

INSECT ARCHITECTURE

PEACOCK FLIES



PEACOCK FLY

The peacock fly, *Eurosta solidaginis* (order Diptera, family Tephritidae) didn't really build this structure. The peacock fly (also called the goldenrod gall fly) caused a plant to form it. Here is the story of how a fly got a plant to make it a home.

In early summer the female peacock fly places an egg on the growing tip of a Canada goldenrod plant. When the egg hatches, the larva chews its way into the growing tip of the stem and begins to eat the plant from the inside.

Once inside the stem of the Canada goldenrod, the tiny larva releases chemicals in its saliva or excrement that irritate the plant. The plant has a reaction to these chemicals. It develops a round swelling around the larva called a ball gall.

The gall is usually harmless to the plant, and it makes quite a good home for the larva. It spends the rest of the summer, the fall, and the winter snug inside the gall.

In early fall, the larva chews a tunnel from the center almost to the outside of the gall. Then it crawls back to the center of the gall where it spends the winter.

In spring the larva enters the next stage of its life cycle, the pupal stage. It forms a covering around itself called a puparium. Inside the puparium it transforms into an adult fly.

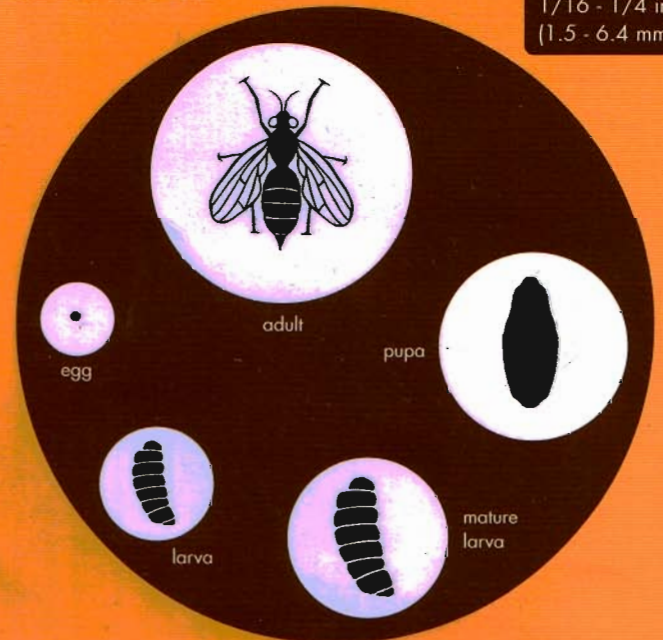
In a few weeks the adult peacock fly emerges. It leaves the gall through the tunnel it had already chewed out when it was a larva. Then it flies off to find a mate and to begin the cycle again.



An adult peacock fly rests on a pencil.

LIFECYCLE

ADULT SIZE:
1/16 - 1/4 in.
(1.5 - 6.4 mm)

