

## Colorado Insects of Interest

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# Fungus Gnats

**Scientific Name:** *Bradysia* spp.

**Order:** Diptera (Flies, Midges, Gnats, Mosquitoes, etc.)

**Family:** Sciaridae (Dark-winged Fungus Gnats)



Figure 1. Fungus gnat adult.

### Identification and Descriptive Features:

Fungus gnat adults are tiny (4 mm), delicate dark colored flies with long legs and antennae. A distinct “y-shaped” pattern is present on the forewings. The wormlike larvae, found in soil, are translucent with a dark head.

**Distribution in Colorado:** Statewide and common. Indoor populations are associated with houseplant potting soil.

**Life History and Habits:** Larvae of fungus gnats usually develop in the top 2.5-5 mm of soil where they feed on fungi, algae, and decaying plant matter. Occasionally they will chew root hairs and may also damage leaves resting on the soil surface. (An effective means of sampling for fungus gnat larvae is to insert slices of potato in the soil and check it after a couple of days.) The larvae develop rapidly and may become full grown in 2-3 weeks, ultimately reaching a length of about 6 mm. They then pupate in the soil, emerging about a week later.



Figure 2. Fungus gnat larva on a potato slice.

The adults fungus gnats are active insects but weak fliers, instead making short, erratic skipping flights. Within homes they are most often seen in the near vicinity of the soil surface of houseplants, but may disperse short distances and often

accumulate around nearby windows. During the course of their brief 7-10 adult life span the females lay up to 200 eggs into soil cracks. Moist growing media with large amounts of peat moss are particularly attractive to the egg laying females. At room temperature a generation may be completed within 3 to 4 weeks and continuous reproduction year-round may occur indoors.

Fungus gnat adults do not and can not bite. They will suck moisture but do not feed in the adult stage.

**Fungus Gnats as Pests Associated with Houseplants:** Fungus gnats often develop in the soil of houseplants, resulting in annoyance problems associated with the dispersing adults. Minor root injuries from larval feeding may also occur, although usually feeding is restricted to the growing media.

Nuisance problems with fungus gnats indoors tend to be most noticeable during late fall and winter. Several reasons may account for this seasonal peak. Houseplants maintained outdoors during summer are commonly colonized by fungus gnats and when plants are brought indoors populations may subsequently increase. Fungus gnats also may be more noticeable with cooler weather, which tends to cause people to spend more time indoors so that fungus gnats are more likely to be observed.

However, the main reason for increases in number of fungus gnats is usually related to changes in moisture levels of houseplant growing media. Decreased day length and cooler temperatures slow plant growth and water usage. If irrigation practices are not altered, during fall and winter the soil remains more moist than during warmer, sunnier periods, providing improved conditions for fungus gnat development.

**Management.** *The most important step in reducing fungus gnat problems associated with houseplants is to allow soil to dry between waterings.* These drier soils will decrease survival of eggs and larvae as well as reduce attractiveness of the soil to egg laying adults. It may also be important to remove pots if they are providing sources of large amounts of decaying plant matter (e.g., decayed bulbs, roots) that provide abundant food for the larvae.



Figure 2. Fungus gnat caught on yellow sticky card.

Insecticides may be considered necessary if fungus gnat problems persist a few weeks after changes in watering/soil moisture have been made. These can include treatments directed at the adults or against the larvae, and different approaches are used against each of these stages.

Adult treatments require repeated use of sprays applied to the soil surface, since new adults emerge continuously. The most effective treatments are those that have some persistence of effect so that they will kill adults for a few days. Some pyrethroid insecticides with fairly long persistence (days) include houseplant insecticide formulations that contain as active ingredient bifenthrin, cyfluthrin, or permethrin. Insecticides such as pyrethrins, resmethrin, soaps, or neem will generally provide little or no control since their effects on adults are minimal and/or of short duration. Larvae within the soil will not be killed by any of these adult treatments, which fail to move into the soil where larvae feed.

Larvae can be killed by the microbial insecticide *Bacillus thuringiensis var. israelensis* (Bti) applied as a soil drench. However, this material is rarely, if ever, available from retail outlets and usually must be mail ordered. Trade names for Bti-products that allow use on houseplants go under trade names such as “Gnatrol” and “Knock-Out Gnats”.

The soil applied systemic insecticide imidacloprid can also kill fungus gnat larvae. This is available in some houseplant formulations as granules, slow-release “spikes” and in combination sprays with pyrethroid insecticides.