

# Managing Fleas

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Fleas are small, wingless insects that feed on the blood of animals and people. In Texas, most flea problems are caused by the cat flea, *Ctenocephalides felis*. This flea feeds on cats, dogs, and wildlife. Other kinds of fleas, such as the dog flea, human flea, and rat flea, are less common on pets and in homes. Fortunately, fleas don't need to be a serious problem because there are many effective treatments.

During their life cycle, fleas pass through four stages: egg, larva, pupa, and adult.

Adult cat fleas are about 1/8 inch long (1 to 3 mm). They are reddish-brown and lack wings. The body is compressed laterally, and backward-pointing bristles help fleas move through the hairs or feathers of host animals and make them more difficult to remove by grooming. The six legs are long, and the hind legs are adapted for jumping. Although they can jump, adult fleas do not usually travel long distances without a host. Fleas prefer to wait and jump onto a passing animal. They remain on the animal until dislodged or groomed from the animal. Without a host, adult fleas live only a few days to a few weeks.



**Figure 1.** A flea collected from a cat.

The eggs are small and oval. They are laid on the animal but become dislodged and fall into the environment as the animal moves around. Female fleas can lay 20 to 30 eggs per day and can produce thousands over their lifetime. Flea larvae are less than 1/4 inch long (6 mm), legless, and dirty white in color. The most likely place to find larvae is in infested pet bedding.

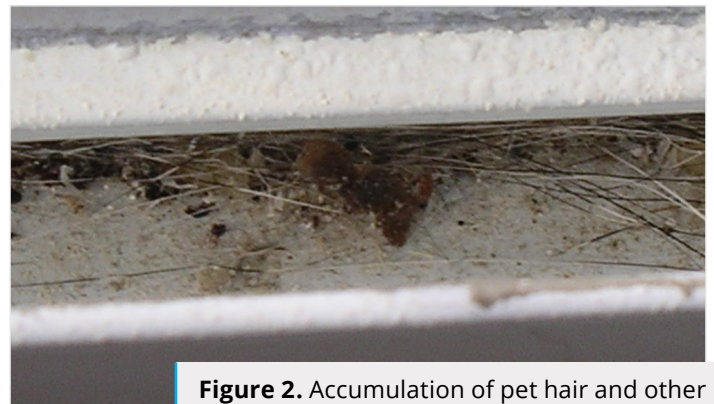
The pupa is the transition stage between the larva and adult. Pupation occurs within a cocoon that is covered by debris from the environment. After a week or two, the pupa becomes an adult, but adult fleas can remain

inside the pupal case in a semi-dormant state to wait for a host before emerging. Long-vacant homes or apartments can "come alive" with such fleas when new tenants move in.

Adult fleas require a blood meal for survival. Adults feed from the host where they reside. They partially digest the blood and excrete fecal material containing blood. Flea feces are a fine, reddish-black dust seen in pet fur and bedding, and is often referred to as "flea dirt." Flea larvae feed on organic matter such as food particles, dead skin, feathers, and the blood-containing excretions of the adult fleas. Larvae develop in 5 to 11 days.

Fleas do not survive well outdoors in hot, sunny lawns. Relative humidity less than 50 percent or soil temperatures higher than 95 degrees Fahrenheit kill flea larvae. Flea larvae are found in moist, shaded spots near pet resting areas. Indoors, flea larvae are usually found where pets hang out such as pet bedding, furniture, rugs, etc.

Buildings can sometimes become infested with fleas, even when there are no pets. This can be either from previous tenants/owners having pets with fleas or from wildlife. Other animals such as bats, rats, squirrels, raccoons, and feral dogs and cats can commonly live under or around structures, leading to an infestation. Wildlife will need to be trapped and removed before a proper flea treatment can be performed.



**Figure 2.** Accumulation of pet hair and other organic debris along with flea fecal matter which is sometimes called flea dirt.

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## Animal and Human Health

Fleas can be a source of both irritation and disease. Dogs and cats scratch constantly when heavily infested, resulting in soiled and roughened coats. Sometimes, it also results in nervous conditions. The most serious effects occur when a pet develops an allergy to flea bites. As few as one or two bites can cause severe itching and scratching in allergic pets.

