

Introduction & Key to Thrips

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Western flower thrips (David Cappaert, Bugwood.org)

Thrips are relatively small, 0.5 to 5 mm long (most are 1 to 2 mm). Wings may be present or absent; when present, wings are unique among insects because they are narrow, with few or no veins, fringed with long hairs that hence give the order's name, Thysanoptera. Mouthparts are piercing-sucking with only a left mandible. Antennae are short (four to nine segments). The tarsi have one or two segments with one or two claws and are bladderlike at the end. They can reproduce sexually or asexually, and females are the most common sex found. Thrips are divided into two suborders, Terebrantia and Tubulifera, that differ in the shape of the last abdominal segment and the development of the ovipositor. The

Terebrantia have the last abdominal segment more or less conical or rounded, and the female almost always has a well-developed, saw-like ovipositor. The Tubulifera have the last abdominal segment tubular, and the females lack an ovipositor. The families of thrips are separated largely by the characters of the antennae, particularly the number of antennal segments and the nature of the sensoria on the third and fourth segments. A total of 11 species belonging to two families of two suborders (Phlaeothripidae-Tubulifera, Thripidae-Terebrantia) are included here.

The metamorphosis of thrips is somewhat intermediate between simple and complete. The first two instars are called larvae. In the suborder Terebrantia, these are followed by the third and fourth instars which are inactive, do not feed, and have external wing pads. The third instar is called a prepupa and the fourth the pupa, and are often spent on the ground in soil or litter. In the suborder Tubulifera, the third and fourth instars are prepupae and the fifth pupa. The two sexes of thrips are similar in appearance, but the females are usually larger in size and lighter in color. The thrips with an ovipositor usually lay their eggs in plant tissue; those without an ovipositor lay their eggs in crevices or under bark. Thrips run, crawl, and jump and can move rapidly. Flight is the major method of active dispersal; however, they can be aerially dispersed by drifting in wind currents for many miles.

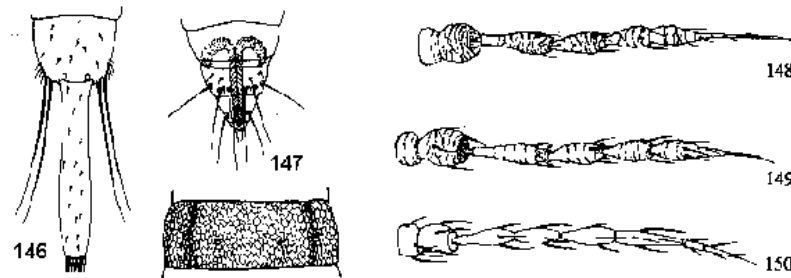
A great number of thrips are plant feeders. Both larvae and adults feed on flowers, leaves, twigs, or buds, using their piercing-sucking mouthparts, causing structural abnormalities of foliage in the form of leaf malformation (distorted, dwarfed, and matted), leaf fold, leaf roll, leaf blisters, and sometimes defoliation; causing discoloration of petals, deformation, or scarring of flowers. A few species feed on fungus spores, a few species are predaceous on other small arthropods (mites, thrips, and aphids) and a few species may bite man. A very important aspect of thrips is the transmission of virus diseases. Tomato spotted wilt virus, is transmitted by the western flower thrips, tobacco thrips, and onion thrips.

Key to eleven species of thrips found in greenhouses

1. Last abdominal segment (X) tubelike (Fig. 145); female without sawlike ovipositor; body blackish brown, antennae yellow except for light brown terminal segment; on Ficus (Phlaeothripidae).....**Cuban laurel thrips.**

1. Last abdominal segment (X) rarely tubelike (Fig. 146); female always with saw-like ovipositor (Thripidae).....**2**

2. Body strongly sclerotized, sculptured or reticulated (Fig. 147); antennal segments III and IV usually strongly vasiform and/or antennal style (segments VII to VIII) extremely long (Figs. 148, 149), at least two-thirds as long as VI.....**3**



