (leaf galls with orange-colored “hair”); **wool sower gall**, *Callirhytis seminator* Harris (stick, spongy galls on twigs with seed-like structures inside); **woolly leaf gall**, *Andricus laniger* Ashmead (leaf galls on post oak); and, **oak apple**, *Amphibolips* spp. (spherical, spongy-filled galls on red oak). Galls on trees are also caused by other insects such as some species of aphids, flies, phylloxera, psyllids, thrips and mites.

Life Cycle: Adults emerge from galls of the “asexual generation” during December. All adults are female and do not mate before laying eggs on swollen leaf buds. Eggs hatch in early spring as leaf buds begin to open. Larvae develop quickly in leaf tissue and stimulate the development of small, beige-colored galls resembling kernels of wheat. Adults of both sexes emerge from these galls or the “sexual generation” after a few weeks. After mating, females lay eggs in oak twigs and branches. These eggs remain dormant for 3 to 5 months. Then they hatch and stimulate the formation of galls of the asexual generation.

Management: Although adult wasps are rarely seen, the galls produced are noticeable; when numerous they can disfigure trees (cosmetic damage only).