Key to the Most Common Species of Thrips Found in Early-Season Blueberry Fields in Florida and Southern Georgia[1]

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Flower thrips are some of the most important pests of early-season blueberries. In 1998, 40% of the losses in blueberry production in Georgia were attributed to flower thrips (USDA 1999). Thrips damage blueberries by oviposition and feeding. Females lay their eggs inside the ovary of the flowers and as the larvae emerge, they leave scars on the ovaries. Mobile stages feed on the flower damaging the cells of superficial layers. This damage is magnified when the ovaries increase their size to form fruits. Scars become more evident during fruit formation, therefore diminishing fruit quality. Under extremely high thrips pressure, the damage to the flowers is so severe that flower abortion may occur (Arèvalo-Rodriguez 2006). We have identified six species of flower thrips that were collected in early-season blueberries in Florida and southern Georgia during the flowering period of 2004, 2005 and 2006. Samples were collected by three methods: 1) white sticky boards deployed inside the bush canopy, 2) white sticky boards located 30 cm above the canopy of the bushes, and 3) thrips collected from flower-clusters of the blueberry bushes. Samples were collected in Florida from Sebring, Haines City, Inverness, and two farms in Gainesville. In Georgia, samples were collected from two farms in Alma in Bacon Co.

At each site we randomly selected 100 specimens per week, for four weeks in each year, during the flowering period of blueberries. We observed approximately 7,000 specimens. Using the information published (Mound and Marullo 1996, Moritz et al. 2001, Moritz et al. 2004, Edwards Unpublished data) and from personal observations we identified the species assemblage. Based on these identification keys and personal experiences, we have compiled a dichotomus key to aid in the identification of flower thrips in early-season blueberries in Florida and southern Georgia. To use this key, it is necessary to slide-mount the thrips specimens for observation under a compound microscope. For slide mounting we used CMC-10 media (Masters Chemical Company, Inc. Elk Grove, IL). This identification key incorporates illustrations of specific morphological features that will facilitate their recognition. The first couplet serves to differentiate the two genera found on early-season blueberry fields, *Frankliniella* and *Thrips*.

This species assemblage is dynamic. In studies conducted on various blueberry farms in Florida from 2006 – 2010, two other species of thrips, both predatory, were often encountered in low numbers. These included a species of Franklinothrips and *Haplothrips gramminis* Hood (Rhodes and Liburd, 2011, Rhodes et al. 2012). *Franklinothrips* sp. are pale colored and smaller than flower thrips. They differ from the two genera of flower thrips in having several rows of evenly speaced, short pronotal setae and a less dense complete first-vein setal-row in the forewing. *Haplothrips gramminis* can easily be identified by its large

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size, reddish-brown coloration, and feather-like wings that lack veins. Other species are also occasionally encountered, so, the Small Fruit and Vegetable IPM Laboratory at the University of Florida will be glad to assist you with your identification if you find unusual flower thrips species in your blueberries.

Identification Key to the Flower Thrips of Blueberries in Florida and Georgia

1. Four or five pairs of elongated pronotal setae (Figure 1). Abdominal sternite VII has no discal setae. The first-vein setal-row in the forewing is complete and the setae are uniformly spaced (Figure 2) . . . .(*Frankliniella* spp.) 2

1'. Three or fewer pairs of elongated pronotal setae. Abdominal sternite VII has discal setae. The first-vein setal-row in the forewing is incomplete (Figure 3) . . . .(*Thrips* spp.) 5

2. The postero-marginal comb of microtrichia is complete in the middle. The microtrichia are long and irregular and their bases are broadly tirangular (Figure 4). Major post-ocular seta is more than 1/2 of the length of ocellar seta III, and usually extending clearly to the outside of the head (Figure 5) . . . . *F. occidentalis*

2'. With a different combination of characters from the ones described above 3

3. Base of the first antennomere restricted (Figure 6). The reticulation on the metanotum media area is equiangular. No post-ocular seta I. Wings might be absent in the adult stage . . . .*F. fusca*

3'. Base of the first antennomere is swollen (Figures 7 and 8). The metanotum has no equiangular reticulations, but irregular longitudinal ones. Post-ocular seta I is present and adults always have wings 4

4. Base of the first antennomere is swollen and the edges are more or less sharp (Figure 7). It presents two well developed and sclerotised setae in the second antennal segment. This species is the most abundant in Florida, and very rarely found in Georgia . . . . *F. bispinosa*