Figures 146 - 150 (NC State Extension)

2.' Body usually with transverse sculpture; antennal style shorter.....**4**

3. Forewings with fringe cilia straight; median dorsal abdominal setae closely set; sense cones on antennal segments III and IV simple (Fig. 148); legs entirely pale yellow.....**Greenhouse thrips.**

3.' Forewings with fringe cilia predominately wavy (Fig. 155); median dorsal setae placed fairly far apart; sense cones on antennal segments III and IV forked (Figs. 149, 152); legs yellow except mid and hind femora, which are brown.....**Banded greenhouse thrips.**

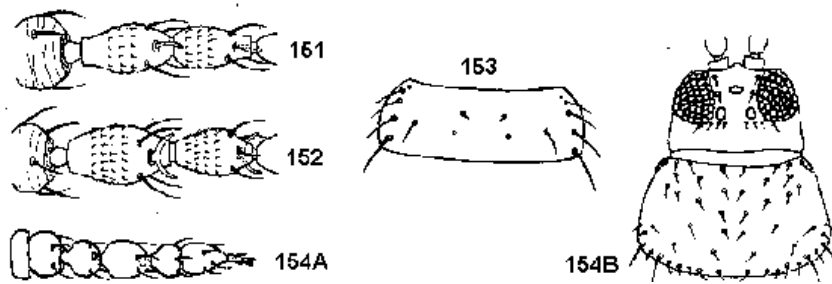
3.ʹ Forewings with fringe cilia wavy (Fig. 155); median dorsal setae closely set; sense cones on antennal segments III and IV simple (Figs. 150, 151); head and pronotum with wrinkles inside reticulations; legs brown with base of femora, apical one third to half of tibiae and all tarsi yellow.....**Echinothrips americanus.**

4. Antennae each seven segmented (Fig. 154A).....**5**

4.' Antennae each eight segmented.....**6**

5. Abdomen uniformly pale yellow, body without any brown markings; posterior margins of abdominal tergites II to VII without conical teeth; abdominal tergite II with four lateral setae (Fig. 153).....**Melon thrips.**

5.' Abdomen uniformly brown; posterior margins of abdominal tergites II to VII with conical teeth; abdominal tergite II with 0 to 3 lateral setae; head narrow, prothorax as in Fig. 154B.....**Composite thrips.**



Figures 151 - 154B (NC State Extension)

6. Pronotum with well-developed anteromarginal, anteroangular setae, and 2 pairs of posteroangular setae; head with 3 pairs of ocellar setae (Fig. 155); coloration of antennae, body and forewings various; abdominal sternites lack accessory setae (*Frankliniella* spp.).....7

6. Pronotum with only 2 pairs of well developed posteroangular setae; head with 2 pairs of ocellar setae (Fig. 156); antennae brown except III yellow, body brown, forewings brown, abdominal sternites II to VII with accessory setae.....**Gladiolus thrips**.

7. Macropterous; abdomen either pale yellow with brown patches on the meson, or entirely dark brown.....8

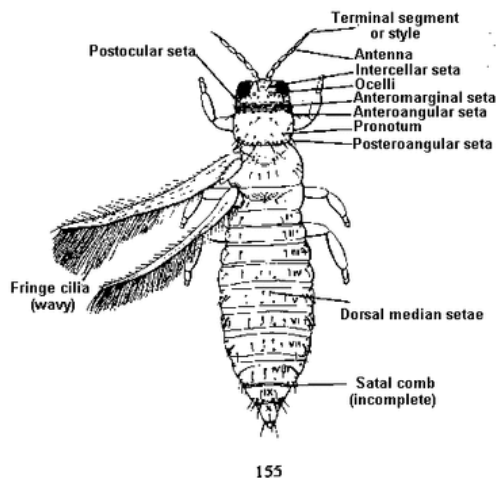


Figure 155 (NC State Extension)

