

Fungus-associated thrips (Phlaeothripidae) from Wyre Forest oaks.

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Thrips receive little attention from amateur naturalists, mainly because they are small and require high power (x400) microscopy with a conventional microscope for identification. Thrips are mostly thought of as flower dwellers, and this is true for many species, notably in the family Thripidae. But there is an interesting and relatively neglected group in the family Phlaeothripidae that feed on fungi. Some species feed on fungal hyphae, others feed by ingesting spores. The former group (subfamily Phlaeothripinae) have narrow maxillary stylets that form a tube with a diameter of less than 5µm through which they draw up juices from fungal hyphae, though how they do this is unknown. The latter group (subfamily Idolothripinae) have larger stylets that allow the direct ingestion of fungal spores. The fungus feeding thrips reported here all belong to the first (Phlaeothripinae) group. Members of the family Phlaeothripidae can be recognised at low magnification by the characteristic tubular form of the last (10th) abdominal segment (01, 02, 04, 06).

Between 16th June and 6th July 2015 a study was conducted by Natural England in the Wyre Forest in which three oak tree canopies were fogged with permethrin mists in order to survey invertebrates. A profusion of insects and other invertebrates were obtained (Winnall, 2016). After various groups had been extracted for study by specialists, tubes of the remaining specimens, all in alcohol, were passed to me for identification of thrips. There were 27 thrips among which a surprising nine species were identified, six of them in the family Phlaeothripidae.

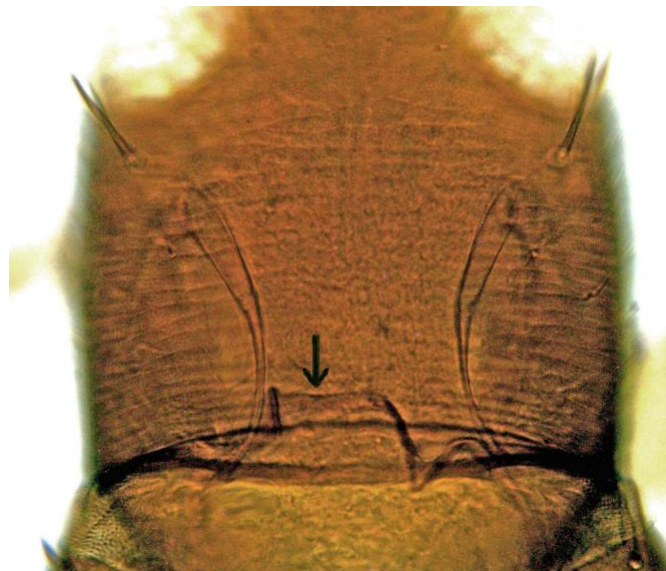
The publications containing dichotomous keys used for identification were *Thrips* by William Kirk (1996), and Mound et al (1976); the latter was downloaded from the Royal Entomological Society internet website. Thrips must be cleared in Potassium hydroxide (KOH) to make the internal structures visible and then mounted on slides. Representative slides were sent to Dom Collins for confirmation of identity, and in one case identity correction. The following species were identified.

Phlaeothripidae

Haplothrips subtilissimus (Haliday, 1852) (Haplo- from the Greek 'simple'). Two females (01) and a second-instar larva. The species is found on oak (*Quercus*) branches. It is widespread in Europe and locally common in Britain. Species of the genus *Haplothrips* have a bridge joining the maxillary stylets (02).



01. *Haplothrips subtilissimus* female, 1.7 mm. Martin Skirrow



02. *Haplothrips subtilissimus* female. Bridge across the maxillae (arrowed; accidentally folded on the right). Martin Skirrow

Hoplothrips fungi (Zetterstedt, 1828) (Hoplo- from the Greek 'heavily armed'). There were 11 specimens, at least two of them females (03). According to Kirk (1996) the species is found in dense stands of young oak in which lower branches are dead from shading. They live beneath encrustations of *Peniophora* fungus. Widespread and common. A characteristic feature is an unusually long curved sense cone on the inner aspect of antennal segment III (04).



03. *Hoplothrips fungi* female, 2.6 mm. Martin Skirrow



04. *Hoplothrips fungi*. Long curved inner sense cone on antennal segment III (arrowed). Martin Skirrow

Hoplothrips corticis (De Geer, 1773). Two females. The species is also associated with dead wood of broadleaves, feeding on fungi. Very local in Britain.

Hoplothrips pedicularius (Haliday 1836). A macropterous female. Fairly common on deadwood of broadleaves, feeding on *Stereum* fungus.