4'. Base of the first antennomere is swollen but the edges are not sharp. Setae are less developed and less sclerotized on antennal segment II than in *F. bipinosa* (Figure 8). This species is very common in blueberry plantings in Georgia . . . . *F. tritici*

5. Seven or eight antennal segments. The postero-marginal microtrichia are short and irregular in length, they appeared to have their bases fused or more than one microtrichia per base (Figure 9). Sternite V has between 10 and 13 discal setae (Figure 10). Has no equiangular reticulation on the metanotum median area . . . . *T. hawaiiensis*

5'. Always with eight antennal segments. The postero-marginal microtrichia are long slender and irregular. Their bases are broad and clearly separated at the base (Figure 11). Sternite V has between 3 and 9 discal setae (Figure 12). The metanotum median area presents some equiangular reticulation . . . . *T. pini*

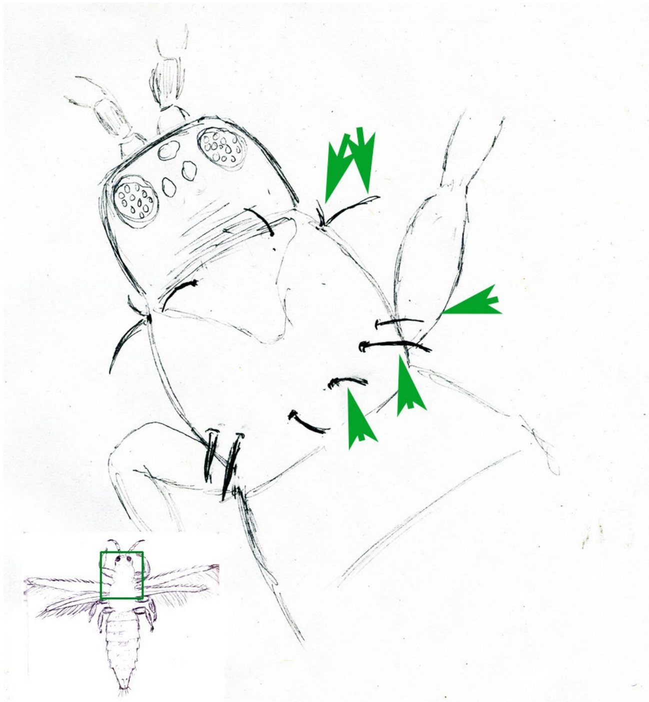


Figure 1.

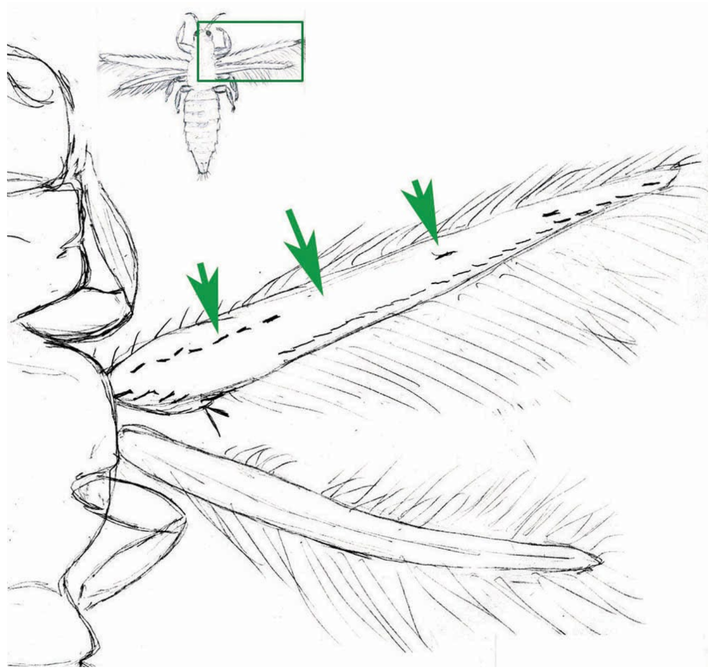


Figure 3.

