

# Fleas



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Most people who own pets have problems with fleas. Food, shelter, and warmth are three essentials fleas need for survival. Homes with a pet, carpeting, and central heating provide all three. Although fleas are present year-round, they are most obvious during warm weather, seeming to disappear with the onset of winter. Controlling fleas begins with an understanding of their life cycle.

## Identification, Biology, and Habits

The species of flea most often found in homes is the cat flea *Ctenocephalides felis*. Cat fleas occur on both cats and dogs and will bite humans. In addition to being a nuisance, flea bites can stimulate allergic responses in both people and pets. Just recently, flea debris (cast skins, egg shells, and droppings) has been found to be a contributor to allergic responses to house dust.

Fleas possess complete metamorphosis, meaning that they have four different life stages: egg, larva, pupa, and adult. Adult cat fleas are 1/8-inch long, dark colored, and wingless, with a vertically flattened body and well-developed jumping legs. Adult fleas spend most of their time on the pet and lay their eggs there. The eggs aren't sticky, so they drop or are shaken off the pet and end up in carpet, upholstered furniture, or the pet's bed.

Flea larvae are white and maggotlike without legs but with a distinct head capsule and several long hairs on each body segment. They live in carpeting or bedding and feed on dried organic matter, including surplus pet blood excreted by adult fleas. Flea pupae are inactive and do not feed. The pupal stage can last from a week to a year, depending on the temperature, humidity, and the presence of a host.

Several factors determine the onset, length, and end of flea season. Temperature and humidity are the primary limiting factors in fleas' develop-

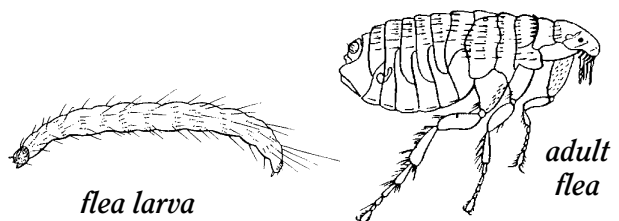
ment and survival. A wet spring usually indicates a season abundant with fleas. During a mild winter in West Virginia, many of the flea adults or pupae outdoors will survive, giving rise to larger flea populations the following spring and summer. In states farther south, where warm, humid conditions persist, year-round flea seasons are common.

Adult fleas thrive at temperatures between 66 degrees and 84 degrees F and at relative humidities between 70 and 90 percent. Flea eggs don't hatch if the temperature is below 40 degrees F. A temperature below 46 degrees F for 10 days or 37 degrees F for five days will kill flea eggs. A relative humidity of less than 50 percent will reduce egg hatch by 20 to 60 percent.

Flea larvae are the stage that is most sensitive to extremes in temperature and humidity. They are especially prone to drying out and will die at humidities below 45 percent. Larvae will not grow or mature at temperatures below 55 degrees F or above 95 degrees F. Indoors, heat and air-conditioning both dry the air. Fleas become most obvious to homeowners in times of moderate temperature in the fall after their numbers have increased throughout the summer and when neither the heat nor the air-conditioning is operating.

## Prevention Methods

In the past there was little a homeowner could do to prevent infestations of fleas. Insect growth regulators now seem to offer a solution. These are chemicals that imitate a hormone produced by fleas



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and interfere with their development. Their advantages include low toxicity to people and pets, combined with prevention of flea egg hatch and inhibition of larval development.

It is possible to get a jump on flea season by applying an insect growth regulator to carpet in the spring. In West Virginia, this should be done in April or May, after temperatures reach 60 degrees F both day and night and humidity is at least 50 percent. Insect growth regulators are available in ready-to-use aerosol sprays, usually in combination with a synthetic pyrethroid insecticide. Look for flea control products containing methoprene, hydroprene, or fenoxycarb.

Screening crawl spaces and other locations to keep out wild animals is also a good prevention tactic. The cat flea also lives on wild animals such as opossums, skunks, and rodents. These animals can act as reservoirs for flea populations even when no dogs or cats are present.

## Control Strategies

Nonchemical control methods include daily or weekly vacuuming of both carpet and upholstery. Vacuuming removes both flea eggs and the droppings of adult fleas. Dispose of the vacuum bag in your outdoor garbage after vacuuming. Wash pet bedding at least once a week during flea season. Pick it up by the four corners to avoid scattering flea eggs and wash it in hot, soapy water.

Integrated pest management programs for fleas combine indoor and outdoor treatments of your home with treatment of pets. Indoor control should begin with a careful vacuuming of the carpet. Any insecticide applied to carpet generally will be more effective if you vacuum the carpet first. A thorough vacuuming makes the pile of the carpet stand up and helps the spray penetrate more easily. Don't waste your money on ultrasonic devices you may have seen advertised for flea control—they have not been shown to be particularly effective.

To remove fleas from your pet, comb the pet's hair with a flea comb. Dip the comb into a pan of warm, soapy water to drown the fleas as they are removed. You may first need to brush long-haired pets to remove tangles before combing for fleas.

You can also use a flea comb for monitoring, keeping a record of the number of fleas removed

each day to check the effectiveness of your other management methods. One concept in flea management is to set a personal tolerance level by correlating numbers of fleas removed through combing with the degree of pet scratching and numbers of flea bites on humans. If your tolerance level is exceeded, you know it's time to increase the frequency or intensity of control methods.

Less toxic chemicals available for flea control include boric acid, diatomaceous earth, and pyrethroids. When applying flea control chemicals indoors, concentrate on areas where pets sleep. Also, treat the "jumping down spots"—those places where pets land as they get down from resting areas. These spots are often overlooked but can contain many flea eggs. Less toxic chemicals for use directly on pets include pyrethrins, pyrethrins plus an insect growth regulator, and limonene (a citrus peel extract), available as shampoos, powders, sprays, and impregnated into flea collars.

## Prevention and Control Outdoors

Many people know the correct way to apply flea control insecticides to their pets and even to the carpet inside the house, but are at a loss when it comes to applying flea control products outdoors. Fleas prefer moist areas that do not get flooded with water and are out of direct sunlight. Outdoors, fleas tend to be concentrated in areas where pets spend a lot of time—sleeping areas and pathways. Treatment should be directed at these spots.

If outdoor pet areas include crawl spaces, these areas should either be treated or screened to prevent entry. Products for outdoor flea control include pyrethrins, pyrethroids, and insect growth regulators. A recent outdoor flea control innovation is a product containing beneficial nematodes, tiny worms that carry bacteria that infect and kill flea larvae.

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