

NOTES ON THE AEOLOTHRIPIDAE

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I take a great deal of pleasure in recording certain notes on the order **Thysanoptera** in the Proceedings of the Entomological Society of British Columbia. This group has been sadly neglected in Canada, very few records being obtainable as to the species present, with their distribution.

The family **Aeolothripidae** represents the most generalized group in the **Thysanoptera**, and for that reason I have attempted to bring together such information as I have been able to gather from literature and from the study of certain specimens, with a view towards enlisting your support and introducing to your notice this important group of insects, which has not as yet received any attention at the hands of our entomologists.

This order of insects, commonly known as Thrips, has been referred to the **Physopoda** by various authors. The name **Thysanoptera**, however, has priority over **Physoda**, and therefore should be used to cover this group. The order is divided into two sub-orders—**Terebrantia** and **Tubulifera**, the former having females with a saw-like ovipositor arising from the 8th and 9th abdominal segments, and the latter, with females without an ovipositor, the terminal segments of the abdomen being drawn out into the form of a tube.

According to Hood (1915), the sub-order **Terebrantia** is divided into two super-families—**Aeolothripidea** and **Thripidea**—the ovipositor of the former being up-curved and of the latter down-curved. The family **Aeolothripidae**, which will receive our attention in this paper, is contained within the former super-family, and it is divided into sub-families and genera in the following manner.

Order	- - - -	Thysanoptera	Haliday.
Sub-order	- - - -	Terebrantia	Haliday.
Super-family	- - - -	Aeolothripidea	Hood.
Family	- - - -	Aeolothripidae	Uzel.

KEY TO SUB-FAMILIES

- A. Labial palpi with fewer segments than maxillary palpi; antennal segments often freely movable.
 - B. Maxillary palpi 7 or 8 segmented; labial palpi 3-5 segmented.
 - Orothripinae** Bagnall.
 - BB. Maxillary palpi 3-segmented; labial palpi 2-segmented.
 - Melanothripinae** Bagnall.
- AA. Labial palpi 4-segmented; maxillary palpi 3-segmented; distal segments always closely united.....**Aeolothripinae** Bagnall.

KEY TO THE GENERA

Orothripinae Bagnall

- a. Labial palpi 5-segmented; head wider than long.
 - b. Terminal antennal segments more or less closely united.
 - c. Antennae moderately slender, inserted very closely together. segments 7-9 more or less compactly united; maxillary palpi clearly 8-segmented; posterior margin of prothorax without strong spine; fore-tibiae unarmed; fore-wings expanded apically, where they are twice as broad as near base.
 - Stomatothrips** Hood.
 - cc. Antennal segments 5-9 closely united.....**Desmothrips** Hood.
 - bb. All antennal segments freely movable.
 - d. Maxillary palpi 5-segmented*; posterior margin of prothorax bordered with several quite strong spines on either side; all tibiae armed; fore-wings broader in distal third, narrower near base.....**Orothrips** Moulton.
- aa. Labial palpi 3 or 4-segmented, head longer than wide.
 - e. Antennal segments 8 and 9 closely joined and together, somewhat shorter than segment 7; maxillary palpi 8-segmented; fore-wings very slightly narrowed before the middle.....**Erythrothrips** Moulton.

Melanothripinae Bagnall

- a. Antennae strongly geniculate, with tip of second segment strongly produced inwardly beyond insertion of third, all segments free; fore-wing coloured uniformly pale brown.....**Ankothrips** Crawford.
- aa.**Melanothrips**.

Aeolothripinae Bagnall

- a. Head small, broader than long, rounded uniformly anteriorly, distinctly retracted into prothorax, forming a compact elliptical mass with prothorax; fore-wings narrow with two developed longitudinal veins but without cross veins.....**Franklinothrips** Back.
- aa. Head and prothorax separated; wings with cross-wings.
 - b. Antennal segments 3 and 4 elongated, the fourth being three times as long as the succeeding segments combined.
 - Mitrothrips** Trybom.