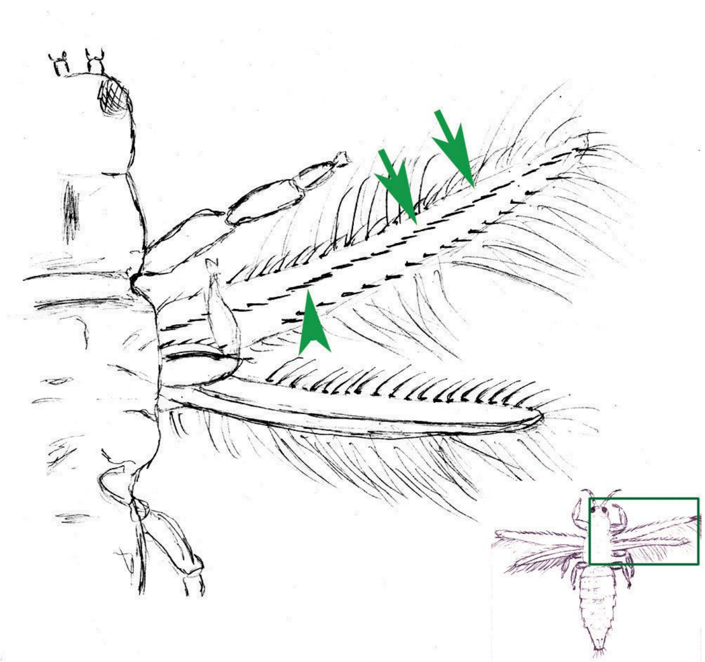
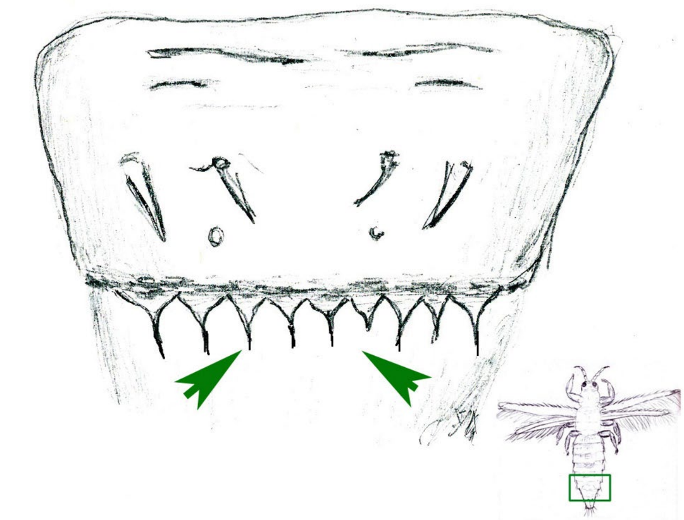


Figure 2.



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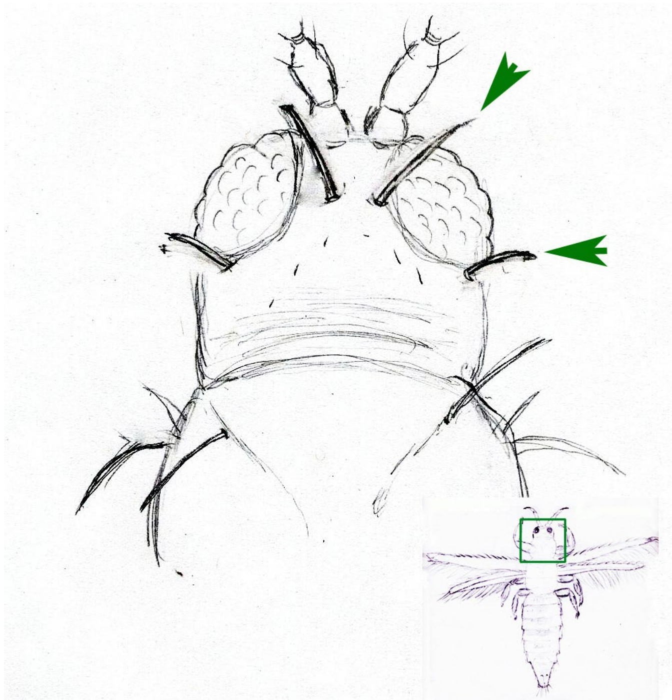
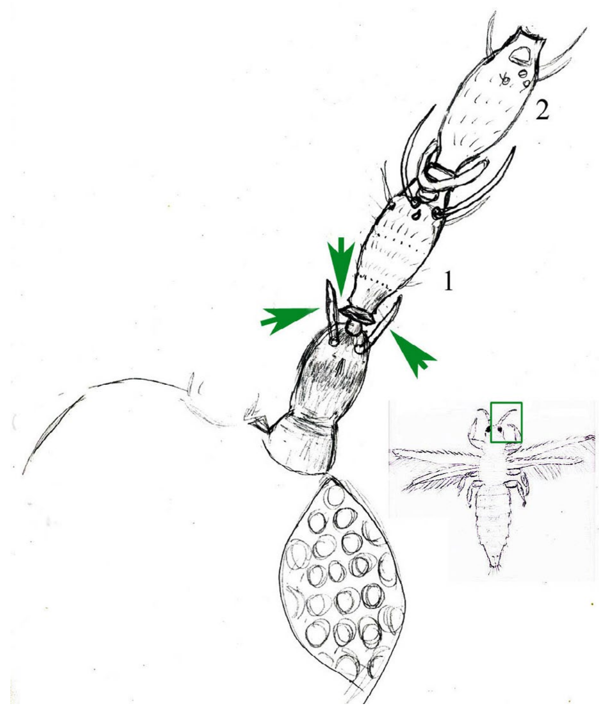


