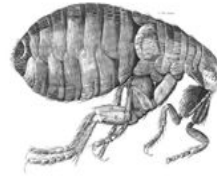


### Fleas (June 2008)

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(Flea drawing by Robert Hooke (1635-1703) )

Officially they are cat fleas, but *Ctenocephalides felis* is really not picky, they can colonize our Beardies as well as cats, domestic rabbits, ferrets, cows, goats, raccoons, opossums, skunks, coyotes, foxes, mongooses, koalas and even some species of poultry. Oh yes, and they bite people and can cause, plague, typhus and other nasty diseases. No wonder they are public pet owner enemy number one.

Despite popular belief squirrels and wild rabbits do not bring fleas into our yards, blame nocturnal visits by feral cats and some of the species listed above. While we are dispelling erroneous beliefs, fleas do not jump from host to host either. Once they find their host, they settle in and live their lives there. Why not, they are warm, safe from predators and a nice blood meal is millimeters away! Only in cases of severe overpopulation will they vacate the neighborhood.

Once a flea arrives it starts feeding in the first few minutes. Breeding follows within a day or two, followed by egg production 48 hours later, about 40 or 50 eggs per day per female flea. Females outnumber males 2:1 on average. Once produced, the eggs drop off the host. Outdoors most eggs dry up and do not hatch. Inside our houses though, 50-70% of the eggs are viable.

Surviving eggs hatch into larvae. They require humidity of greater than 50% and are also subject to desiccation, although they will drown if their environment is saturated. They survive in soil, grass, carpets, unwashed pet bedding and in the cracks in hardwood floors or under the molding. They live primarily on adult flea feces which have dropped off with them. Many will die of starvation. Ideal conditions for eggs and larvae are temperatures of 65-75 °F and a relative humidity of ~ 75%. (Humidity is higher in the deep carpet pile or soil than in the air above it.) However, all life stages of the flea can survive a temperature range of 28 to 95 °F. Above that temperature, especially in full sun, immature stages will die. Up here in the



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cold Northeast fleas over-winter in animal bedding – domestic or wild – or in our homes.

The larvae that have made it thus far, eat like pigs for the next two weeks, going through at least two molts as they grow. They are at their most vulnerable at this stage. Once the larvae have matured they produce a “silk” in which they wrap themselves to form pupae. The outer surface is sticky, and becomes covered in debris from their environment. As pupae, fleas are pretty much invulnerable to their environment including insecticides, and 80-90% will survive. After a week, adult fleas are ready to hatch from the pupae, but their hatching will be delayed if the environmental conditions are not right, especially if it is too cold or dry. Emergence can be delayed up to eight months.

Adults hatch if they sense carbon dioxide release or body heat from a potential host. Vibrations from the host moving about and causing surrounding debris to shift can also cause hatching.

The biggest problem for our Beardies is flea allergic dermatitis (FAD). There is a considerable range of severity, but in most dogs the areas affected will be the spine in front of the tail head and the groin. The degree of itchiness varies, but in severe cases is extreme. There will be significant hair loss, redness, and divots in the skin from the scratching; secondary bacterial infection can cause pyoderma and hot spots.

You do not have to see adult fleas to diagnose FAD, although finding the tiny dark spots of flea feces which turn red in water – digested blood- certainly helps. It must be remembered allergies are additive, and there may be accompanying atopic dermatitis exacerbating the condition.

Topical spot –ons are usually effective at keeping fleas at bay (Advantage, Frontline, Vectra 3D, Promeris or Revolution). Not all dogs will tolerate these products so watch your dog carefully especially on the first application, and if you notice a problem quickly wash the area of application thoroughly and then seek veterinary assistance. Reports of flea resistance to these products are probably not accurate. Frequent shampooing – especially with harsh shampoos – or swimming can reduce efficacy despite product labels. Vectra-3 and oral Comfortis tend to have the longest action. Both are new products. Comfortis starts to kill fleas within 30 minutes of being ingested. It continues to kill fleas for a month. Other oral flea products



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would include Capstar and Program/Sentinel. Capstar kills all fleas on a dog within 30 minutes, but has no residual action beyond 48 hours. It would be the first choice for a heavily infested dog. Program (Sentinel includes the active ingredient in Program as well as the heartworm protective ingredient of Interceptor) provides a month of protection, but takes longer to kill fleas initially than Comfortis or Capstar. The oral products have no action against ticks. Capstar can be used long term to protect the dog against fleas being given every second or third day.

If the environment is heavily infested with pupae, spot on treatments can be overwhelmed. In these cases, they should be applied every two or three weeks – as needed, with Capstar given at regular intervals to bring down the population on the Beardie. Capstar can be given safely to puppies as young as 4 weeks of age.

For 70-80% of its life span the flea is not on the animal though, but hidden in the environment. In dry areas, outdoor fleas will die in non-irrigated areas by mid-summer. Indoors they continue to flourish. If your dog gets on the furniture or if you have cats that do, remember immature stages will be under the cushions and in the upholstery or even in your bed. Most larvae and even some of the eggs can be killed by the use of insect growth regulators (IGRs) such as methoprene and pyriproxifen). Knockout spray dries on contact and is easier to use and less messy than some. Be aware though that these sprays usually contain permethrins (synthetic pyrethrins) to help kill eggs as well as killing any adult fleas in the environment. Another option is sodium polyborate (Fleabusters) which kills the larvae by drying them out, and may choke them to death on the fine dust too. None of these products will have any effect on pupae. The best recourse and the most environmentally friendly, is frequent and thorough vacuuming. Do not put flea collars or other flea products in the bag. You will aerosolize the chemicals into the environment. After vacuuming seal the bag in a plastic bag and put it out in the trash.

Many of the outdoor larvicidal sprays contain malathion or diazinon. Both are organophosphates. The latter is banned for domestic use but still available for agricultural use. Both are extremely toxic to humans and domestic animals as well as beneficial insects and wildlife, and should not be used. Nematodes of the species *steinernema* are a natural means of controlling flea larvae as well as those of cutworms, Japanese beetles and other pests. Occasional watering and replenishment every few months is all



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the care they need. Some people advocate using diatomaceous earth, but unless it is well watered into the ground the harsh dust can cause damage to respiratory tissue, particularly that of our dogs – who are closer to the ground. It will become airborne after a dry spell again too.

Care must be taken with applying any of these control measures. Be sure to read the directions closely. Research the ingredients and make sure that you are applying the right product to the right species. Be aware of the special needs of the infant and geriatric animals as well as the immune compromised humans and adult dogs. A recent report links the use of pyrethrin sprays and pet shampoos by pregnant women to the incidence of autism in their children. The spot-ons coat the hair of our dogs, they will be ingested by dogs and puppies mouthing on them, as well as human children and adults when they pet or cuddle the animal. Fleas cause a lot of misery and we need to control them. However, control can bring a cost.

One final take home thought. Fleas drown. All the fleas on our dogs are adults.