



Common Name: **Small fruit flies / Vinegar flies / Pomace flies**
Scientific Name: **Drosophila species**

SMALL FRUIT FLIES



Introduction. The common names “small fruit fly” and “pomace fly” come from these flies’ small size and fondness for fruits and processed fruit as egg laying and developmental sites. The name of vinegar fly comes from the fact they develop in the vinegar like liquids at the top of imperfectly sealed canned fruits and vegetables. Note that only flies of the family Tephritidae can properly be called fruit flies. Vinegar flies are nuisance pests but may act as disease vectors. The best known of these flies is *Drosophila melanogaster*, which has been used extensively in the study of heredity. They are worldwide in distribution and are found throughout the United States.

Recognition. Small fruit fly adults are about 1/8 inch long, including the wings. They are colored dull tan to brownish-yellow or brownish-black. The eyes are usually bright red. One of the most common vinegar flies, *Drosophila melanogaster* is tan with the abdomen blackish above and grayish below, and has bright red eyes. A slightly larger and darker (brown to black) species, *Drosophila repleta*, is found commonly in restaurants and bars that have sanitation issues.

Mature small fruit fly larvae are about 1/4 to 3/8 inch long, eyeless, legless, and tapering towards the pointed head from the large rounded rear segment. The head contains 2 dark mouth hooks. Larvae are nearly white except for the dark mouth hooks and yellow tips of the terminal abdominal spiracles (breathing pores).

Similar Flies. (1) Small dung flies (Sphaeroceridae) and (2) Humpbacked flies (Phoridae) are similar in size to vinegar flies and often require the aid of magnification and a trained eye to differentiate them. (3)



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Moth/drain/sewer flies (Psychodidae) are densely covered with gray hairs, giving them a fuzzy, moth-like appearance. (4) Fungus gnats (Mycetophilidae) and (5) dark winged fungus gnats (Sciaridae) are minute, slender, long-legged and mosquito-like.

Biology. Small fruit fly females lay their eggs (average about 500) near the surface of fermenting fruits and vegetables or near rips and seams in the imperfectly sealed containers of such materials. The eggs hatch in about 30 hours. The larvae develop in the vinegar-like liquids of the fermenting materials where they feed near the surface and primarily on the yeast, for about 5 to 6 days. Prior to pupation, the larvae crawl to drier areas of the food or elsewhere. The brown, seed-like sheath (puparium) containing the pupa is formed from the last larval skin/exoskeleton. The newly emerged adults mate in about 2 days. The life cycle (adult to adult) may be completed in 8 to 10 days at 85° F. Their reproductive potential is enormous.

Habits. Small fruit flies are attracted primarily to fresh fruits and vegetables and those fermenting because of yeast. Materials lose their attractiveness when they begin to decay because of bacteria and fungi. Materials commonly infested include bananas, grapes, peaches, pineapples, tomatoes, cucumbers and potatoes. Fermented liquids include beer, cider, vinegar, wine and rancid mop water containing residues on floors and in tile grout joints. Some species are attracted to human and animal excrement.

The larvae develop primarily in liquids and near the surface of food items but seek drier sites nearby in which to pupate. Since these flies have a short life cycle of 8 to 10 days, they can exploit many temporarily available developmental sites such as sour mop and broom heads, fruit under a table or cabinet, fruit left out in a bowl, etc. Dishwater and mop water full of food particles can accumulate on surfaces or in crevices and ferment, providing ideal fly breeding conditions.

Adults tend to hover in small circles. Because of their small size, many species are able to penetrate ordinary window screens.

Cultural Control & Preventative Measures. The key to small fruit fly control is sanitation. Elimination of larval food and developmental sites is mandatory. The presence of adult flies usually means that larvae are developing in some nearby fermenting material. In food handling establishments and other commercial settings, mop water puddles beneath equipment should be squeezed into floor drains and missing grout between floor tiles should be replaced. If the flies are coming from outdoors, replacing standard window screens with finer gauge screens having a smaller mesh size can be helpful in keeping these small flies out.



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The number of vinegar flies indoors can be reduced through the use of insect light traps and baited jar or canister traps. Adults can be easily killed with an appropriately labeled non-residual aerosol insecticide application. However, such relief will only be temporary, lasting only until new adults emerge, unless proper sanitation has been practiced.

Professional Control. A Varmet Guard technician can reduce or stop small fruit fly breeding via the repeated use of appropriately labeled botanical or microbial insecticides and insect growth regulators in floor drains, grout ruts and other breeding sites. Strategically-placed scent lure jar traps and insect light traps can be installed by a Varmet Guard technician to reduce numbers of adult small fruit flies indoors. A non-residual aerosol insecticide can also be used to kill large numbers of adult flies, but only the elimination of the breeding sites will provide long-term control.