

Blackflies: A Little-known Martin Pest

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The 2004 Purple Martin nesting season in Minnesota was once again plagued by blackflies, also known as buffalo gnats. Buffalo gnats are small, biting flies that take blood meals from birds, as well as humans, livestock, and other wild animals. Several landlords in this region reported losses of featherless nestlings. The young martins were bitten by the gnats and died from the bites several days later. Seasoned Minnesota landlords may recall the gnat devastation to their martin colonies in 1984 (see sidebar). Luckily blackflies are not a threat to our martins every season. The 2004 devastation was not as severe as it was the 1984 season. But, as in 1984 the gnats were so bad they actually killed mature Purple Martins as well as nestling martins. The gnats crawled into the ear openings of the adult martins to bite and feed on the martins' blood. Feathered adults and nestlings are at less risk than the younger, featherless nestlings.

The fact that Minnesota is the land of 15,000 lakes, with vast areas of rivers, streams, and creeks, makes the state a prime area for gnats to thrive. Typically regions well-supplied with small bodies of water are better equipped to provide the needed moisture for gnats to successfully grow and thrive. The larval stage develops in water. The adult stage of the gnat is the one which is devastating to featherless martin nestlings. The adult female gnat will regularly land on or around the eyes, ear openings, and, with young birds, on the featherless body, all areas where the gnat can easily bite and obtain its blood meals.

As one watches his or her Purple Martin colony and witnesses the young dying one after the other in the nest, one has to say, how can I stop this devastation? This landlord was not going to stand by and let the gnats win. I contacted the *PMCA* and was advised to spray the exterior surfaces of the martin housing with a product called *Fly Away II*. This would eliminate the immediate threat of the buffalo gnats around the martin housing.

Fly Away II is a ready-to-use aqueous solution of Pyrethrins. The product is used primarily by the livestock and horse industry to keep flies out of the eyes and nose of cattle and horses. It is a mild solution that is odorless and non-toxic.

In an effort to educate myself in what Pyrethrin is and how I could use this type of insecticide, I went to the Internet and searched for information regarding Pyrethrins. In my search, I found many products that contained Pyrethrins. I learned that Pyrethrum is extracted from chrysanthemum flowers, and is then called Pyrethrin. Pyrethrin is a natural insecticide which is odorless and non-toxic. It is a safe product that can be sprayed directly onto animals and pets. There is a documented study done by the *Audubon Society of Omaha* (*Audubon Society of Omaha/Possible Solutions to Predators and Problems on The Bluebird Trail*, <<http://audubon-omaha.org/bbbox/bbtabl2.htm>>) in which the society members used *Fly Away II* on the inside of a bluebird nestbox with nestlings inside. The product was sprayed under the nest material, and not directly onto the young. This type of application was effective in keeping the gnats from entering the nestbox. Caution should be used to avoid getting any of the Pyrethrin product on the skin of the young birds. The Minnesota *DNR* also suggested *Fly Away II* for this problem.

I went to my local farm supply store to see if they carried the *Fly Away II* product. They

did not, but did have rather a similar product by *Absorbine* called *Fly-X*. The *Absorbine Fly-X* product contains 0.1% Pyrethrins and 1% solution of Piperonyl butoxide (a glycol ether) and 98.9% water base. The product is non-toxic and odorless, however, it is scented with citronella.

The *Fly-X* Pyrethrin product is a non-residual product, thus, it does not leave a residue after it dries. The Pyrethrins however, break down in ultraviolet light, which renders an exterior surface application ineffective after one day of exposure to sunlight. For this reason, it might be necessary to



Upper photo: A male martin attending to its nestling, after the gourd was sprayed with *Ultrathon*, a 3M product for insect control. **Lower photo:** A nestling waits for a meal in comfort. Note all the gnats stuck to the surfaces of the gourds in both photos.

All photos by Robert Schneewind

reapply the product daily, or as long as the gnats are seen, if it is used on the exterior surface of your martin housing.