* Moulton (U.S.D.A. Tech. ser. No. 12, Pt. 3) in generic key of **Orothrips** gives labial palpi "four-segmented," but in the description of the genus and in the species **kelloggii** gives labial palpi "five-segmented." No specimen of **kelloggii** has been available for study, but in a specimen of its variety **yosemitei** the labial palpi are apparently four-segmented, but by careful lighting adjustment a small fifth segment appears to be present.

With **Erythrothrips** (U.S.D.A. Tech. ser. No. 21) Moulton in generic description gives labial palpi with three segments, but in the description of the species **arizonae** labial palpi four-segmented.

bb. Fourth antennal segment less than three times as long as combined succeeding segments.

c. Antennal segment 7 longer than 8 and 9 together.

Rhipidothrips.

cc. Terminal four antennal segments closely jointed, shorter or slightly longer than the fifth.....**Aeolothrips** Haliday.

KEY TO THE SPECIES

Genus **Stomatothrips** Hood

S. flavus Hood (Proc. Biol. Soc. Wash., Vol. 25, 1912, p. 64).
Female—Length 1.4-1.7 mm.; colour brownish-yellow; antennal segments 1-4 pale yellowish white, the remainder of antenna black; tibiae shaded with black.

Head about one and one-fourth times as wide as long; wings long; fore-wings expanded apically coloured pale brown, with two white cross bands, one of these being a narrow one at basal seventh and the other a slightly wider one at apical seventh; intermediate brown area somewhat paler at middle. Abdominal segments 1, 2, 3 whitish on posterior margin; segments 9 and 10 tinged with yellow or white.

Genus **Desmothrips** Hood

D. australis Bagnall. Described by Bagnall under the generic name of **Orothrips**. Hood (Proc. Biol. Soc. Wash., Vol. 28, 1915, p. 57) refers this species to **Desmothrips**.

Genus **Orothrips** Moulton

O. kelloggii Moulton (U.S.D.A. Bur. Ent. Tech., ser. 12, Pt. 3, 1907). Length 1.8 mm.; colour dark brown, sometimes light brown; prothorax and abdomen shaded with orange. Antennae uniform dark brown except tip of segment 2, which is light brown, and base of 3, which is yellow; antennal segments 3 and 4 with elongate light coloured membranous sense areas on outer side.

O. kelloggii yosemitii Moulton (U.S.D.A. Bur. Ent. Tech., ser. 21, 1911). Length 1.7 mm.; colour brown to blackish-brown; antennae, segment 2 yellow, dark-brown at base, segment 3 yellow but brown in outer half; sense areas on segments 3 and 4 ovoid.

Genus **Erythrothrips** Moulton

E. arizona Moulton (U.S.D.A. Bur. Ent. Tech., ser. 21, 1911). Length of body 2.6 mm.; colour dark brown; antennae brown unicolorous with body except basal part of segment 3, which is light brown. Long slender sense areas on segments 3 and 4. Fore-wings clear white with longitudinal bands, dark brown, extending from base, including scale, to tip.

Genus **Ankothrips** Crawford

A. robustus Crawford (Pomona Journ. Ent., Vol. 1, No. 4, 1909). Length of body 1.4 mm.; colour dark brown to black; antennae brown unicolorous with body; fore-wings light brown.

