

## Treatment options for scaly leg mite infestations in poultry

This info sheet is designed to help you understand scaly leg mite infestations, also known as **knemidocoptiasis** or **scaly foot**, so that you can better treat the condition. Although these mites can also infect the wattles of poultry and ceres of parrots, this document will focus solely on the legs of poultry. Also, be aware that there are a number of other mites that infect poultry, the key point of difference being that the others undergo part of their life cycles away from the bird, so it is important not to confuse scaly leg mite with other mite infestations.

### Life cycle

In order to fully discuss treatment options for scaly leg mites, it is important to understand their life cycle.

Scaly leg mites, *Knemidocoptes mutans* (sometimes spelled *Cnemidocoptes*), spend their entire three-week life cycle on their bird hosts (chickens, turkeys, pheasants). The females are viviparous, which means they lay live larvae rather than eggs.

The larvae have three pairs of legs. After two nymphal stages, the mites mature into adults with four leg pairs. The mites burrow directly under the main protective skin layer, primarily on the face, feet, and beak cere, where they feed on keratin, which is the main protein component of the skin. Most commonly, the unfeathered regions (beak, eyelids, legs, and vent) are affected. As the mites burrow they form tunnels, damaging the underlying tissues of the bird legs. This causes an inflammatory response in which the scales and legs swell in size and a dried, crusty exudate may be observed.

Scaly leg mites are usually only transmitted between birds through prolonged contact, as they cannot live outside their host for an extended period. The mites are commonly transmitted from parent to unfeathered nestlings, which may appear asymptomatic until they mature. Unlike many parasitic infections in birds, clinical infestation with *Knemidocoptes* species occurs more frequently in older birds, however the infestation may have been present for many weeks to months before symptoms become obvious. This is not unusual, as there are many diseases which are asymptomatic in animals until they reach production stress. Infection will become persistent in flocks where there are always birds of different ages. Spread is slow and inexorable when left untreated.

### Diagnosis

A scaly leg mite infection can be confirmed by soaking off an infected scale and having this examined by a laboratory. The base of the scale needs to be carefully removed, as this is where the lab will find the mites. However, usually diagnosis on symptoms is very reliable. It is important to not confuse the swelling from legs mites with that of bumble foot, which is a larger area swelling, usually of the foot pad.

## Management and Treatment

The treatment of scaly leg mite can be done in a way which is kind and gentle to the bird and its skin. Try to determine how many birds are infected, and treat the worst ones first. Remember that the more birds you can treat at once, the greater your chance of reducing population numbers and therefore the rate of reinfection.

One way in which the infection cycle continues and spreads is through infected older birds contaminating the environment of younger birds. Treatment therefore needs to consider the size of the flock, and the severity of infection, and what's going to happen to the eggs.

**Barrier creams / butters:** A simple treatment that leaves no egg residues is to apply a barrier cream to the legs. This will disrupt the life cycle of mites under the skin by preventing air reaching the underlying tissues. *You should always treat both legs, even if one leg appears normal. Always assume both legs are infected!* After cleaning the scaly area thoroughly with warm soapy water, allow the scales to dry and apply a tissue-friendly highly water repellent cream, such as Allfarm Barrier Butter. Work the cream in well; you may find a soft bristle brush helpful, and warming the cream slightly helps it mould to contours of the legs. The birds should be kept in a clean area, free of shavings. The principle is to keep the enlarged (probably infected) scales clean, and to repeat the application several times until the legs start to respond. Remember to treat both legs for the first few applications. The minimum time for treatment will be three weeks, as any mites which were recently laid need to be smothered. Over time, inflammation will decrease, scale ugliness will reduce, and eventually the damaged scales will fall off and be replaced by clean, fresh, flexible leg scales. Barrier butters have no residues or petrochemicals or insecticides. They rely on acting as a bandage and soaking the tissues with natural vegetable oils of the kind which have been used for many years to treat dry, irritated and damaged skin. The process of working on the barrier gels also massages the scales and leg circulation and encourages healing by doing so. The softening from the barrier butter oils also means the new scales are flexible. Barrier butters should be environment- and user-friendly. Preheating the butter to body temperature makes it easier to apply. Some people have advocated an Epsom salts soak of infected legs prior to treatment. This is also a good idea, but the overall objective is to ensure the area is well cleaned. Barrier products are easily repelled by water, and so if a pre-soak treatment is used then the legs must be well dried afterwards, or the barrier products will not adhere. A useful supporting treatment is to apply some vitamin E cream, especially when the lesions start to heal.

**Chemical treatments:** A fast treatment for leg mites is to apply ivermectin products – such as those found in a pour-on drench. These products are absorbed through the skin, enter the bird's circulatory system, and diffuse into the skin tissues that the mites are consuming. An added benefit of ivermectin products is that they will also paralyse gut worms. However, a major downside is that ivermectin also diffuses into eggs, where it can be found in both yolks and whites. There are no data on how long until eggs are safe and residue-free after treatment. *It should also be noted that ivermectin products are not registered for the treatment of poultry that are used for producing meat or eggs for human consumption.* Unlike barrier creams, ivermectins also do not provide any extra support to help the skin recover.

**Other products:** Other treatments that can be applied to mite-infested legs include products containing essential oils. These can be effective, but the oils and solvents can be caustic and irritating to the sensitive, inflamed tissues under the scales. A single application will be inadequate. Petroleum jelly can also be applied in a similar manner to barrier cream/butter, however it tends to remain sticky and does not nourish the skin as a barrier butter does.

**Warning - dangerous treatments:** More dangerous, less validated treatments can be found on the internet. These include wiping legs with petrol or other solvent products. The base chemicals will be toxic to the skin and have the potential to be toxic to the liver and kidneys. This treatment is completely unacceptable from a welfare point of view because it is cruel. This treatment is only mentioned here as a warning!