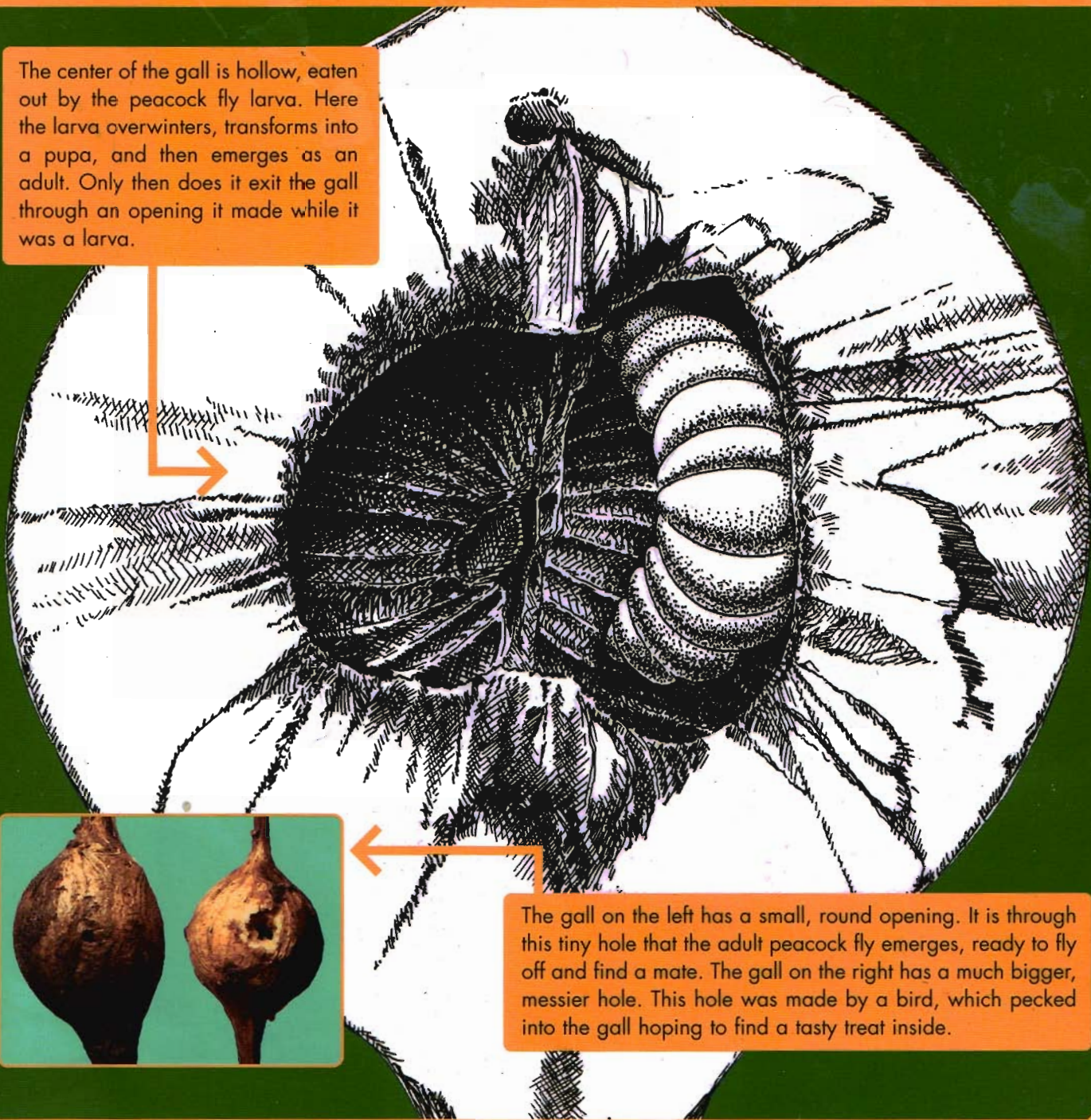


PEACOCK FLY BALL GALL

The center of the gall is hollow, eaten out by the peacock fly larva. Here the larva overwinters, transforms into a pupa, and then emerges as an adult. Only then does it exit the gall through an opening it made while it was a larva.



The gall on the left has a small, round opening. It is through this tiny hole that the adult peacock fly emerges, ready to fly off and find a mate. The gall on the right has a much bigger, messier hole. This hole was made by a bird, which pecked into the gall hoping to find a tasty treat inside.

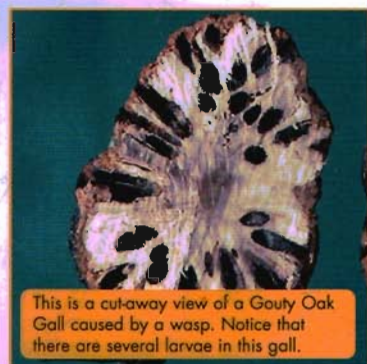




Canada goldenrod plants respond to the larva's secretions by forming a round gall around the insect.



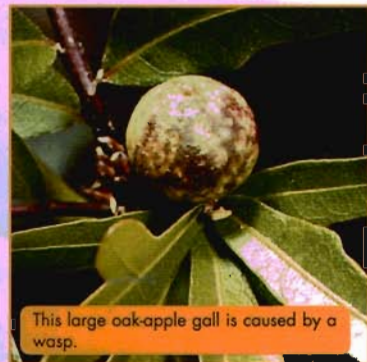
This gall formed in response to the larva of a jumping plant louse, which looks like a tiny cicada.



This is a cut-away view of a Gouty Oak Gall caused by a wasp. Notice that there are several larvae in this gall.



This leafy spurge plant formed galls around the larvae of an insect known as a shoot-tip gall midge.



This large oak-apple gall is caused by a wasp.

WHERE TO FIND GALLS

Peacock flies lay their eggs only on the tips of growing Canada goldenrod plants. Goldenrods are common plants with plumes of small, bright yellow flowers. Look for them in sunny places, along roadsides, in meadows and other unmowed areas.

Once you locate Canada goldenrod, you will probably find many ball galls. If you like, try carefully opening one up. Depending on the time of year, you might find a larva or pupa still inside.

PHOTOGRAPHY / ILLUSTRATION CREDITS

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OTHER GALL-MAKERS

A gall is basically an abnormal growth that a plant produces. There are a variety of insects that lay eggs on or in plants that can cause this to happen.

Oak-apple galls are formed when a certain type of wasp lays eggs on the leaves or leafstalk of an oak tree. The gall gets its name from the fact that it looks a little like an apple. Generally these galls do not hurt the tree.

Tiny flies called shoot-tip gall midges (order Diptera, family Cecidomyiidae) lay eggs on a plant's growing tip. When the larvae hatch they enter the stem of the plant and the gall forms. Examples in the pictures above include the shoot-tip gall on leafy spurge and the pine cone willow gall.