Hoplothrips semicaecus (Uzel, 1895). Two females (05). The species is associated with the dead wood of broadleaves. Found mainly in south-eastern counties of England. Females have a group of small sense cones on the underside of antennal segment IV which has an almost cylindrical shape (06).



05. *Hoplothrips semicaecus* female, 3.2 mm. Martin Skirrow

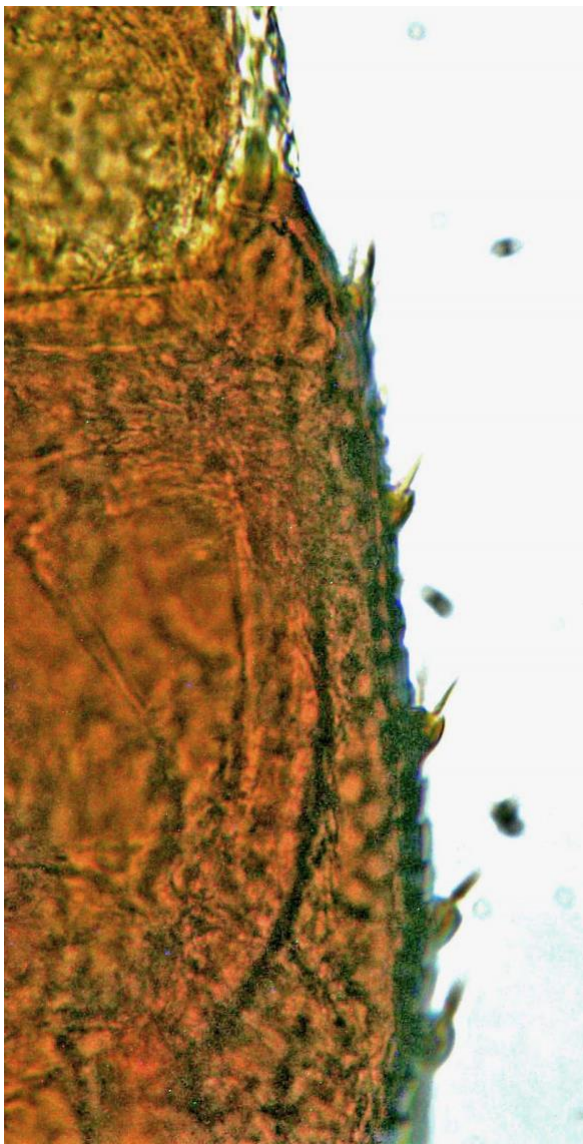


06. *Hoplothrips semicaecus* female. Multiple small sense cones on underside of antennal segment IV. Martin Skirrow.

Phlaeothrips coriaceus (Haliday 1836). Two males (07). The species is found on dead branches of broadleaves. Widespread in Europe but infrequently found in Britain. A particular feature of the species is the presence of several small tubercles bearing setae on the sides of the head (08).



07. *Phlaeothrips coriaceus* male, 3.0 mm. Martin Skirrow



08. *Phlaeothrips coriaceus* male. Tubercles with setae on side of head. Martin Skirrow

Thripidae

Three non-fungal feeding species in the family **Thripidae** were also found.

Limothrips cerealium (Haliday 1838). Three macropterous (winged) females. A common and widely distributed species breeding on grasses and cereals. Probably chance visitors with no specific relation to the oaks.

Taeniothrips picipes (Zetterstedt 1828). A female found in flowers of many herbs. Widespread in Britain. Probably a chance visitor.

Thrips minutissimus (Linnaeus 1758). A single female. Females are found in oak flowers.

Very little has been done on fogging work with thrips so these results are of particular interest. Information on thrips is difficult to find and there does not appear to be a national recording scheme. All six Phlaeothripidae species recorded here are listed in Keith Alexander's checklist of saproxylic invertebrates (Alexander, 2002). Thrips species are listed on the NBN Gateway website, but the distribution maps for Phlaeothripidae appear blank or virtually so. There are single records for *Hoplothrips fungi* (Sussex), *H. pedicularius* (Somerset), and *Hoplothrips semicaecus* (Worcestershire). The latter was a female found in an interception trap placed against an old hollow pear tree in July 2014 at Carpenter's Farm, Berrow, SO777339 and reported by myself (determiner Dom Collins). There is clearly gross under-reporting. It is hoped that more amateur naturalists will become interested in this only mildly challenging group of insects; the rewards could be great.

Acknowledgements

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References

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Figure captions

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