



## Fleas

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### What You Should Know

- Adult fleas feed on blood, but larvae feed on skin, feathers and hair.
- Although not common in Utah, regular grooming and sanitation will help monitor for fleas on household pets, and topical insecticides are very effective if needed.

Fleas transmit disease and parasitic worms, and cause allergic dermatitis to humans and animals. There are about 2,000 different flea species in the world and at least 325 species in North America, all belonging to the order Siphonaptera. Fleas are not likely to be confused with other insects because adults are flattened dorsal-ventrally, or side-to-side (Fig. 3). All adult fleas are blood-sucking external parasites, meaning they require blood for nutrition, but do not live within the host. Also, adult fleas do not usually stay on the host except to feed, which is unlike lice that prefer to always be on the host. Fleas can thrive where warm-blooded animals live close together in regular nests or beds. This partially explains why many rodents have fleas but most large animals (e.g. cows, horses) do not get infested. Interestingly, fleas can jump 200 times their own body length and 80 times their own body height, making them the best jumpers in the world.



Fig. 1. Flea larva.<sup>1</sup>



Fig. 2. Grooming a flea-infested animal often reveals "flea dirt."<sup>1</sup>



Fig. 3. Adult flea. Note the darkened comb near the back of the head.<sup>2</sup>

### Flea Description

**Adults:** Flea adults are small insects (1.5-3.3 mm long), usually dark red or brown colored, and have large hind legs for jumping (Fig. 3). Although fleas go through complete metamorphosis, the adults never have wings. Complete development takes 30-75 days, depending on humidity and temperature. The exoskeleton is hardened and covered with hairs and spines that point backward. Adults feed on blood with piercing-sucking mouthparts. Eyes are absent or simple, and depend on antennae for sensory to heat, touch and smell. Adults often have thickened combs near the back of the head to help grasp onto the host while feeding (Fig. 3).

**Eggs:** Flea eggs hatch after 3-10 days, and are round or oval and white in color. Females lay eggs singly near potential host's nest or directly on the host.

**Larvae:** Flea larvae are legless and wormlike (Fig. 1). Flea larvae usually live in the nest or bedding where they scavenge on organic debris (e.g. hair, feathers) with chewing mouthparts. Full-grown larvae are about 4 mm long and go through three molts before spinning a silken cocoon.

**Pupae:** The pupal case protects fleas until development is complete. Adult emergence is based on vibrations, heat and carbon dioxide from nearby hosts.

## Feeding Habits and Hosts

Both adult males and females feed on blood; some females require a blood meal to lay eggs. Most fleas infest mammals, including rodents, dogs, cats, rabbits, and squirrels. Less than 10% feed on birds. In general, fleas are not host-specific and will feed opportunistically. Some flea species will time adult emergence with pregnant female mammals or avian nest return.

Two prominent fleas are of importance to homeowners in Utah. The cat flea, *Ctenocephalides felis*, has a wide host range and is common on dogs and cats. The dog flea, *C. canis*, is closely related but not as common. Both the cat and dog fleas will feed on humans; attacks occur when the fleas are denied access to their normal host. The worst human cases are noted when infested pests are removed from the household. Humans are usually bitten near the ankles and lower legs. Skin can be itchy, reddened and swollen (Fig. 4). Skin irritations are caused by flea saliva injected into the body during feeding to prevent blood coagulation. Secondary infections can develop if the bites are scratched.



Fig. 4. Flea bites on a human.<sup>1</sup>

<sup>1</sup> Images courtesy of Wikipedia (<http://en.wikipedia.org/wiki/Flea>).

<sup>2</sup> Image courtesy of Centers for Disease Control and Prevention Plague Training Module (<http://0-emergency.cdc.gov.pugwash.lib.warwick.ac.uk/agent/plague/trainingmodule/>).

## Management and Detection

- Frequent and thorough vacuuming is a necessary part of flea control. Larvae can survive in carpet for an extended period of time without food. The vibrations from the vacuum may also trigger adult emergence and should be done prior to insecticide applications.
- Infested areas should be cleaned, especially carpet, upholstered furniture, gaps along baseboards, and pet sleeping areas. Throw away the vacuum bag to avoid reinfestation. Clothing, blankets, and bedding should be laundered frequently with hot water or destroyed.
- Suspected infested areas should be monitored regularly, included pet sleeping beds or blankets. Wear white socks and walk slowly to look for jumping adults.
- Reduce the accumulation of loose pet hair around the house to prevent harborage for larvae. Regular grooming will prevent some adult feeding and may loosen "flea dirt" or excrement from the coat (Fig. 2).

## Control Options

Insecticides are a necessary part of a flea control program. Flea infestations in Utah are relatively light, so thorough sanitation as described above and a pet treatment is generally effective. Severe infestations may require carpet and furniture treatments. Complete control may take several weeks if flea eggs and pupae are present, so be patient and diligent.

There are over 800 insecticide products registered for flea control on pets in Utah, including dusts, sprays, shampoos and collars. Treatment dose is often based on safety to the animal rather than effectiveness against fleas. Cats are especially susceptible to toxins because of their grooming behavior. Shampoos and dusts have relatively little residual effect. Recommended topical products for controlling adult fleas are Frontline® (fipronil and methoprene) or Advantage® (imidacloprid). Both products contain an oil carrier that will accumulate in the hair follicles and oil glands, distributing the active ingredient throughout the coat. The most effective insecticides for controlling larvae should include an insect growth regulator (IGR). Active ingredients for IGR's include methoprene or pyriproxyfen.

**Precautionary Statement:** All pesticides have benefits and risks, however following the label will maximize the benefits and reduce risks. Pay attention to the directions for use and follow precautionary statements. Pesticide labels are considered legal documents containing instructions and limitations. Inconsistent use of the product or disregarding the label is a violation of both federal and state laws. The pesticide applicator is legally responsible for proper use.

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