

# Fleas, Ticks, Lice, Mites, and Flies

By Lynn P. Schmeitzel and  
Peter J. Ihrke

**F**leas are wingless, brown, bloodsucking insects that may infest dogs and cats, and other warmblooded animals. Fleas transmit several diseases (for example, plague) and parasites such as tapeworms. Young animals heavily infested with fleas may die from severe blood loss. Fleas prefer certain species of animals but will attack any source of blood if the preferred animal is not available.

The cat flea (*Ctenocephalides felis*) and the dog flea (*Ctenocephalides canis*) both infest dogs and cats. *C. felis* is the most common flea found on dogs and cats. Cat and dog

fleas move rapidly on the skin and are most easily found on the rump and in the groin area.

Sticktight fleas (*Echidnophaga gallinacea*) are found on birds (especially chickens) and may attack dogs and cats exposed to infested birds. This flea attaches to the face of the animal and moves slowly.

The human flea (*Pulex irritans*) may attack dogs and cats.

Flea eggs laid on the host are smooth and quickly fall off into the animal's environment. The eggs are oval, white, and glistening.

Small larvae hatch from the eggs and feed on the feces from adult fleas. After several molts, the last larval stage forms a pupal case. While in the case, the larva develops into an adult flea. The adult flea emerges from the pupal case and searches for an animal.

Time required for the flea

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Lynn P. Schmeitzel is Assistant Professor of Dermatology, College of Veterinary Medicine, University of Tennessee, Knoxville. Peter J. Ihrke is Assistant Professor of Dermatology and Allergy, School of Veterinary Medicine, University of California, Davis.

to develop from egg to adult may be as short as 16 days during periods of warm temperatures and high humidity.

A small amount of flea saliva is deposited in the skin each time the adult flea bites an animal. This saliva is very irritating and an allergic reaction can cause severe itching, resulting in the skin disease termed flea allergy dermatitis.

Biting and scratching around the rump and groin areas is the most common sign of flea allergy. Hair loss, a red rash, and thickening of the skin are commonly seen. Fleas may be difficult to find in allergic animals since very few flea bites are needed to cause an allergic reaction. In areas of the United States where fleas are common, flea allergy dermatitis is the most common itchy disease of the skin.

Flea feces (flea dirt) in the haircoat confirms the presence of fleas. Flea dirt consists of dehydrated blood from the dog or cat and is reddish-black and comma-shaped.

Successful treatment of flea allergy dermatitis requires the absolute elimination of fleas from contact with the affected dog or cat. If one dog or cat in a household has fleas, it may be assumed that all animals in the household

have fleas. Therefore, all animals in the household must be treated. All animals, the house, and premises should be treated with appropriate insecticides at frequent intervals to prevent reinfestation.

Contrary to recent folklore, brewers yeast (a thiamine or B<sub>1</sub> source), garlic, or sulfur are not effective in either repelling or killing fleas.

### **Ticks, Hard and Soft**

Ticks are bloodsucking arthropod parasites of the skin. They transmit many diseases such as Rocky Mountain Spotted Fever to people and animals. Severe blood loss may result from heavy infestation. Tick paralysis is a rare disease caused by a toxic substance in the saliva of some ticks. Recovery is rapid if the ticks are removed.

Ticks have a four-staged life cycle including an egg, a six-legged larva (seed tick), an eight-legged nymph, and an eight-legged adult. Ticks are identified as one-host, two-host, and three-host ticks depending on the number of hosts required to complete their life cycle.

Hard ticks (*Ixodidae*) and soft ticks (*Argasidae*) are the two main families of parasitic ticks.

Hard ticks have a hard shield on their backs distinguishing them from soft ticks which do not. Most hard ticks require three different hosts to complete their life cycle and each stage only feeds once.

Thirteen species of economically important ticks are in the hard tick (*Ixodidae*) family. Most of these ticks are acquired outside except for the Brown Dog Tick (*Rhipicephalus sanguineus*) which can infest buildings.

The Brown Dog Tick is widely distributed in North America. Since this tick survives indoors, it can infest kennels and households. The Brown Dog Tick is a three-host tick but all three stages can parasitize the dog. This tick also parasitizes cats, horses, rabbits, and humans. The Brown Dog Tick has no white markings on the shield on its back.

The American Dog Tick (*Dermacentor variabilis*) is widely distributed in North America but is most common on the Atlantic coast. These ticks, unlike the Brown Dog Tick, live only in grasses and shrubs.

The larval and nymphal stages of the American Dog Tick parasitize field mice. The adult tick usually infests the

dog but also can parasitize humans, wild animals, cattle, and horses. Adult American Dog Ticks have white markings on the shield on their backs. Outdoor areas such as fields are the major sources of American Dog Ticks.