Due to the breakdown of Pyrethrins in sunlight, I decided to try using a 3M product called Ultrathon (25% Deet), but only on the exterior of my martin housing, as this product has a residual and does not break down in UV rays, thus extending its effectiveness for gnat control. The Flys-X Pyrethrin product was used inside the nestbox, under the nest material. Both products worked effectively, as no buffalo gnats were seen inside or outside of the martin housing after the first application of these products. These products were used during the month of July, 2004, as it was during this time period that the buffalo gnat infestation reached its peak. In the accompanying photos, it's easy to see how bad the infestation of buffalo gnats was—note the gnats stuck to the Super-Gourds after Ultrathon, the 3M product, was sprayed on the exterior surface of the gourds.

Conclusion:

Before learning how gnats can devastate a Purple Martin colony, I lost six martin nestlings. Other Minnesota landlords reported more severe losses at their colonies. My martin colony was able to fledge 48 healthy fledglings, with my care and treatment with Flys-X and Ultrathon products. My goal in publishing this information about gnat devastation to Purple Martin colonies is an effort to educate landlords and ensure that future losses are limited. As martin stewards, we landlords need to learn how to combat the problems that can occur during the nesting season. It should be mentioned that Pyrethrins are a natural insecticide with low toxicity to humans, mammals, and birds. This type of insecticide has

been successfully used in bluebird nests and martin nests to end gnat infestations. As always, care should be taken when using any insecticides around nestlings in particular—it would be best to remove the young martins when applying the Pyrethrin product under the nest material.

Editor's Note: Fortunately, outbreaks of blackflies, with their potentially devastating effects on nestling martins, are not a frequent occurrence. Unlike fleas, nest mites, and blowflies, which can be physically removed by replacing nest material, gnats are more difficult to deal with.

Since they can cause a great deal of damage in a short space of time, landlords need to take steps to control the gnats as quickly as possible. The *PMCA* suggests using the same approach as outlined in this article. Look for a low-toxicity Pyrethrin-based product such as Flys Away II or Flys X. Each active compartment entrance should be completely plugged with a rag, then spray the exterior of the house surface thoroughly. Spray the surface around each rag plug; do not spray the product directly into compartments unless initial control efforts aren't effective. Remove the rag plugs after spraying. If further control is needed, spray the compartment interiors as well, after removing nestlings. Exterior spraying can be repeated daily if necessary, or, as Robert Schneewind chose to do, a product that does not break down in sunlight, such as Ultrathon, can be used on the exterior, again taking care not to get the product inside compartments. The *PMCA* recommends this only in cases of blackfly infestations, not as a routine practice in absence of gnats.

Robert Schneewind had 15 pairs of martins in 2004. He is a technical support specialist for FSI International in Chaska.



The season's outcome at Robert Schneewind's site: a house covered with martins, and a total of 48 young fledged. Prior to treating housing to control blackflies, also called buffalo gnats, Schneewind lost six nestlings, and other landlords in the area also lost birds.

About Blackflies



(From "What's Bugging Your Birds?" by James R. Hill, III, *Update* Vol 5(2) pg 1-7, 26-27.)

Blackflies, also known as buffalo gnats, are tiny flies (2-3 mm long) whose adult females parasitize mammals and birds. Before a female blackfly can lay her eggs, she must engorge herself with a blood meal. Larval development takes place in aquatic environments. Adult females are famous for inflicting painful bites on humans, especially outdoorsmen in the north woods. Being winged, blood-feeders, they are capable of transmitting avian blood parasites.

In 1982, I collected three blood-engorged female blackflies in Griggsville, IL, attached to the unfeathered skin surrounding the eye of a 28-day-old nestling Purple Martin. They were later identified as by Dr. Peter Adlter, entomologist at the Pennsylvania State University. The Purple Martin was a new host record for this species. Until my Illinois observation, it had been recorded only from turkeys, chickens, pheasants, doves, starlings, and humans. Heavy infestations of these flies have been shown to cause a drop in egg production in domestic chickens.

In 1984, heavy spring rains in the upper Midwest apparently caused ideal breeding habitat for blackflies, whose populations exploded in Iowa, Minnesota, Nebraska, and South Dakota. Dense clouds of them attacked nesting Purple Martins causing widespread die-offs and colony-site abandonments. In Edinboro, PA, in 1990, I collected several other specimens of blackflies that were taking blood meals from nestling martins.