

The Black Dump Fly: A larval predator of house flies ¹

J.A. Hogsette and R.D. Jacobs²

General Information

The black dump fly (Figure 1) is a shiny, black fly similar in size and appearance to the house fly. It is currently regaining popularity as a biological control agent for controlling house flies on poultry farms without the use of pesticides.



Figure 1. The Black Dump Fly

Figure 1.

The fly is native to the U.S., and Central and South America. The current scientific name of the fly is *Hydrotaea aenescens*, however it is sometimes referred to by its former name, *Ophyra aenescens*. The purpose of this document is to provide some

general information about this fly, its biology and behavior, and how it is being used to control house flies in animal manures.

Biology

Although the black dump fly is referred to as a biological control agent for house flies, it is the larvae (or maggots) that are actually the predators. Black dump fly larvae will kill the larvae of many (but not all) other fly species. When fly larvae that are suitable dump fly prey are in a substrate with dump fly larvae, it is generally only the dump fly larvae that survive to become adults. But black dump fly larvae do not need to feed on other fly larvae to develop normally; they can develop using only the nutrients in the substrate. For this reason they are called facultative predators.

Black dump fly larvae have the ability to kill up to 20 house fly larvae daily during much of their developmental period. This is a rare example of animals killing more prey than they can eat. When black dump fly larvae and house fly larvae are together in the same substrate, the dump fly larvae will pursue and kill the house fly larvae. When a house fly larva is killed, nearby house fly larvae are

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2. J.A. Hogsette, USDA-ARS and R.D. Jacobs, poultry extension agent, Dairy and Poultry Sciences Department, Cooperative Extension Service, Institute of Food and Agricultural Sciences, University of Florida, Gainesville, 32611.

attracted. This activity makes it easier for dump fly larvae to eliminate their victims.

The black dump fly has a life cycle similar to that of the house fly. Females lay an average of 170 eggs over a period of 7 to 10 days. Under optimum conditions (80° F or 26.7 °C, and 60% RH), eggs hatch in 18 to 24 hours.

There are three larval or maggot stages, followed by the pupal stage where the larva changes to the adult fly. Adults emerge from their pupal case, and mate after about 5 days. About 2 days later, females begin laying their eggs. Time required from egg to adult is approximately 14 days. This cycle may be shorter at warmer temperatures, and longer at cooler temperatures.

Behavior

The behavior of the black dump fly adult is a significant factor that separates these flies from house flies and other nuisance flies. Black dump fly adults seem to prefer dark locations and stay close to the ground.

In swine houses and high-rise poultry houses, adult black dump flies tend to stay in the manure pits. Black dump fly adults do not attempt to feed or rest on animals or humans. When people enter poultry house manure pits, dump fly adults appear not to notice. There is little movement or flight. If they do fly, the flights are short and low. This is in direct contrast to house fly adults that take flight at the slightest disturbance, buzzing loudly as they swarm in large clouds. Although black dump flies have been shown to fly 6 miles or more, adults apparently do not leave farms and congregate around homes like house flies.

Fly Control

Black dump flies have been used successfully in poultry and swine houses. The larvae seem to prefer manures that are comparatively low in fibrous materials, and do not develop well in manures from cattle, horses, sheep, or goats. However, work is being done to determine why this is so.

Black dump flies moved to Europe, probably by commerce, in the mid-1970s, and were used to control house flies in swine houses, particularly in the former German Democratic Republic. They are currently used in Western Europe for the same purpose. The flies are shipped to the customer in the pupal or larval stage. Pupae or larvae are placed in manure pits, adults emerge, and usually the dump fly becomes established.

The dump fly usually needs help if it is to quickly overwhelm the house fly. This is because the house fly life cycle (6.5 to 7 days) is shorter than the dump fly's (14 days), and house fly females lay more eggs. The current recommendation is to feed cyromazine(Larvadex) premix in the chickens' diet for a minimum of 6 weeks. One week after removing cyromazine from the diet, place dump fly pupae in the manure pit.

Some companies are recommending approximately 10 pupae or larvae per square foot of manure pit initially, then 5 pupae or larvae per square foot of manure pit 2 weeks later.

In poultry houses, pupae should be placed in bags (If pupae are shipped in bags, use these bags) which are attached about 3 to 4 feet high on the down-wind side of support posts in the manure pit. Adults will climb out the open tops of bags, find mates and reproduce. If shipments include pupae and larvae, sprinkle contents of shipment containers along edges of manure pack.

After dump flies have been introduced in houses, essentially all pesticide use should be terminated. So far, dump flies have not been in contact with many pesticides on a regular basis and consequently have not developed pesticide resistance. For this reason, they are much easier to kill with pesticides than house flies. Sometimes house fly adults are still present in poultry houses, and will congregate in dead air spaces upstairs near the hens. These flies should be controlled with granular baits, but not sprays. Dump flies rarely if ever fly higher than 3 feet above the manure in the pits.

Good manure management is essential to maintain established dump fly populations. An important aspect is proper scheduling of manure

removal. When manure is removed (but houses are not de-populated), only half the manure should be removed for the entire length of the house. Then, 2 to 4 weeks later, the remainder of the manure should be removed. When houses are de-populated and all the manure is removed, dump fly populations must be re-established after houses are re-populated. Research is underway to determine the best methods for maintaining dump fly populations.

The black dump fly is just one of the many beneficial insects and mites that kill house flies, and are present naturally in the environment. Dump flies are not the final solution to house fly problems. However, by managing dump flies and the manure in which they grow, house fly control with pesticides should become unnecessary, and the cost of fly control should decrease.