**Removal.** Hard ticks usually are found securely attached by their head to the skin. Before removal, these ticks should be sprayed with an insecticide safe for use on animals, or soaked with alcohol. The head should be grasped with an instrument such as tweezers and pulled on gently until removed. Cigarettes, lighters, gasoline and kerosene can severely injure the skin and should never be used to remove ticks. If the ticks are Brown Dog Ticks, the kennels and household premises may need repeated treatment with pesticides.

Soft ticks (*Argasidae*) have a leathery outer covering. The Spinose Ear Tick (*Otobius megnini*) is the only medically important soft tick. This tick is most common in the southwestern parts of the United States. The young stages (larvae and nymphs) live in the outer ear canal of dogs, cats, cattle, and horses. Adult soft ticks do not feed and do not live on animals.

The Spinose Ear Tick can

cause severe irritation to the ear canal and may occasionally cause paralysis and seizures in some animals. The animal should be taken to a veterinarian for removal of these ticks since the eardrum may be damaged by improper removal of the ticks, especially by sharp instruments.

### The Louse

Lice are wingless insects that are uncommon parasites of dogs and cats and are common parasites of livestock and birds in the United States. Lice spend their entire life cycle on the host and are not readily transmitted from one animal species to another (they are host specific). In other words cat lice will not usually infest dogs and vice versa. Lice are spread from an animal to another by direct contact.

Female lice attach their eggs (nits) to the hairs or feathers on their hosts. The young lice undergo several molts before becoming adults. Development from egg to adult takes about 19 to 28 days.

The two main types of lice include sucking lice (*Anoplura*) and biting lice (*Mallophaga*).

Sucking lice are larger than biting lice, have piercing

mouthparts for obtaining a blood meal, and have pincer-like claws for clinging to the hairs of their hosts. These lice are grey to red depending on the amount of blood they have ingested. Sucking lice may cause severe anemia in heavily infested young or debilitated animals.

Sucking lice can infest most domestic animals (except birds and cats). Infested animals are usually itchy and often have rough dry coats. Sucking lice move slowly.

Biting lice usually are yellow with a large rounded head and mouthparts adapted for chewing and biting. Some species have legs for clasping, others have legs for moving rapidly. These lice may cause severe hair loss from scratching and rubbing. Biting lice can infest dogs, cats, cattle, sheep, goats, horses, and birds.

Specific identification of lice is difficult and is less important than being able to determine if the louse is a biting species or the more harmful blood-sucking species.

The dog has one common biting louse (*Trichodectes canis*) and one common sucking louse (*Linognathus setosus*). The cat has only one common species, a biting louse (*Felicola subrostratus*).

Adult lice and eggs attached to hair and feathers may be seen with the unaided eye. Lice and nits may be found more readily by using a magnifying hand lens with good lighting.

Many pesticides will kill adult lice but the eggs are quite resistant. Consequently, animals should be treated and then retreated two weeks later to kill the lice that have hatched from eggs not affected by the first treatment.

### All About Mites

Demodectic mites (*Demodex* spp.) parasitize many domestic animals. These mites live in hair follicles in the skin. They crawl from the mother to the nursing puppy or kitten during the first few days of life. They do not cause any harm in small numbers and are considered normal inhabitants of the skin. These mites are not contagious from animal to animal, or animal to human. The skin disease caused by an increased number of mites is called demodicosis or demodectic mange.

*Demodex* spp. are elongated mites with short stubby legs. The life cycle includes an egg, a six-legged larva, an eight-legged nymph, and an eight-legged adult.

These mites can be dem-

onstrated by a veterinarian performing a skin scraping, removing the superficial layer of a small area of skin with a scalpel blade. The debris is placed on a glass slide with mineral oil and examined with a microscope.

**Affects Dogs.** Demodicosis is a potentially serious disease in the dog. If large numbers of *Demodex canis* mites are found in several skin scrapings a diagnosis of demodicosis may be made.

There are two forms of demodicosis in the dog—localized and generalized. Patchy hair loss on the head, forelegs, and trunk is called localized demodicosis. In generalized demodicosis hair loss, reddening, and crusts may involve the entire body. These animals also may develop severe bacterial infections in the skin.

An inherited defect in the animal's immune system allowing the mites to multiply is believed to be an important factor in development of generalized demodicosis. Since it is believed that the defect of the immune system is inherited, dogs with demodicosis should not be used for breeding. Demodicosis is not a contagious disease. Affected puppies were born with a predisposition to develop demodicosis.

Diagnosis and treatment of localized and generalized demodicosis should be supervised by a veterinarian. Localized demodicosis often does not require any treatment and usually will spontaneously cure in six to eight weeks. Occasionally the localized form will become generalized, so the affected areas and normal skin must be closely observed. No one can predict if a dog with localized demodicosis will spontaneously cure or develop generalized demodicosis.

A veterinarian usually will treat generalized demodicosis with a series of parasitocidal rinses after clipping the hair. Antibiotics may be needed for a secondary bacterial infection that is often present.

