Melanthripidae

Australian fauna

Link to genera and species of Australian Melanthripidae

Two genera and 13 species of Melanthripidae are known from Australia, and all the species are endemic to this continent.

Biology

All species of Melanthripidae seem to be phytophagous, feeding and breeding within flowers, and they probably pupate at soil level within a silken cocoon. Although there is limited reliable data, many of these species seem likely to be both host specific and univoltine. Despite some species being locally abundant in Europe or in North America, there are few studies on their biology and life history (de Borbon, 2009).

Geographic distribution

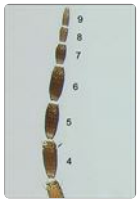
Cranothrips and *Dorythrips* are both restricted to the Southern hemisphere, and both have remarkably disjunct distributions. *Cranothrips* has nine described species in Australia and one in South Africa (Mound & Marullo, 1998), and *Dorythrips* has two described species in Australia and four in western South America (de Borbon, 2009). *Ankothrips* also has a remarkable distribution, with seven species in western North America (Mound *et al.*, 2019), four in southern Europe, and one in South Africa. In contrast, *Melanthrips* is essentially Palearctic, although it seems to be particularly diverse in the southern parts of that region in countries of the eastern Mediterranean. In addition, two *Melanthrips* species are described from South Africa, two from India, and two from western USA (Mound *et al.*, 2019).

Recognition

The antennae of Melanthripidae species are nine segmented, with the distal segments fully distinct from each other and bearing many microtrichia, and the sensoria on segments III and IV transverse to oblique. These sensoria vary considerably in width between species, and in Melanthrips tortus from Morocco they are unusually long and extend to the midpoint of their segment (zur Strassen, 2003). Most species are large and robust, with the head and thorax bearing several pairs of long setae. However, in Australia some species of Cranothrips are small and pale with very short setae. The tentorial bridge in the head is well-developed with stout anterior arms, on the metanotum the median setae arise close to the posterior margin, the fore wings are broad with several cross-veins and the apex rounded, and on the posterior margin of the seventh sternite in females there is a pair of lobes each with two setae as in females of Merothripidae. In the members of three of the four genera the mesothoracic spiracular area is prolonged dorso-ventrally, but this is not so in any species of *Dorythrips*, all of which have a sub-circular spiracular area.

Cranothrips poultoni, female

Dorythrips chilensis, female



Cranothrips poultoni, antennal segments

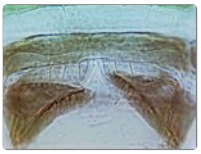
Cranothrips poultoni, antennal segments III-IV

Dorythrips chilensis, head & pronotum

Cranothrips poultoni, head and thorax

Cranothrips sititor, head and thorax

Ankothrips niezabitowski, head & pronotum



Ankothrips niezabitowski, female sternite VII

Cranothrips poultoni, tergites VIII-X

Genus and species diversity

The Melanthripidae comprises four genera and nearly 70 species, with three further genera known only from fossils (ThripsWiki, 2020). The major genus, *Melanthrips*, comprises 36 species, and zur Strassen (2003) provided a key to 24 of these. Of the other genera, *Dorythrips* includes five species, *Cranothrips* 10 species, and *Ankothrips* 12 species.

Family relationships

The genera of Melanthripidae were considered for many years to be members of the Aeolothripidae, although placed in a separate subfamily, Melanthripinae. Females of species in these genera all have a pair of lobes on the posterior margin of the seventh sternite and an associated two pairs of setae. These lobes and setae are also found in females of the Merothripidae, and they are interpreted as representing the ancestral eighth sternite. In contrast, all species of Aeolothripidae have no trace of the lobes. The family Melanthripidae presumably represents an early branching of the Thysanoptera lineage, and adults of this family also retain some other ancestral character states, including a well-developed pair of trichobothria on the tenth tergite, transverse sensoria on the antennal segments, and a well developed tentorium in the head. Bhatti (2006) placed the Melanthripidae in a separate superfamily, Melanthripoidea.

Thysanoptera systematics

The classification adopted here is a compromise between practicality and the ideal of a classification based on phylogenetic relationships. The two sub-orders, Terebrantia and Tubulifera, are probably sister-groups (Buckman *et al*., 2013), but relationships among the eight families of Terebrantia remain far from clear (and there are also five families based on fossils - see ThripsWiki 2020). A radically different classification was proposed by Bhatti (1994, 1998, 2006) that recognised two Orders, 10 superfamilies and 40 families. This classification is based on autapomorphies rather than synapomorphies, and thus is essentially phenetic rather than phylogenetic.

References

Bhatti JS (1994) Phylogenetic relationships among Thysanoptera (Insecta) with particular reference to the families of the Order Tubulifera. *Zoology (Journal of Pure and Applied Zoology)* **4** (1993): 93–130.

Bhatti JS (1998) New structural features in the Order Tubulifera (Insecta). 1. Amalgamation of labro-maxillary complex with cranium and other cephalic structures. *Zoology (Journal of Pure and Applied Zoology)* **5**: 147–176.

Bhatti JS (2006) The classification of Terebrantia (Insecta) into families. *Oriental Insects* **40**: 339–375.

de Borbon, CM (2009) A redefinition of *Dorythrips* (Thysanoptera: Melanthripidae) with a description of a new species from Argentina. *Zootaxa* **2121**: 17–26.

Buckman RS, Mound LA & Whiting MF (2013) Phylogeny of thrips (Insecta: Thysanoptera) based on five molecular loci. *Systematic Entomology* **38**: 123–133.

Mound L, Hoddle MS & Hastings A (2019) Thysanoptera Californica. *An identification and information system to thrips in California*. Lucidcentral.org, Identic Pty Ltd, Queensland, Australia.
https://keys.lucidcentral.org/keys/v3/thrips_of_california_2019/

Mound LA & Marullo R (1998) Biology and identification of Aeolothripidae (Thysanoptera) in Australia. *Invertebrate Taxonomy* 12: 929–950.

ThripsWiki (2020) *ThripsWiki - providing information on the World's thrips*. Available from:
http://thrips.info/wiki/Main_Page [accessed 29.x.2019].

zur Strassen (2003) Die terebranten Thysanopteren Europas und des Mittelmeer-Gebietes. *Die Tierwelt Deutschlands* **74**: 1–271.