

## Moth Flies: Easy to Control – Until They're Not!

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(On behalf of BASF Professional & Specialty Solutions)

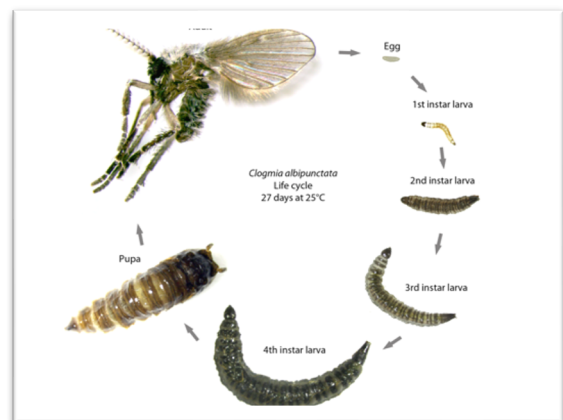
Moth flies are one of the most common small flies encountered in buildings by pest management technicians (PMPs). They are members of the order Diptera (true flies), belong to the family Psychodidae, and are frequently referred to as psychodid. Found throughout the U.S. and most parts of the world, these small, fuzzy-looking flies are also known as drain flies or filter flies.

**Moth fly adult** – Photo by Jeff Tucker



Adult moth flies' range in color from yellow to brown to gray to black. The most common indoor species are light to dark gray and frequently have areas of their wings and body with black, white or yellow markings. Typically, the wings and body of moth flies are covered in long, dense hair which give them a fuzzy, moth-like appearance. Adults hold their wings roof like over the body. They are not folded over the abdomen as seen in other small flies (such as phorid flies (Phoridae) or small fruit flies (Drosophilidae)).

Female moth flies lay their eggs in a gelatinous film or biolayer typically found in portions of drains or sewer lines above water-filled traps. They also can develop under slabs in pools of foul water resulting from broken/leaking sewer lines. The eggs hatch within 48 hours and larvae typically develop over the next 8-24 days. The pupal stage lasts from 1-2 days. Under ideal conditions the life cycle requires from 7-28 days with the adults surviving for about 2 weeks after emerging from the pupa. It is often stated that moth fly larvae develop in the slime layers above the water line in various plumbing traps, but this is not always true. Some structure infesting moth fly larvae and pupae can live freely in foul water similar to mosquito larvae and pupae.



**Moth fly life cycle** – Jimenez-Guri, et al, 2014  
PLOS ONE

Moth flies are weak fliers and in most indoor situations can be seen resting on walls, ceiling tiles, and other surfaces close to the larval sites. The flies are most active during the evening hours and will usually fly only when disturbed.

## Inspection

Moth flies are pests of the penetralia (the innermost parts or recesses of a building) which can make locating their sources extraordinarily difficult. In most residential and commercial structures such as restaurants, hospitals and food plants, moth flies are often associated with drains and sewers. Their presence indoors generally indicates poor drain maintenance or leaking/broken sewer lines. Other than being a nuisance and indicators of neglected drains and sewer systems, drain flies are fairly innocuous. However, when adult drain flies are found in sensitive environments such as operating rooms and food or pharmaceutical production areas, there is zero tolerance for their presence. Like many insects if numbers are large enough, they may induce allergic responses in humans that include asthma and/or rhinitis. Outdoors, moth fly breeding sites can include tree holes, filter beds of sewage treatment plants and under plastic liners in flower beds used to retard weed growth.

**Typical moth fly infested floor drain** – Photo by Jeff Tucker



Indoors, the control of moth flies requires locating the gelatinous biofilm covered surfaces or foul water that attract egg laying females. For most types of buildings, these will be either floor, sink or tub drains. However, moth flies are frequently found breeding in locations where access is limited. Examples include void spaces under floors, ceiling voids, wall voids, unused toilets and in condensate pans and drain lines associated with HVAC systems, refrigeration and sterilization units. The use of thermal imaging units has proven useful in locating plumbing leaks in walls associated with hand/scrub sinks adjacent to operating rooms in hospitals.

## Control

The first step in resolving a moth fly infestation is locating the larval development sites. This is not always easy; in fact, it can be one of the most difficult tasks in structural pest control. Some cases have taken years to resolve due to issues with access to ceilings and walls in hospital surgical suites and other sensitive environments. In many cases it is not uncommon to discover leaking plumbing embedded in the structure as the source.

The primary method of control is the cleaning of drains and other larval breeding sites and fixing plumbing leaks. Unfortunately, dumping hot water and detergents or bleach down drains will generally not remove the gelatinous biolayers that serve as egg laying sites – and this approach is not recommended. Mechanical cleaning/scrubbing of the drain is the best approach. Modern drain cleaners, such as Bio 5 Drain Cleaner from BASF, which are based on bacterial cultures,

have proven very effective in maintaining drains free of moth fly production and odors. In situations where adult drain flies require control, they can easily be knocked down with non-residual contact materials such as PT® 565 Plus XLO Pressurized Contact Insecticide or PT P.I.® Pressurized Contact Insecticide. In all cases, when using insecticidal products read and follow all label directions.

Although adult moth flies are weak fliers, they are attracted to insect light traps. Most of the commercial insect light trap units will be effective in removing adult drain flies and serve a dual role as an effective monitoring device for appraisal of drain fly control programs and as a monitor for other flying insects. But remember, when the adult stage of the fly is the only target, only the symptom is removed not the source.

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