

# The medical effects of thrips



## 1 Introduction

Thrips are small insects that normally feed on plant tissue and are occasionally predators of insects and mites. Only one species is known to live on an animal: *Aulacothrips dictyotus* (family: Heterothripidae) is an ectoparasite on a homopteran bug. No species are known to breed on mammals, although they often land on human skin, sometimes in large numbers. There are many reports that this can lead to itching, skin lesions and rashes, although some of the evidence is only circumstantial. Some thrips have even been observed feeding on human blood. Why does this behaviour occur and what are the clinical symptoms?

## 2 Infestations

In cereal-growing areas of northern Europe, vast numbers of adult cereal thrips, such as *Limothrips cerealium* (family: Thripidae), migrate during warm weather in July and August. They can land in large numbers and people can find dozens of them crawling on their arms and face. People unfamiliar with these insects, known as “thunderbugs”, can become distressed, fearing they are infested with fleas or lice. The thrips are quickly noticed on exposed skin, but they land everywhere and are not specifically seeking out skin. They produce an unpleasant itching sensation, which can become intolerable when large numbers are present. Farm workers can be driven out of fields, bathers can leave beaches and picnickers can be driven indoors. The phenomenon has been recorded as far back as the 1860s and still occurs every year.



*Limothrips cerealium*

In Australia, vast numbers of the plague thrips *Thrips imaginis* (family: Thripidae) settle on exposed skin and other surfaces from October to December. The species is abundant, but is most obvious in “plague years”, which have occurred every few years since at least the 1930s. It is sometimes claimed that the thrips land preferentially on moist surfaces, such as sweating skin, but a true preference has never been shown. Skin is likely to be moist at the times when thrips fly and thrips may simply stay longer on moist surfaces.

More recently in Australia, enormous numbers of *Pseudanaphothrips araucariae* (family: Thripidae) breeding on pine trees have invaded a nearby school in such numbers and caused such irritation that the school was forced to restrict its hours to when the thrips were not flying (Mound *et al.*, 2002).

*Gynaikothrips ficorum* (family: Phlaeothripidae) breeds on fig trees and has been recorded occasionally as abundant enough to be an irritant in Latin America, Australia and Israel.

## 3 Do thrips bite?

When thrips walk on skin, they can produce a strong itching sensation. This appears to be produced by thrips probing the skin as if probing a leaf. They are probably also introducing saliva into the wound. This can lead to irritation and an inflammatory reaction. The mouthparts consist of a mandible that pierces and paired maxillary stylets through which liquid is sucked up. They are able to pierce human skin easily.



The mandible of a thrips

## 4 Bite symptoms

Thrips can produce intense itching and a sharp pricking sensation when they bite, but they usually leave no visible signs. However, they occasionally produce wheals in some individuals. Larger species of thrips leave red or pinkish pinpoint lesions lasting hours to days, with surrounding whitish zones or erythema that fades rapidly (Southcott, 1986; Mumcuoglu & Volman, 1988).

## 5 Do thrips suck blood?

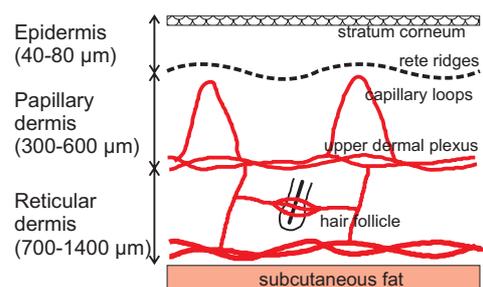
The diagram below shows that thrips would have to probe at least 40-80  $\mu\text{m}$  into the skin to be able to reach capillary loops and about 340-680  $\mu\text{m}$  to be able to reach the capillaries in the upper dermal plexus. The stylets of adults in the family Thripidae can be exerted about 60  $\mu\text{m}$  and so are just on the margins of being able to reach capillaries. However, larger species in the family Phlaeothripidae can exert their stylets about 100  $\mu\text{m}$  or more and should be able to reach capillaries. *Karyothrips flavipes* (family: Phlaeothripidae) has been observed feeding on blood from a wrist for over 30 minutes (Bailey, 1936). The blood could be seen within the insect.



*Karyothrips flavipes*

Photo: L.A. Mound

Since thrips can suck blood, they could, in principle, act as disease vectors, but as yet there is no evidence of this. The amount of blood consumed and the frequency of blood feeding make it very unlikely.



Arrangement of blood vessels in the skin (after Swain & Grant, 1989)

## References

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