Tucked In: Overwintering Abundance

How do insects endure the harsh, cold, wet winter?

By Katherine Hauswirth

Galls cover an oak leaf.

Once the leaves have finished their autumn show-stopper, they descend from the stage and we're left with more muted environs. When I look out my window on winter days, I see grays and browns drawn in stark, heavy lines in contrast to a bright background of snow. Other than the birds and squirrels that visit my feeder, and the occasional passage of a deer, the landscape looks forlorn when compared to the color and bustle of the warmer months.

But throughout our forests, creatures of all sizes, including insects, have developed surreptitious methods to survive our harsh, cold winters. Wasp queens hibernate under tree bark. Some species of ants stay underground in their colonies until the warm weather beckons. Others take shelter in wood or even in acorns.

Grasshopper eggs, formed in the autumn, live in rigid pods in the soil where they'll stay in suspended animation until spring. Ladybugs shelter together by the hundreds, sometimes within the walls of our homes. On warm, late winter days they emerge to bask in the sun coming through my guest room window.

And then there are the galls, plant tissue growths that protect young insects, often until spring. Plants create the galls in response to some kind of stimulation from an insect, mite, fungus, or bacteria, and they come in an array of colors, shapes, and sizes. Some galls look like apples on oak trees, or pine cones on willows. Others are subtler and appear as a swelling along a stem, like blackberry knot or goldenrod galls. In the United States, there are some 2000 gall-producing insects, most of which are wasps or gnats.

Oak apple galls are fairly easy to find. These golf ball-

confluent wasp. The galls turn from green to brown and drop off the trees in the cooler seasons. By the time we find them they've been long abandoned. Look for the hole that served as the creature's escape hatch. If you crack open an older oak apple gall, you'll find fuzzy material surrounding the central egg chamber. The hackberry petiole gall, another brown sphere, is filled with up to 13 nymphs from aphid or cicada families. They overwinter in the gall's wax-lined "apartments."

If you see a brown, kidney shaped object approximately two inches in diameter on an apple tree, Eastern red cedar, or another species of juniper, it may be the home of the *Gymnosporangium juniperi-virginianae* fungus. These growths are sometimes called "cedar apples." When the weather warms, bright orange, gelatinous, spore-producing horns up to four inches long protrude from the gall.

Some galls, named for their bitter taste, are high in tannins, which are thought to protect them from fungal or bacterial infections. Galls have been harvested to make tannic acid, inks, dyes, and even bait. Larvae from goldenrod galls are said to be good for catching perch, bluegills, and trout. Galls have also been used as a spice and as an emergency food for livestock. And if you're camping and in need of a warm fire, dry galls make for excellent tinder.

Many of us are decorating trees this holiday season, and it turns out our insect neighbors may be doing so, too. Look closely and you will spot some of these well-crafted nurseries nestled among stems and branches. In the spring, we'll all be emerging together to test the warming air.

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sized spheres house the
larvae of the *Amphibolips*