Cat Flea

Ctenocephalides felis (Bouché)

Description:

Immature stages – Cat flea eggs are oval, smooth and about 0.5 mm in length. Because the female flea is on the host, when she produces eggs they sift through the host's fur and fall into the environment, collecting in areas where the host spends a lot of time. The eggs are dry and smooth, so readily sift through the coat. A pile of flea eggs, being small and white, look like spilled salt. Within a few days of oviposition, wormlike larvae hatch from the eggs and begin to feed, grazing on organic matter in their environment. Newly-hatched larvae are about 1.5 mm in length but they grow to about 5 mm before pupating. Depending on temperature and food availability, larvae can complete development in a few days to a few weeks. Larvae lack eyes and legs, but have a ring of hairs on each segment. Visible through their thin translucent exoskeleton is dark gut material, consisting mainly of the adult flea feces they consume.

Adult stages – Adults are stimulated to emerge by vibration or an increase in carbon dioxide. They are about 1 to 3 mm in size, reddish-brown to black in color, wingless, and are laterally compressed. They possess powerful hind legs that allow for jumping on the host, and the thin body facilitates running through hair, fur, and feathers. Adult cat fleas require fresh blood to produce eggs. This is the only stage in the cat flea life cycle when the fleas live on the pet. Adults live 4 to 25 days.

Biology:

Cat fleas are bloodsucking external parasites that live on dogs and cats as well as a wide array of other mammals. Once an adult cat flea finds a host it stays on the host, because it must feed at least once an hour to obtain nutrients for survival and for the females to produce eggs. While there are over 2,000 species of fleas worldwide, the most common is the cat flea, *Ctenocephalides felis* (Bouché). The dog flea, *Ctenocephalides canis* (Curtis), appears similar to the cat flea, but is rarely found in the United States. The adult cat flea takes a blood meal about once an hour, acquiring nutrients for energy and for females to produce eggs. The cat flea life cycle is one of complete metamorphosis, involving the stages of an egg, larva, pupa, and adult. This cycle usually lasts 30 to 75 days, yet may vary due to external factors, such as temperature and humidity.

Damage:

Cat fleas are capable of transmitting murine typhus to humans, though such reports are rare. There are also varied allergic responses to their bites depending upon the sensitivity of the host. Cat fleas serve as the intermediate host to an intestinal parasite, the dog tapeworm (*Dipylidium caninum*), which is transmitted to the pet when a flea carrying a tapeworm cyst is ingested. Mostly, fleas



Cocoons in Carpet



Adult Cat Flea



Fleas Feeding/Defecating

simply act as a nuisance since they feed on most mammals. A common problem for the host is flea allergy dermatitis (FAD), which pet owners in the United States annually spend millions of dollars to treat. Fleas can be detected early on by observing the behavior of the pet (i.e. noticing the pet scratching). Flea allergy dermatitis is a costly and uncomfortable ailment for both animals and humans, and early detection and treatment are the keys to minimization of suffering.

Management:

Cultural control: In order to effectively control an infestation, fleas must be removed from the pet, the home, and the yard. Elimination of fleas from the animal alone is futile. Immature fleas that have developed into adults off the animal simply jump on, causing subsequent reinfestation. Flea combs may be used to treat the pet, yet they remove only 10 to 60 percent of the fleas. However, by shampooing the animal, the dried blood and skin flakes that provide food for the larvae are removed. Scientific evidence regarding dietary supplementation with vitamin B, Brewer's Yeast, or garlic suggest these methods are of no value. Scientific evidence has also shown that ultrasonic and insecticidal flea collars are not effective. Control access of feral animals, such as skunks, opossums, raccoons, and cats, to your yard as they bring new fleas with them, and do not let wildlife nest under your home or in outbuildings. Light traps placed around the home, especially where the pet frequents, may collect fleas upon emergence from their cocoons, but traps will not attract fleas off the pet.

Chemical control: Advances in flea adulticides are topical treatments, such as imidacloprid or fipronil. When using a pesticide, always read and follow label instructions. Insect growth regulators (IGR) and insect development inhibitors (IDI), administered as a daily or monthly dose, will disrupt egg and larval development but not kill adult fleas. Methoprene and pyriproxyfen are active ingredients of IGRs sold through veterinarians and pest control operators, which are available in sprays and fleas collars. Lufenuron, an IDI sold through veterinarians, is orally administered to the pet. Insecticidal shampoos provide only short-term flea control, killing only the fleas on the animal at the time of shampooing with no residual activity. Most botanical shampoos contain hepatotoxic compounds and are more toxic to the pet than to fleas. For effective control, the home must also be treated, primarily in areas most frequented by the animal as the eggs and larvae are developing here. This can be done by vacuuming, washing bedding and rugs, and using sprays containing insecticides on the carpet. However, vacuuming will remove only eggs and food sources from the carpet. Larvae curl up around carpet fibers and pupae stick to the carpet. Steam cleaning carpet can kill all fleas stages and rapidly knock down a flea infestation, but it should be followed with use of an IGR shortly thereafter to prevent subsequent flea reinfestation. It is important to restrict pet access from areas that are hard to treat, such as children's playrooms, crowded garages, and work areas. Sheds and dog houses should be treated the same way and at the same time as the home. Borate carpet treatment, applied either by the home owner or a professional, works as an intestinal poison upon ingestion by the flea larvae. Diatomaceous earth has been used as a chafing agent to control larvae in carpets, but it contains silica which is known to cause lung disease in humans if inhaled in excessive quantities. Neither diatomaceous earth nor boric acid has activity against adult fleas, so should not be applied to animals. To treat the outdoors, pyrethroids may be sprayed in dry shaded areas which the animal frequents, as well as photostable insect growth regulators, which are the most effective outdoor treatments. Since larvae prefer shaded areas with high humidity and limited air movement, spraying the entire yard is wasteful and irresponsible. For outdoor areas which are difficult to treat (i.e. under decks), pet access should be restricted. Outdoor treatment is primarily used in severe cases of flea infestation and may not be necessary if fleas are controlled on the pet and in the home.

Biological Control: The use of the beneficial nematode *Steinernema carpocapsae* has been investigated in several areas around the United States. These nematodes are applied to soil as a spray to destroy the flea larvae by parasitizing them. If label directions are followed carefully, this may reduce flea populations. However, these nematodes work best in moist sandy soils and may lose effectiveness in other environments.