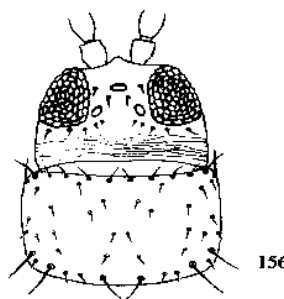


Figure 156 (NC State Extension)

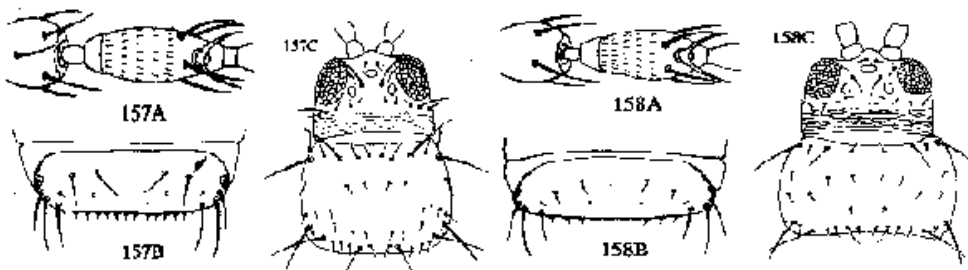
7. Brachypterous; color generally dark brown to lighter brown especially the thorax and head.....**Tobacco thrips** (in part).

8. Pedicel of antennal segment III straight without thickened middle ring (Figs. 157A, 158A); comb on posterior margin of abdominal tergite VIII complete or incomplete (Figs. 157B, 158B).....9

8. Pedicel of antennal segment III with a distinctly thickened middle ring which in profile appears as angulations (Figs. 159A, 160A); setal comb on posterior margin of abdominal tergite VIII incomplete.....**10**

9. Comb on posterior margin of abdominal tergite VIII complete (Fig. 157B); anteromarginal and anteroangular setae on pronotum of similar length; postocular setae longer, as stout as the interocellar setae (Fig. 157C); color various.....**Western flower thrips.**

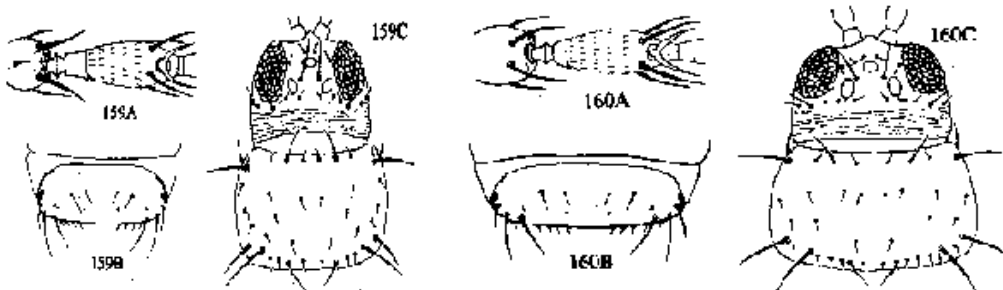
9. Setal comb on posterior margin of abdominal tergite VIII incomplete (Fig. 158B); anteroangular setae usually longer than anteromarginal setae on pronotum; postocular setae shorter and more slender than the interocellar pair; predominately brown (Fig. 158C).....**Tobacco thrips.**



Figures 157A - 158C

10. Pedicel of antennal III segment with distal and basal parts equally diverging; pair of dorsal setae on antennal segment II not enlarged nor on projections (Fig. 159A); head and abdominal tergite VIII as in Fig. 159 B, C).....**Flower thrips.**

10. Pedicel of antennal segment III strongly angulated, 12 to 14 m wide with profile of apex and base diverging strongly; pair of dorsal setae on antennal segment II enlarged, on projections (Fig. 154A); head and abdominal tergite VIII as in Fig. 160B, C).....**Florida flower thrips.**



Figures 159A - 160C (NC State Extension)