Cat fleas do not normally live on humans but can bite people who handle or sleep with infested animals. Flea bites cause small, red, itchy bumps. People with allergies to flea bites suffer from hives, rashes, or generalized itching. Allergic reactions usually appear 12 to 24 hours after a bite and may last a week or more.

Fleas that have fed on rodents may transmit diseases, including plague and murine typhus. For this reason, avoid close contact with wild rodents such as squirrels, rats, and prairie dogs. Their fleas can bite you and may transmit disease. However, cat fleas do not carry plague.

Cat fleas sometimes carry an intestinal parasite called dog tapeworm which pets can get from eating infested fleas. The dog tapeworm is capable of living in the intestinal tracts of dogs, cats, and sometimes humans. These long, flattened worms consist of up to 200 body segments, called proglottids, and may reach up to 12 inches long. When mature, segments detach from the main body of the tapeworm and wriggle their way out of the anus of infected animals. Fresh tapeworm segments are opaque, white, flat, and somewhat rectangular. When segments are dry, they are creamy white, look like rice, and contain tapeworm eggs. They are usually seen around a pet's anus, in feces, or in the bedding of infested pets. If your pet has tapeworms, talk to their veterinarian.

## Control

An integrated flea control program includes good sanitation and treatment of the pet and environment. You can eliminate fleas from your home with proper treatment, but it may take time, especially if the infestation is heavy.

### Sanitation

Wash pet bedding regularly and vacuum thoroughly. Vacuuming removes up to 30 percent of the larvae and up to 60 percent of flea eggs from a carpet, as well as the larvae's food supply of organic matter and dried blood. Vacuum under furniture, cushions, chairs, beds, and along walls. Discard vacuum cleaner bags or empty vacuum canisters in an outside garbage bin to avoid fleas emerging from the vacuum.

### Treating Pets

Your pet's first line of defense against fleas is a flea comb and a good bath. Soap acts as a gentle insecticide and helps control light infestations on your pet. Though time consuming, combing helps reduce the need for insecticides. Flea combs have fine teeth that remove adult fleas from fur. Pay special attention to the face and neck, and the area in front of the tail. Dip the comb frequently in soapy water or an alcohol solution to kill fleas removed from the pet.



**Figure 3.** Vacuuming carpets helps to reduce flea presence and food sources.

There are various formulations of flea control products for pets that offer a wide variety of choices. Spot-on treatments are pesticides applied to one or more spots on the animal's back. Natural oils on the fur help transfer the pesticide to all parts of the pet's body. Spot-on treatment active ingredients include permethrin, deltamethrin, methoprene, pyriproxyfen, etofenprox, dinotefuran, fluralaner, selamectin, fipronil, imidacloprid, and indoxacarb.

Chewable products may be a better option for animals who enjoy water, which cause spot-on treatments to gradually decline over the month. Chewable products are ingested by the animal and absorbed into the bloodstream. Active ingredients include spinosad, imidacloprid, fluralaner, afoxolaner, lotilaner, sarolaner, nitenpyram, and lufenuron.

Flea collars have received an upgrade in the last few years and are another viable option. Modern-day flea collars deliver flea control by absorbing into the



**Figure 4.** Flea combs physically remove fleas from pets.

oil glands of the skin and distributing throughout the body. Active ingredients include permethrin, flumethrin, imidacloprid, and tetrachlorvinphos.

With all products, read and follow label directions carefully. Products designed for use on adult dogs should not be used on puppies or cats, unless specified on the label. Also remember, the label is the law.

Insect growth regulators, or IGRs (methoprene, pyriproxyfen), are a treatment for fleas. These products work by disrupting the normal development of flea eggs and larvae. When exposed to IGRs, eggs fail to hatch, larvae die before they complete their development, and adult fleas are unable to reproduce. Because most IGRs kill only eggs and larvae, they do not eliminate adult fleas quickly. For this reason, they are usually mixed with a mild contact insecticide.