**Rare in Cats.** Demodicosis is a rare disease in cats. There are two types of demodectic mites in the cat: *Demodex cati* and an unnamed *Demodex* spp. In localized demodicosis there is patchy hair loss, reddening, and occasionally crusting on the neck, ears and head. In generalized demodicosis hair loss, reddening, and crusting may involve the entire body.

Generalized demodicosis may develop in cats secondary to suppression of the immune system associated with sys-

temic diseases such as diabetes mellitus or feline leukemia virus infection. Diagnosis and treatment of feline demodicosis should be supervised by a veterinarian.

### **Sarcoptic Mites**

The family Sarcoptidae includes the *Sarcoptes* spp. and *Notoedres* spp. of mites. These mites may affect many species of animals but usually prefer one species. They are spread by direct contact from one animal to another.

This family of mites burrow within the superficial layers of the skin and the entire life cycle is spent on the host animal. The life cycle includes an egg, a six-legged larva, two eight-legged nymphal stages and an eight-legged adult. The development from egg to adult takes about 17 days.

The common skin disease caused by sarcoptic mites is called scabies or sarcoptic mange. The variety *Sarcoptes scabiei* is named after a particular host (for example, *Sarcoptes scabiei* var. *canis*—the sarcoptic mite of dogs). In all animals, scabies is an intensely itchy disease causing the animal to scratch, chew, and rub constantly.

Canine scabies is a common, contagious skin disease. The most common signs are

scaling, crusting, and a red rash on the head, ears, and abdomen. The entire body may be affected. Many of the skin lesions are self-induced since dogs with canine scabies are almost constantly scratching, chewing, and rubbing their skin. Severe itching is induced by very few mites and may be due to an allergic reaction to the mites.

Scabies is highly contagious from dog to dog. Dogs obtained from sources with large numbers of animals housed together such as pounds, large puppy producing establishments, and some pet shops are more likely to be affected by scabies.

Scabies mites may be transmitted to a human, resulting in a red rash. Usually the disease in humans is self-limiting since canine scabies mites apparently cannot complete their life cycle in human skin.

Since these mites often are difficult to find by multiple skin scrapings, response to treatment with parasiticial rinses is often used by veterinarians to diagnose canine scabies.

#### **Cat Scabies, Mange.**

Feline scabies or notoedric mange caused by *Notoedres cati* is an uncommon skin disease in many parts of the

United States yet may be common in certain local areas. These mites are highly contagious to other cats and occasionally may be transmitted to people and dogs. In the cat there is hair loss, thickening and crusting of the skin, usually affecting the head and forelegs. These areas are severely itchy.

*Notoedres* mites have morphologic characteristics similar to *Sarcoptes scabiei* mites. These mites may cause a red rash in humans. Usually this rash spontaneously resolves in people since *Notoedres cati* mites cannot complete their life cycle in human skin.

Parasiticial rinses are used to treat notoedric mange. Since many parasiticides are highly toxic to cats, a veterinarian always should supervise the use of any parasiticides in cats.

**Ear Mites.** The Psoroptic family of mites usually are parasites of cattle and sheep. The life cycle includes an egg, a six-legged larva, two eight-legged nymphal stages, and an eight-legged adult.

One member of this family, *Otodectes cyanotis*, the ear mite, is a common cause of ear problems in the dog and cat. These mites generally are found in the outer ear canal

but may rarely be found on other parts of the body. The mites are readily transmitted between dogs and cats.

Ear mites cause severe irritation and thick, dry, black crusts in the ear canals. The mites may be seen with a magnifying instrument called an otoscope. They are large, white, and mobile. Eardrops usually are prescribed by veterinarians to treat this disease.

**Walking Dandruff.** *Cheyletiella* spp. or Walking Dandruff Mites are contagious mites that live on the surface of the skin. These mites cause severe scaling, usually on the back. Some itching may be seen but this disease usually is not as itchy as the other skin diseases caused by mites in dogs and cats. The mites commonly affect dogs, cats, and rabbits. They may be seen with a magnifying hand lens or in skin scrapings.

**Chiggers** are larval stages of the Trombiculid mites. Only the larval stages are parasitic. The nymphs and adults are free living. Chiggers are seen most often in the late summer and early fall and are obtained by contact with heavy underbrush.

The North American Chigger (*Trombicula alfreddugesi*) is the most common chigger that affects animals and people. On animals they cause an itchy, red rash on the belly, face, feet, and legs. Chiggers are orange-red in color. They may be found in the ears of cats.

The larval mites remain attached to the skin for only a few hours, so the larvae often are difficult to find on the animal. Since chiggers leave voluntarily, the only treatment that may be needed is something to stop the itching. Chigger infested areas should be avoided during summer and fall months to prevent recurrence.

**Flies.** The larvae of *Cuterebra* spp. flies infest cats, dogs, rabbits, squirrels, and small rodents in the summer. Pets acquire the larvae by investigating rodent burrows. Consequently the neck is most commonly affected.

The larva penetrates the skin and forms a cavity under the skin. A breathing pore communicates with the outside. Cuterebra larvae should be removed surgically by a veterinarian.