

Drat That Gnat!

Not too long ago, I repotted a few of my house plants. Unfortunately, the potting soil, unbeknownst to me at the time, was infested with fungus gnats. Apparently, this is not an unusual problem although I have rarely had an issue with bugs in the soil.

Fungus, or soil gnats are in the order *Diptera* and make up six of the seven families in the superfamily *Sciaroidea*. These are: *Sciaridae*, *Diadocidiidae*, *Ditomyiidae*, *Keroplastidae*, *Bilitophilidae*, and *Mycetophilidae*. The most commonly seen gnats are in the latter family, *Bradysia coprophilia*, and *B. impatiens*.

They are often confused with fruit flies, *Drosophila melanogaster*. However, fungus gnats are black in color, and tend to cluster around soil. They are a weak fly, and prefer walking over plants and soil to flying. Fruit flies are tan in color, have reddish-colored eyes, and as the name implies, tend to be found around fruit.



Fungus gnats on a yellow, adhesive sticky trap.

These gnats are very small flies, from 1/16 to 1/8 inch (1.5 to 3 mm) long. They have complete metamorphosis, with the four stages: egg, larvae, pupa, and adult. The larvae can be up

to an inch (2.54 cm) long. One female can lay up to 300 eggs in the first week of adulthood, making control difficult.



An exoskeleton shed in a potting soil sample.

I am a firm believer in doing the least harm when dealing with pests. So far, I have been keeping the gnats under control with yellow, adhesive sticky traps. The flies are attracted to the color yellow. When the traps are full, I discard them and put out fresh ones. Chunks of raw potato are said to do the same thing. One can mix 3% hydrogen peroxide with water (1:4 parts) and use that to water the plants. A layer of sand or pebbles on top of the soil is said to work also. Commercial growers may use chemical controls. Baking the soil before use will tend to kill any insects that may be present at any life stage.

These little flies are more of an annoyance than anything, especially when they choose to flit around one's face and ears. They are typically harmless to healthy plants and humans. They can be an indicator of overwatering, and they may feed on roots that have been kept wet, and that may be rotting. They can be attracted to a fungus that is present in the soil. Repotting is recommended to get rid of them.

They also help with the decomposition of organic matter. The commercially available potting soil I used was full of organic matter, from microscopic bits, to root hairs, all the way up to small pieces of twigs and bark.



Twigs and other organic matter are visible in this sample of potting mix.

Interestingly enough, I only have these gnats in the soil of two plants. They are primarily in a Jade plant (*Crassula ovata*) and a Devil's Ivy (*Epipremnum aureum*). I have a number of African violets, (*Saintpaulia*) that should attract the gnats, but they are not bothered by them. Those plants are potted in a soilless mix, consisting of peat moss, vermiculite, and perlite.

There are a number of fun trivia facts about gnats. Some tolerate freezing quite well. At -25°F (-31.667°C) their abdomens with freeze, but temperatures must drop to -60°F (-57.11°C) before their heads finally freeze. The little flies occur on every continent except Antarctica. Some *Cecidomyiidae* gnats reproduce via paedogenesis, that is asexually during the larval stage.

While the gnats are interesting little creatures, the potting soil is proving to be very interesting too. It is definitely going to warrant further exploration. A very tiny little mite showed up in one sample. While I got a picture of him, it is not very clear, as he was hurrying to escape the light. I also detected some other movement, but could not spot the creature causing it. Perhaps we will learn more secrets of the soil in a future article.

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All photos by the author.

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