



# Sarcoptic Mite

**Sarcoptic Mite for Dog Last updated:**

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## Synopsis

### **CAPC Recommends**

Different varieties of *Sarcoptes scabiei* infest a wide range of mammalian hosts, including dogs and other canids, human beings, horses, and cattle; cats are rarely infested with this mite.

In all hosts, mites tunnel in the epidermis and produce an intensely pruritic dermatitis with hyperkeratosis and alopecia.

Infestations between hosts occur, but the mites tend not to survive for long on hosts other than those to which they are adapted; thus, they are considered host-adapted strains of a single species rather than distinct species.

## Species

*Sarcoptes scabiei* (canine mange mite, itch mite)



*Sarcoptes scabiei* with long unsegmented pretarsi on front legs and characteristic triangular spines

## Overview of Life Cycle

Mites live in burrows in the skin where the female glues her eggs to the tunnel walls. Eggs hatch to produce six-legged larvae that cut through the skin and dig new burrows. The larvae then molt to become first- and second-stage nymphs before becoming adults. The entire life cycle can be completed in 2-3 weeks.

## Stages

Eggs are large (about 230  $\mu\text{m}$  long) and ellipsoid.

Adults are approximately 300-500  $\mu\text{m}$  long. The first two pairs of legs of the eight-legged adult females end in long and unsegmented stalks (pedicels) that end in a wineglass-shaped caruncle; the third and fourth pairs of legs end in long setae. Male mites have setae only on the third pair of legs, with pedicels and caruncles on the other legs. Males also have marked thickening of the cuticle between the various plates on the ventral surface that appear dark, compared with the rest of the body. The dorsal surface of both the male and female mites is covered with large triangular spines (most conspicuous in the female).

# Disease

Infestations typically produce hyperkeratosis and alopecia.

Lesions become highly pruritic and are often the cause of self mutilation. Lesions may become bloody from the scratching of the affected dog.

Mites typically are found on the margins of the ears, lateral elbows, and lateral hocks of affected animals, although lesions are also common on the flanks and ventrum, especially in more severe cases.

# Prevalence

Sarcoptic mange is among the most commonly diagnosed skin diseases in dogs, both in general practice and at referral/dermatologic specialty hospitals.

Severe skin disease may be present even though repeated skin scrapings recover no mites.

Infestations appear to occur throughout the range of the dog and are present in both cool and tropical climates.

# Host Associations and Transmission Between Hosts

*Sarcoptes scabiei* var *canis* has a host preference for dogs, wolves, coyotes, and foxes but has also been reported in humans, cats, horses, and ungulates.

The mites are spread between canids by direct contact of animals.

*Sarcoptes scabiei* is a serious parasite of red fox (*Vulpes vulpes*) and coyotes (*Canis latrans*), which could perhaps be considered reservoir hosts in some areas. Red foxes have their own variety (*S. scabiei* var *vulpes*) that can also infect dogs.

# Prepatent Period and Environmental Factors

Mites develop from eggs to egg-producing adults in approximately 3 weeks.

Three to six weeks post-infestation, dogs become sensitized to mite antigens, and the clinical signs begin to appear. It is important to remember that dogs can still transmit scabies during this period.

*Sarcoptes scabiei* does not survive in the environment off the host; infestations are dependent upon direct contact between animals or fairly immediate fomite transmission, such as by clipper blades.

# Site of Infection and Pathogenesis

Mites are found in burrows in the skin.

Lesions typically are noted on the margins of the ears, lateral elbows, and lateral hocks of infested animals. Occasionally pododermatitis also develops.

Infestations initially produce dry, crusted lesions that become pruritic and on excoriation often develop a serous exudate. Alopecia is usually present as well.

Some dogs develop a severe form of sarcoptic mange referred to as “crusted scabies” in which large mite populations are present within profound hyperkeratosis.

# Diagnosis

Skin scrapings for sarcoptic mange mites should be deep enough to examine the full thickness of the epidermis and produce a sample that is tinged with blood.

#### Technique

Place a drop of mineral oil or microscopic immersion oil onto a rounded scalpel blade (#10 or #20).

Pinch the skin together at the area of interest and scrape the skin firmly to remove the superficial epidermis. The area should turn red (not bloody) if the scraping is done correctly.

It is important to sample from several areas to get a representative sample from the patient.

Deposit the oil/scraping mixture onto a microscope slide and examine at 10x magnification. Mites and their eggs will be clearly visible at low power, but accurate identification of the mite will require 40x magnification.

You may have to tease apart the scrapings on the microscope slide with needles, especially when significant hyperkeratosis is present.

If no mites are seen but lesions strongly suggest sarcoptic mange, response to treatment may be used to reach a clinical diagnosis.

## Treatment

Selamectin and topical moxidectin/imidacloprid are label approved for treatment of sarcoptic mange in dogs.

Fipronil and flumethrin/imidacloprid collars are label approved as “aids in control of sarcoptic mange” and “aids in the treatment and control of sarcoptic mange” respectively.

Off-label afoxolaner, topical and oral fluralaner, and sarolaner have been shown to be effective in the treatment of sarcoptic mange in dogs. All are at the labeled dose, route, and frequency for use to control ticks and fleas.

Off-label, high dose ivermectin was used to treat sarcoptic mange historically but may cause toxicity in ivermectin-sensitive dogs and failures have been reported. CAPC prefers the use of approved products and does not recommend the use of off label, high dose ivermectin to treat sarcoptic mange in dogs.

## Control and Prevention

Routine use of fipronil, topical moxidectin, selamectin, afoxolaner, fluralaner, or sarolaner likely will prevent infestations with *Sarcoptes scabiei* in dogs.

Infected dogs can be kept separate to prevent the spread of mites to other animals through direct contact, but within a home, it is recommended to treat all animals due to the delay in clinical signs.

## Public Health Considerations

People can develop a self-limiting infestation with *S. scabiei* from dogs. The lesions that are produced will be highly pruritic but usually clear without the need for specific treatment for the mite infestation. If lesions persist or are particularly uncomfortable, a dermatologist should be consulted.

People also develop infestations with *Sarcoptes scabiei* var. *hominis* following contact with other infested people. Dogs are not always the source of human scabies, particularly when institutional outbreaks occur.

Human scabies is considered a sexually transmitted disease although any close contact between individuals may facilitate transfer of mites and establishment of a new infestation.

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