Figure 5.



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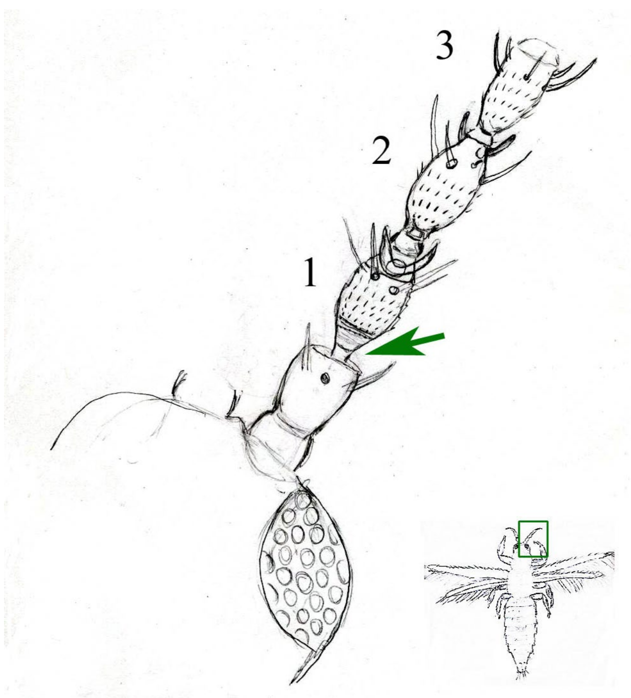

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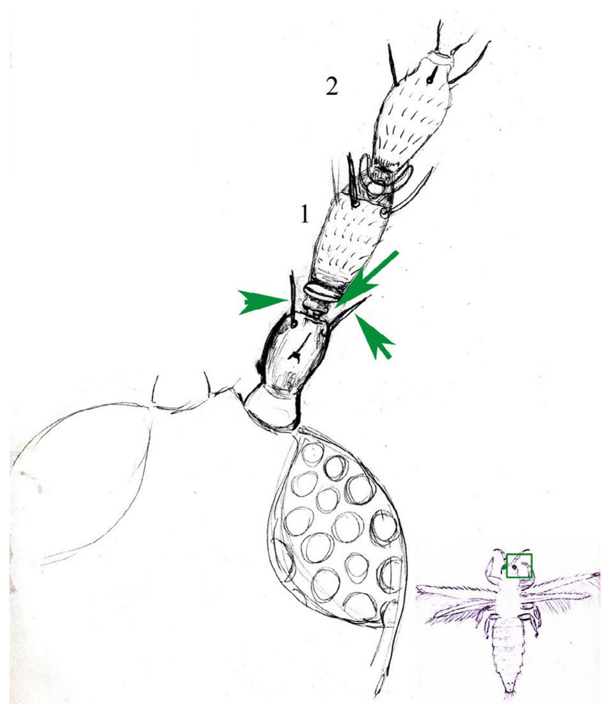

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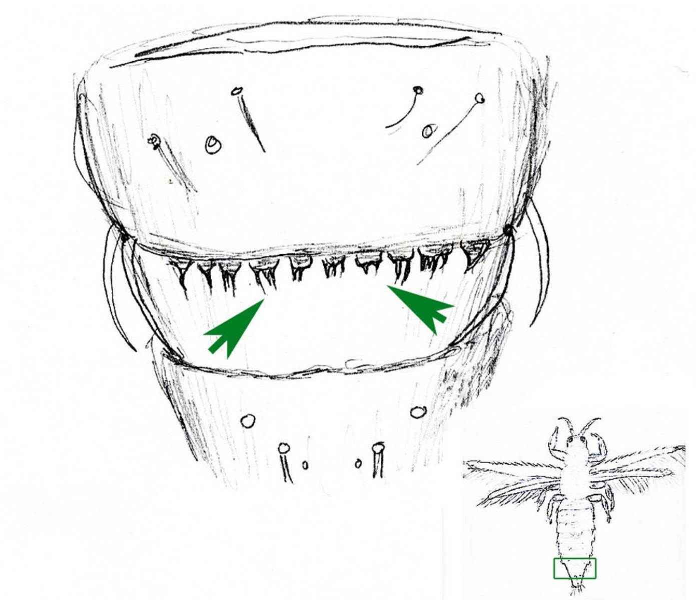