**Figure 5.** Performing spot treatments on your pet may help control fleas.

Botanical (plant-based) insecticides kill larval and adult fleas, and are relatively low in toxicity. Botanical insecticides include pyrethrum (or pyrethrins) and citrus oil extracts (limonene and linalool). Use botanical insecticides with care. Though usually safe when applied according to label directions, some pets (especially certain cat breeds) are sensitive to botanicals, especially citrus oil products.

Read and follow all label instructions and talk to your pet's veterinarian for flea control options. The veterinarian knows your pet's health history and can suggest the product that will work best for your pet.

## Treating Homes and Yards

Pet living areas should be treated at the same time as the pet. This kills immature and newly emerging fleas, and prevents reinfestation of the pet.

For indoor treatments, target areas where pets spend their time such as sleeping areas, and in and under nearby furniture. Always read and follow label instructions, and make sure product(s) can be used indoors. There are multiple active ingredients that can be used for flea control indoors. Some include thyme oil, rosemary oil, cedarwood oil, geraniol, diatomaceous earth, methoprene, pyriproxyfen, dinotefuran, bifenthrin, prallethrin, and etofenprox.

Methoprene and pyriproxyfen are insect growth regulators and disrupt the life cycle of fleas. Both can be used indoors. However, methoprene is not photostable and cannot be used outdoors, but pyriproxyfen can be used outdoors. Pyriproxyfen controls both immature and adult fleas.

Diatomaceous earth (DE) comes in a dust formulation. When using DE indoors, it is best to target areas where the product will not be stirred up and become airborne to avoid breathing it in. Diatomaceous earth is also labeled for outdoor areas, but keep in mind that if the product gets wet or is in very humid conditions, it will need to be reapplied. Diatomaceous earth should be applied in a very thin layer.

It is sometimes claimed that garlic, brewer's yeast, cedar bedding, and various herbal sachets control fleas, but there is little scientific evidence to support such claims. Volatile oils in fresh cedar chips are toxic to fleas, but the effect lasts for a very short time. Tests have shown that brewer's yeast does not protect pets from fleas.

Outdoors, treat only flea breeding sites such as bedding areas, the ground under decks and shrubbery, and wherever pets spend a lot of time. Well-maintained lawns in sunny sites are unlikely to harbor many fleas, and most likely do not require treatment. Outdoor flea products include such active ingredients as cedarwood oil, lemongrass oil, thyme oil, rosemary oil, cedarwood oil, geraniol, pyriproxyfen, dinotefuran, diatomaceous earth, bifenthrin, permethrin, prallethrin, and acetamiprid.

Because flea pupae are hard to kill with insecticides, it is critical to have an additional follow-up treatment at 10 to 14 days after the first application.

## Biological and Mechanical Controls

Fire ants and other predatory insects eat flea larvae, but they do not provide sufficient control. Several kinds of predatory nematodes (a type of microscopic worm) are sold for outdoor flea control, but their effectiveness has not been well-tested. Nematodes require specific amounts of soil moisture to move through the soil and seek out hosts. It is important to irrigate with  $\frac{1}{4}$  to  $\frac{1}{2}$  inch of water before and after application. If you are under watering restrictions and cannot keep the soil moist, then nematodes may not work as well as you hope.

Several kinds of flea traps are available that attract fleas to a sticky glue board where they are immobilized. Place traps near pet beds and loafing areas for best control. By themselves, traps are unlikely to solve most flea problems. However, they can be a useful part of an integrated flea control program and help to figure out where high populations are in the home.



## Working with a Pest Control Company

If you can't get a flea problem under control or if you don't want to perform treatments on your own, then you can hire a pest management professional. A pest control company can treat both indoor and outdoor areas. Most pest control companies will provide you with tasks to complete before they come to perform the flea treatment. Some of the items will most likely include vacuuming carpets, and clearing toys and clothing from areas to be sprayed. You and your pets need to stay off treated areas until the product is completely dry.

## Acknowledgements

An earlier version of this publication was authored by Mike Merchant and James Robinson, retired Extension Urban Entomologist, and retired Professor and Extension Specialist, respectively.

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*All photos courtesy of Wizzie Brown.*