

# Department of Animal Science

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## KEEPING POULTRY SAFE FROM BLACK FLIES (BUFFALO GNATS)

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It is important for poultry keepers to understand the threat that black flies (Figure 1) can pose to your flock. Across the nation, the months of April, May and June are the prime season for swarms of black flies (commonly known as buffalo gnats). Black flies are very tiny (1/16 to 1/8 inch long), blood-sucking flies in the insect family Simuliidae. Contrary to their name, black flies come in a variety of colors including gray, tan or greenish. Black flies also have a distinctive hump behind their head, hence their common name, buffalo gnats. They are enormous pests of humans, domestic animals, and wildlife across much of the United States and Canada. They often bite in shaded or partially-shaded areas and may fly as far as 15 miles from their initial larval habitat. Black flies require moving water to complete their life cycle. They breed in the fast-moving water of creeks, streams, and rivers. This characteristic can make them extremely bothersome in mountainous regions. **Black flies often attack in swarms.** Livestock and poultry are at risk of serious injury and perhaps even death from bites and other related factors, so keeping them away from your flock is critical. Death from these swarms is due to acute toxemia and anaphylactic shock caused by toxins introduced within the black fly saliva, suffocation from swarming flies obstructing the animal's airway, or from blood loss.

### Life cycle

The females attach hundreds of eggs (150-800) to submerged objects such as plants, twigs, rocks and leaves in fast-moving water. The time frame for the eggs to hatch is dependent on the water temperature. Eggs usually hatch within four to five days at 70° F. Larvae (Figure 2) then **attach themselves to submerged objects** and feed on bacteria and algae in the water. Their development time also depends on multiple factors such as water temperature and food availability. The larvae mature and spin a cocoon to pupate in, and the adults emerge in late spring, often in swarms. In recent years, numerous backyard poultry flock owners



*Figure 1. Black fly. Source: Mississippi State University Extension Service.*



*Figure 2. Black fly larvae on branch from a stream. Source: University of Arkansas Cooperative Extension.*

have reported **chicken deaths after swarms of black flies attacked their flocks**. An investigation in Iowa in 2018 found sudden death loss in backyard poultry flocks that were attacked by swarms of black flies. Necropsies revealed multiple black flies in the oropharyngeal cavity and trachea. Similar findings occurred in Mississippi in 2020. In 2018, livestock producers in the Arkansas Delta worked to protect their animals after a population explosion of black flies was blamed for the deaths of a bull and cow and the closure of a state nature center. Additional states from Maine to Louisiana also reported black fly problems during that same time frame.

Adult male and female black flies feed on nectar. However, **females also need blood to produce eggs**. As a result, the females search for blood to nourish their developing eggs and will travel 10 miles or more in search of a blood meal. The entire life cycle of the black fly takes about four to six weeks depending on the species, temperature, available food and water temperature. It is possible for multiple generations to be produced each year depending on conditions. Adults will live two to three weeks.

### Protecting your flock

Bites of the black fly can be extremely painful and itchy. In addition, some individuals and animals may have an allergic reaction to the anticoagulant injected by the fly at the bite site. Black flies prefer **warm, humid weather and are attracted to carbon dioxide** exhaled by people and animals as well as perspiration, fragrances and dark moving objects. Periods around sunrise and sunset on calm days are their most active times of the day. They do not like air movement or wind and will seek out still air. Methods to protect your flock include:

- **Use fans for air movement.** Black flies prefer still air and; therefore, using fans to create air turbulence near your flock can deter fly numbers.
- **Use small mesh screens to cover the coop and run.** Black flies can pass through very small spaces, so covering coops with screens of 24 mesh per inch (2.54 cm) wire or smaller is necessary to deter black flies. Keep in mind that this type of screen is not predator proof, so layer this material over your predator-proof fencing. Do not use this type of mesh as your only source of predator protection.

- **Keep the flock housed.** Black flies do not like to be inside and will rarely enter shelters. Housing your flock during black fly season is the best protection. The birds may not like being cooped. Black fly season only lasts a few weeks and then it will be safe (at least from black flies) for them to return to the outdoors.

Using pesticides for black fly control usually has at best, limited success. Although not specifically labeled for black flies, there are on-animal products labeled for mosquito and biting-fly control that can be applied directly to chickens. Many of these products use permethrin as the active ingredient. One example is Permethrin II insecticide. Another is Ravap, which has different active ingredients (tetrachlorvinphos and dichlorvos) and also can be applied directly on poultry. **Read and follow all label directions and warnings for exact amounts and dilutions for these and any other insecticides, especially when using on-animal products.** To keep the gnats off you, repellents that contain DEET (N, N-Diethyl-meta-toluamide), the most common active ingredient in insect repellents, have been reported to be effective but may need to be frequently reapplied. The Centers for Disease Control has also approved Picaridin, oil of lemon eucalyptus and IR3535, as effective alternatives to DEET. In addition, wearing light-colored clothing may help keep black flies away because they are very attracted to dark-colored clothing. Many backyard poultry individuals claim that vanilla extract may help repel black flies, although this has not been proven.

If securing your flock in the coop does not prove sufficient, a few other options include:

- **Prozap Insectrin Dust.** This ready-to-use insecticide dust controls horn flies and lice and aids in the control of face flies on horses, beef and dairy cattle. It also controls northern fowl mites, lice on swine, chicken mites and lice on poultry. One pound will treat 100 birds.
- **Insectrin X.** This is a long-lasting livestock and premise spray that provides quick knockdown and broad-spectrum insect control for up to 28 days. It controls poultry lice, fowl mites, fleas, ticks, flies and numerous other insects. When mixed with water, it will make 12.5 gallons of spray. The active ingredient is permethrin, a safe insecticide for use outdoors and in homes, non-food areas, barns, coops and kennels.
- **Permethrin spray.** Spray inside cracks, crevices and in areas where black fly activity is present.
- **Mite strips.** Permethrin mite strips are an efficient and economical option to help keep your flock safe.
- **Gnat foggers.** These will kill gnats currently in the area but will not kill unborn gnats or adult gnats not in the area and is not a permanent solution. Multiple foggings will be necessary as more gnats return, and temporarily relocating the flock may be necessary during fogging treatment. Read and follow label instructions.
- **Essentria Insecticide Concentrate.** This provides quick control with residual protection. It can be used indoors or outdoors, for turf and ornamentals, on-animal and mosquito misting applications, vegetables, fruit trees, pasture and range, nursery and greenhouse. This product contains natural essential plant oils.
- **Citronella and Vanilla** have been reported by some poultry producers to be effective against black flies.

## Summary

Black flies are a serious problem and a threat to livestock, including poultry, in many parts of the United States during spring. Poultry flocks are at risk of serious injury or death from swarms of black flies due to anaphylactic shock, suffocation and blood loss. The best protection you can provide is to **keep your flock cooped during black fly season**, use screen mesh to cover the coop and run, and use fans to create air movement surrounding your flock. Pesticides are available but have limited success. Check your poultry regularly, especially those housed in bright sunlit areas where heat stress may be an issue. Be aware of anything out of the ordinary such as suspicious lesions on the face, comb, or wattles; increased nervousness and restlessness in the flock; a drop in egg production; small amounts of blood around the face, comb, or wattles; or unexplained deaths in the flock. Any of these could indicate a problem with black flies. If you suspect a problem, contact your local county Extension agent, TSU poultry Extension specialist (Dr. Pramir Maharjan) at 615-963-5823 or UT poultry Extension specialist (Dr. Tom Tabler) at 931-486-2129 for assistance.



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