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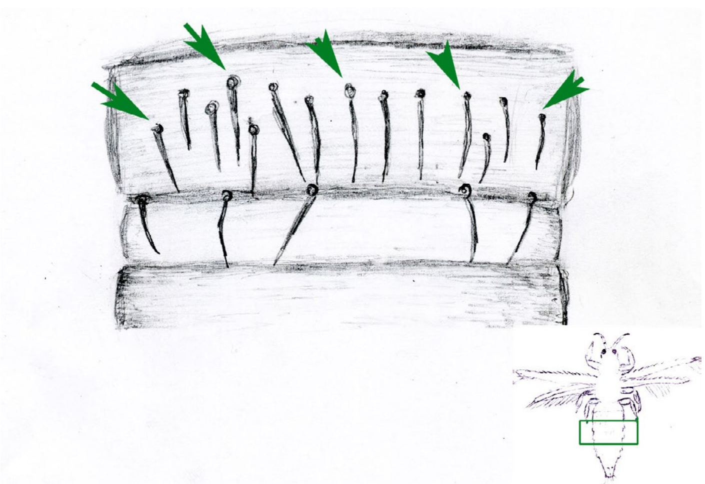

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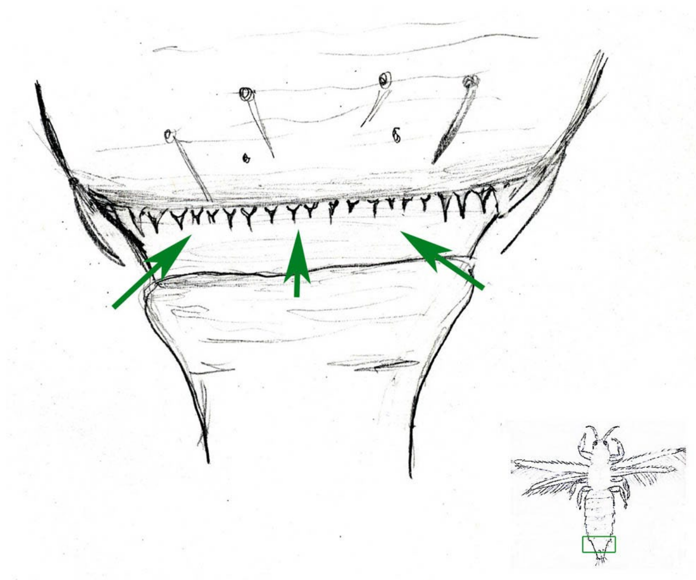

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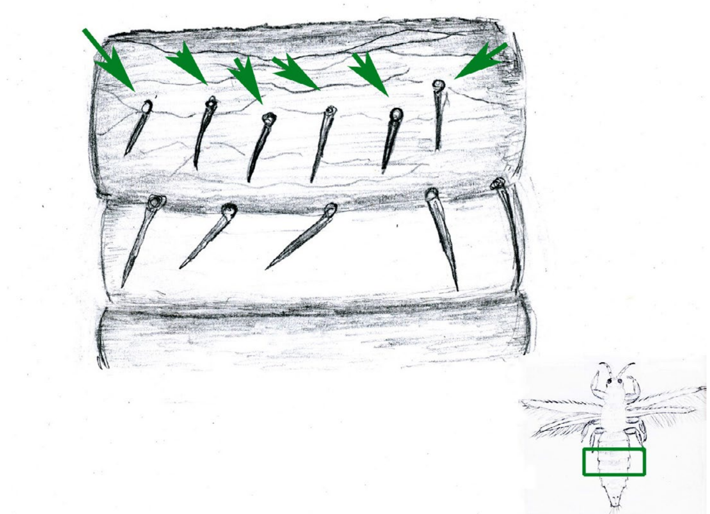

Figure 12.

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