Genus **Franklinothrips** Back

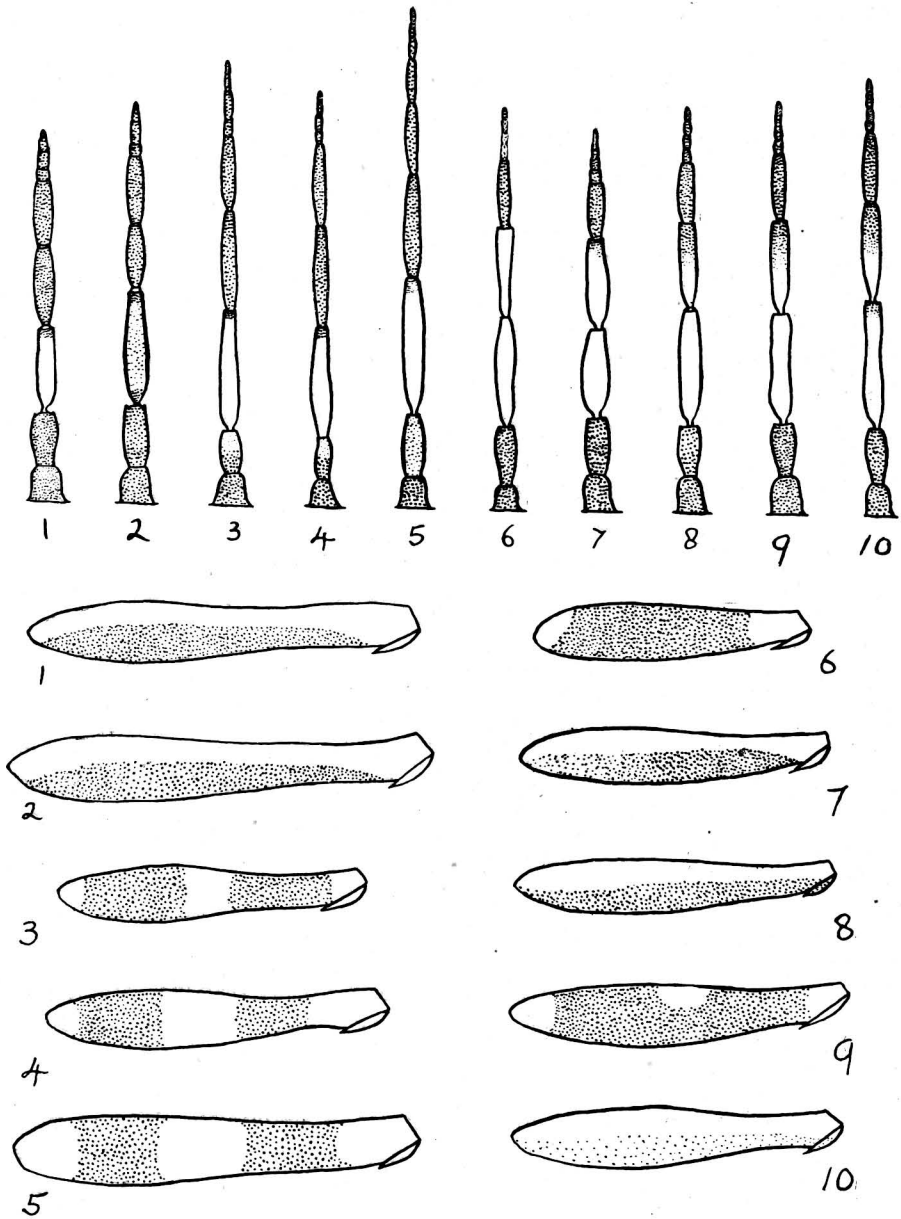
F. vespiformis Crawford (Pomona Journ. Ent., Vol. 1, 1909). Length of body 1.6 mm.; colour dark brown with first two and part of third abdominal segments light; antennal segments 1-3 clear pale yellow; fore-wings shaded brown, with a small clear area near base and another almost at the tip and a larger clear area near centre.

F. tenuicornis Hood (Ent. News, Vol. 26, 1915). Length of body 1.8 mm.; colour blackish-brown; antennal segments 1-4 clear pale yellow, remainder dark blackish-brown.

