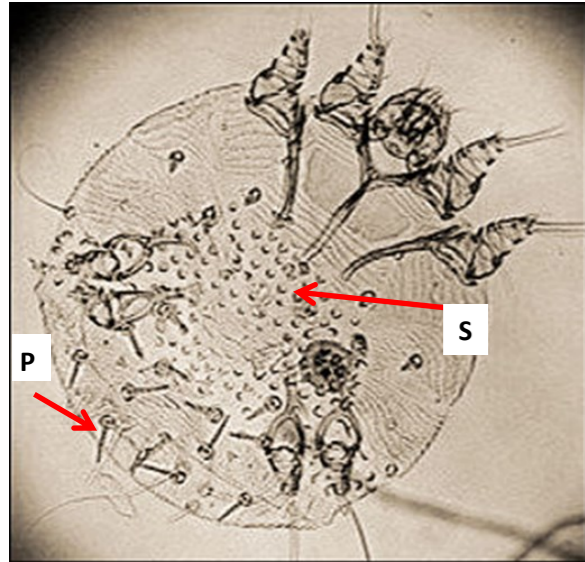
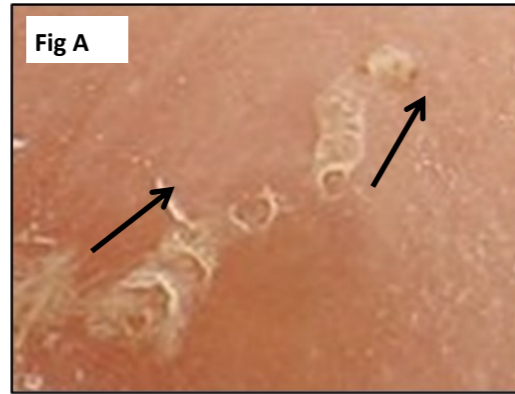


Life cycle of the itch mite, *Sarcoptes scabiei* in dogs

Sarcoptes scabiei is a skin burrowing mite in permanent association with its host. The genus *Sarcoptes* contains only one species, but many varieties or strains exist which have adapted to their specific hosts, including one of humans, *S. scabiei* var *hominis*. The parasite affects animals worldwide, including livestock in warmer countries but in the UK, dogs and foxes are most commonly affected, which can result in a severe dermatitis known as sarcoptic mange.



1. *Sarcoptes scabiei* are approx. 300-600µm in size, round in shape and ventrally flattened. The head region is rounded and the four pairs of legs are stumpy, barely protruding beyond the body margin. The posterior pairs of legs are somewhat recessed but the front two pairs are visible and forward pointing, and end in stalks with a sucker. The dorsal surface is covered with spines (P) and the central region has triangular scales (S).



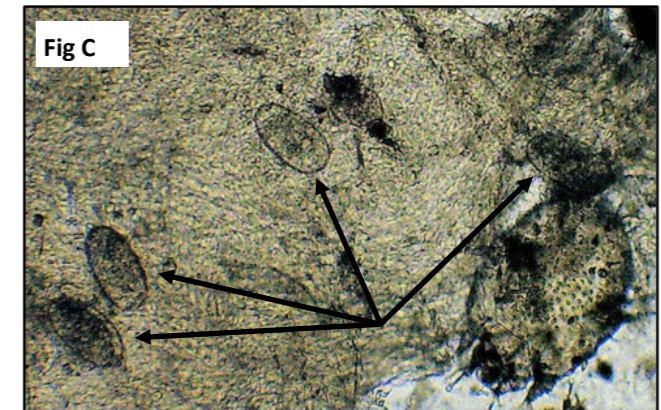
2. Males and females mate on the skin surface and the female then creates a winding tunnel, feeding on damaged skin and released exudate as she burrows. Tunnels reach approx. 1cm in size after 4-5 days, at which point the mite starts to deposit her eggs. Fig. A is a close-up image of a scabies burrow in human skin. The mite has travelled in the direction of the arrows.



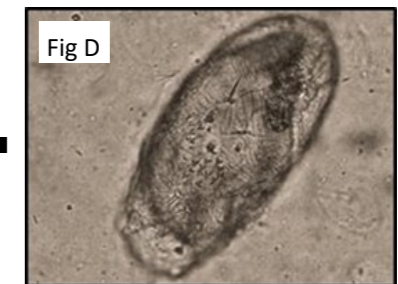
3. Fig B is an H&E-stained section of the stratum corneum in a case of canine scabies. The spines on the dorsal surface can be seen (arrow) on a mite within a burrow.



In dogs the condition is an intensely pruritic dermatitis causing papules and crusting on the legs, ears, face and other areas. Left untreated this may become a debilitating condition of the entire body, with epidermal hyperplasia and thickening/wrinkling of the skin. Image of dog courtesy CDC.



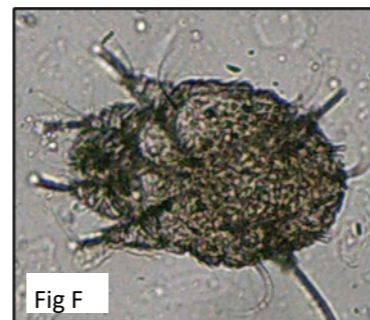
4. Two to three oval eggs (Fig. C arrows) are produced each day in the burrow over a period of 2 months. The image shown is a skin scrape in which a single female mite is present.



5. Fig D shows a larva which has developed within an egg, which takes 3-4 days.



6. Fig. E shows a larva breaking out of an egg, with the front leg and stalk protruding.



7. The newly hatched larvae (Fig F) has six legs and is less than 0.1mm in size, compared to the adult mite which measures up to 0.6mm.

PUBLIC HEALTH SIGNIFICANCE

Sarcoptes from dog infestations can transfer to owners, typically producing a transient itchy dermatitis on in-contact regions, on the arms for example. The dermatitis and itchiness resolves once mites on the dog have been eradicated through treatment. Clinical human scabies is a contagious condition transmitted by close human to human contact with *Sarcoptes* which has adapted to humans – it is not caused by animal strains of the parasite

TRANSMISSION OCCURS BY DIRECT CONTACT, HOWEVER MITES CAN SURVIVE OFF THEIR HOST FOR SEVERAL DAYS, THE LIFE CYCLE (EGG TO ADULT) IS COMPLETED IN APPROX. 21 DAYS.



This is an empty mite egg shell which together with mite faeces, egg cuticles and other mite derived debris is very antigenic and allergenic, leading to the severe skin response seen in sarcoptic mange.

8. The larvae themselves may create 'moulting pockets' in the epidermis. After 2-3 days of feeding the larva moults to an 8-legged protonymph which in turn becomes a tritonymph; After a further few days the adult stage is reached.