



# TREES & SHRUBS

## Poplar Twiggall Fly

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### Quick Facts...

Poplar twiggall fly produces a smooth knot-like gall on the twigs of aspen. These galls continue to expand for years after they are produced.

The poplar twiggall fly is a native insect that has become much more abundant since the early 1980s.

Several natural controls affect incidence of galling. There are no effective chemical controls to prevent this gall.

The poplar twiggall is an increasingly common gall along the Front Range. It is found on the twigs and branches of cottonwoods, poplars and, particularly, aspen. This gall is caused by an insect, the poplar twiggall fly (*Hexomyza schineri*). The galls (Figure 1) 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. Ultimately, galls become large knots on trunks and larger branches, giving the plants a gnarled, bonsai-like appearance. 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.

Serious galling has been limited to aspen. However, small numbers of galls sometimes can be seen on other *Populus* species. Galling is most common on younger trees that produce a lot of succulent new growth.

Occasionally *Cytospora* canker may develop around a gall. The exit wound of the gall-making insect can be a point of entry for this common fungus disease. (See fact sheet 2.937, *Cytospora Canker*.) However, the activities of this insect contribute little to the overall incidence of *Cytospora* canker.

The poplar twiggall fly is native to the region. Outbreaks began to attract attention in the mid-1980s. Originally, problems seemed limited largely to the southern metro Denver area. Recently, there has been an extensive expansion of the outbreak. It currently extends across the Front Range and now occurs even in some native forest stands of aspen.

### 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.

Areas below buds appear to be particularly favored sites for galls. As the stems continue to grow, the area where eggs were laid becomes increasingly swollen. At first, the swelling involves a fairly indistinct enlargement. However, within two months the full sized gall is usually present.



Figure 1: Galls produced by twiggall fly, with emerging pupae.



Figure 2: Continued expansion of galls on older wood.



Figure 3: Adult poplar twiggall fly laying eggs in developing twigs.

The developing gall fly is a greenish-yellow maggot that grows slowly within the gall all summer. It is difficult to find until late summer and fall, when it grows rapidly, filling a small cavity within the swollen area of the twig. Individual galls typically contain two to three larvae.

There is one generation per year. Some observations indicate that a few flies may have a second generation during seasons that are unusually warm.

## Control

There are some natural controls of the poplar twiggall fly. A small parasitic wasp (*Eurytoma contractura*) parasitizes and commonly kills large numbers of the poplar twiggall fly. Observed parasitism typically ranges from 20 to 30 percent but has exceeded 80 percent in some years. The adult wasps emerge from the galls about two weeks after the adult flies first appear.

Predation of the pupae by chickadees and other birds also occurs in spring. Their activity is evident by some tearing around the exit hole by the beaks of the feeding birds.

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 have worked poorly to control this insect. Repeated sprays timed for periods when the flies are laying eggs have provided only about 50 percent control, at best, in Colorado State University research trials. Use of soil-applied systemic insecticides have been more variable. Soil drenches of imidacloprid (Merit, Marathon, etc.), applied two weeks prior to bud break, have given good results in one field trial. Maintaining soil moisture with irrigation after applications is important. Soil applied systemic insecticides have not been effective with potted aspen.



Figure 4: Poplar twiggalls showing evidence of predation by chickadees.



Figure 5: Poplar twiggall fly and parasitic wasp.

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