Genus **Aeolothrips** Haliday

- a. Antennal segment 4 uniformly similar in colour to segments 5-9.
- b. Antennal segment 2 wholly concolorous with segment 1; fore-wings clear white with dark brown longitudinal band covering posterior half near base to near tip. Length of body 1.6 mm.; antennal segment 3 lemon-yellow shaded light brown at tip.
kuwanaii Moulton.
- bb. Length of body 2.4 mm.; antennal segment 3 light brown with a touch of purple pigment at the base.
kuwanaii var. **robustus** Moulton.
- bbb. Antennal segment 2 lighter in colour, wholly or in part, to segment 1; fore-wings with dark cross bands reaching from anterior margin of wing to the posterior margin.
- c. Segments 2 and 3 of abdomen white; length of body 1.9 mm.; antennal segment 3 very pale yellowish-white except brown band around apex, antennal segment 2 brown at base, fading to light yellowish at apex.....**bicolor** Hinds.
- cc. Abdominal segments more or less unicolorous, brown.
- d. Last four segments of antennae equal to the fifth alone; segment 3 one and one-third times as long as 1 and 2 together; length of body 1.6 mm.; antennae brown except tip of 2 and all but extreme tip of 3, which are nearly white, remainder concolorous.....**fasciatus** Linn.
- dd. Last four segments of antennae one and one-fourth times as long as segment 5; segment 3 one and one-half times as long as 1 and 2 together; length of body 2.1 mm.; antennal segment 2 light brown, 3 lemon-yellow shaded light brown at the tip, remaining segments concolorous with rest of the body.....**nasturtii** Jones.

- aa. Antennal segment 4 white or yellow or partially shaded brown.
- e. First few abdominal segments yellow in colour.
- ee. Abdominal segments unicolorous or first few segments only slightly lighter to the prevailing colour.
- f. Antennal segment 4 wholly white or yellow or shaded brown only at the extreme apex.
- g. Fore-wing with brown area along the greater part of the costal margin.....**tiliae** Bagnall.
- gg. Fore-wing with longitudinal black band along posterior margin, which broadens in the second fifth to nearly the costal margin. Length of body 1.5 mm.; colour blackish-brown; head not transversely striate; antennal segments 6-9 together equal to segment 5.....**crassus** Hood.
- ff. Antennal segment 4 with basal half white or yellow, apical half shaded brown or black.
- h. Antennal segment 3 more or yellowish-white throughout. Length of body 1.5 mm.; colour blackish-brown; antennal segment 4 pale yellowish-white in basal half; ocelli more than twice the diameter of facets of eyes; antennal segments 5-9 together very slightly longer than 3, the last four segments together nearly as long as 5; fore-wings basal fifth and apex white, remainder dark brown-grey, except a white spot occupying costal half of middle fifth.....**annectans** Hood.
- hh. Antennal segment 3 with extreme tip brown or black.
- j. Head deeply and closely transversely striate; length of body 1.5 mm.; colour dark blackish-brown; antennal segment 3 yellowish-white, becoming dark blackish-brown at extreme apex; 4 yellowish-white in basal half or third, except dark pedicel, remainder of antenna blackish-brown; fore-wings with posterior border occupied by a longitudinal black band which extends from extreme base, across scale, to the tip of wing, with a tendency to form a transverse band just beyond the basal third.
vittipennis Hood.
- jj. Head, dorsal surface with minute cross striations; length of body 1.7 mm.; colour



AEOLOTHRIPS SPP.

Diagrammatic outlines, shaded to show specific characters, adapted from original descriptions, of the female antenna and the wing of *Aeolothrips*: (1) *kuwanaii*, (2) *kuwanaii robustus*, (3) *bicolor*, (4) *fasciatus*, (5) *nasturtii*, (6) *tiliae*, (7) *crassus*, (8) *vittipennis*, (9) *annectans*, (10) *floridensis*.

dark brown; antennal segment 3 and basal half of 4 yellow, remainder brown, with the very tip of 3 brown; fore-wings with posterior half shaded, but not very dark brown, longitudinally.....**floridensis** Watson.

Ae. vittatus, tibialis, albocinctus, melaleucus and **versicolor** are not contained in the above key. In the keys on the genus **Aeolothrips** to which I have had reference (Jones, U.S.D.A. Bur. Ent. Tech. ser. 23, Pt. I., 1912, and Watson, Ent. News, Vol. 27, 1916) the leading characters refer to the wing. In some specimens in my possession, collected in British Columbia, brachyterous forms only occur at present. Hence for my own satisfaction I have collated such information relating to the various species from the original descriptions, using other characters than the wings as the basis.

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