

Frankliniella occidentalis



Distinguishing features

Female macroptera. Body variable from yellow to brown, but widespread pest strain usually mainly dark yellow with brown areas medially on each tergite; antennal segments II & VI–VIII brown, III–V yellow with apices variably brown; legs mainly yellow washed with brown; fore wings pale with dark setae. Antennae 8-segmented, III–IV with forked sense cone, VIII longer than VII. Head wider than long; 3 pairs of ocellar setae present, pair III longer than distance between external margins of hind ocelli, arising on anterior margins of ocellar triangle; postocular setae pair I present, pair IV longer than distance between hind ocelli. Pronotum with 5 pairs of major setae; anteromarginal setae slightly shorter than anteroangulars, one pair of minor setae present medially between posteromarginal submedian setae. Metanotum with 2 pairs of setae at anterior margin, campaniform sensilla present. Fore wing with 2 complete rows of veinal setae. Tergites V–VIII with paired lateral ctenidia, ctenidia sometimes weakly developed on IV, on VIII anterolateral to spiracle; posteromarginal comb on VIII complete, with short slender microtrichia arising from triangular bases. Sternites III–VII without discal setae.

Male macroptera. Similar to female but smaller and paler; tergite VIII without marginal comb; IX with median pair of dorsal setae shorter than lateral pair, posterolateral setae stout in larger males; sternites III–VII with transverse pore plate.



Dark female [U.S.A.]



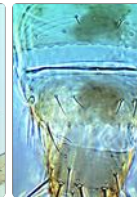
Dark form



Common pest form



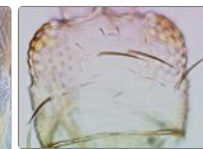
Head & pronotum



Tergites VII-IX



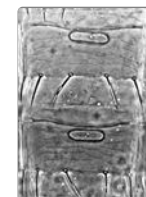
Tergites VII-VIII



Head



Female sternite VII



Male sternite pore plates



Fore wing

Related species

Within the genus *Frankliniella* it is usually possible to recognise *occidentalis* by the pale fore wings, long postocular setae, presence of metanotal campaniform sensilla, and the rather irregular comb on tergite VIII. However, this species is variable in size and colour, the dark brown form being more common at low temperatures, and paler forms at higher temperatures.

The widespread pest strain is usually more constant in size and colour, but the number of synonyms listed below is an indication of the variation in size and colour of adult females. Molecular studies have indicated that western flower thrips comprises two species that cannot be distinguished morphologically (Rugman-Jones *et al.*, 2010). All *Frankliniella* species have a pair of setae in front of the first ocellus, a complete row of setae on both veins of the fore wing, and a pair of ctenidia on tergite VIII situated anterolateral to the spiracles. Most of the 180 described species are known only from the neotropics, but *F. schultzei*, *F. occidentalis* and *F. williamsi* have been widely introduced around the world (Kirk & Terry, 2003).

Biological data

Breeds and feeds on leaves and within flowers. Causes feeding damage on developing fruits. This is a highly polyphagous pest, that is also an important vector of tospoviruses on many crops. However, it also feeds on leaf mites of which it has been reported as a useful biocontrol agent (Reitz *et al.*, 2020).

Distribution data

Originally from western USA (Mound *et al.* 2019), but now worldwide in temperate areas, and locally abundant on cultivated plants across Australia.

Family name

THRIPIDAE - THRIPINAE

Species name

Frankliniella occidentalis (Pergande)

Original name and synonyms

Euthrips occidentalis Pergande, 1895: 392
Euthrips tritici var. *californicus* Moulton, 1911: 16
Euthrips helianthi Moulton, 1911: 40
Frankliniella tritici var. *moultoni* Hood, 1914: 38
Frankliniella nubila Treherne, 1924: 84
Frankliniella claripennis Morgan, 1925: 142
Frankliniella canadensis Morgan, 1925: 143
Frankliniella trehernei Morgan, 1925: 144
Frankliniella tritici maculata Priesner, 1925: 15
Frankliniella occidentalis f. *brunnescens* Priesner, 1932: 182
Frankliniella occidentalis f. *dubia* Priesner, 1932: 182
Frankliniella venusta Moulton, 1936: 172
Frankliniella conspicua Moulton, 1936: 173
Frankliniella chrysanthemi Kurosawa, 1941: 173
Frankliniella dahliae Moulton, 1948: 97
Frankliniella dianthi Moulton, 1948: 98
Frankliniella syringae Moulton, 1948: 98
Frankliniella umbrosa Moulton, 1948: 105.

References

- Kirk, WDJ & Terry I (2003) The spread of western flower thrips *Frankliniella occidentalis* Pergande. *Agricultural and Forest Entomology*5: 301–310.
- 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/
- Reitz SR, Gao YL, Kirk WDJ, Hoddle MS, Leiss KA & Funderburk JE (2020) Invasion Biology, Ecology, and Management of Western Flower Thrips. *Annual Review of Entomology*65:
- Rugman-Jones PF, Hoddle MS & Stouthamer R (2010) Nuclear-Mitochondrial Barcoding Exposes the Global Pest Western Flower Thrips (Thysanoptera: Thripidae) as Two Sympatric Cryptic Species in Its Native California. *Journal of Economic Entomology*103: 877–886.