

## A new species of *Eremiothrips* from Iran (Thysanoptera: Thripidae)

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**Abstract.** *Eremiothrips eshghii* sp. nov. is described from Fars province, south of Iran, from specimens collected on a species of *Ephedra* (Ephedraceae). This new species seems to be related to *E. efflatouni* (Priesner, 1965) in having no long setae on the posterior angles of the pronotum in both sexes, as well as in the presence of biserially toothed processes on the tergum IX of males.

**Key words.** Thysanoptera, thrips, *Eremiothrips eshghii*, new species, Fars, Iran, Palearctic Region

### Introduction

The insect order Thysanoptera, called thrips, shows a wide biological diversity including fungus-feeders (MOUND & PALMER 1983), predators (PALMER & MOUND 1990, MOUND 2011), phytophages (MOUND & TEULON 1995, MOUND 1997) including on mosses (MOUND 1989), and even ectoparasites (CAVALLERI et al. 2010). However, members of the family Thripidae, one of the nine families in the order and comprising over 2000 species in 290 genera worldwide (MOUND & MORRIS 2007), are mostly associated with living plants. So the majority of pest thrips species are included in this family, and several species in two large genera, *Frankliniella* Karny, 1910 and *Thrips* Linnaeus, 1758 clearly confirm this statement. Besides these two genera, there are several genera, each with at least a few species, that are considered pests of various crops around the world. Such genera are *Anaphothrips* Uzel, 1895, *Aptinothrips* Haliday, 1836, *Caliothrips* Daniel, 1904, *Chirothrips* Haliday, 1836, *Dendrothrips* Uzel, 1895, *Limothrips* Haliday, 1836, *Scirtothrips* Shull, 1909 (MORITZ et al. 2004, 2009). Despite these, there are several thripid genera that are solely phytophagous but with almost no pest species recorded. This is probably due to a long coevolution between such species and their plants in which they breed, also due to restriction to host plants that usually have not been used as a crop, although some have been considered medicinal plants. One example is *Eremiothrips* Priesner, 1950 with 18 recorded species worldwide (THRIPS WIKI 2013). In the south of Iran, species of this genus are sometimes found in huge numbers, but with no pest recorded.

PRIESNER (1965) considered *Eremiothrips* (under the genus name *Ascirtothrips* Priesner 1965) related to *Scirtothrips*. However, BHATTI (1972) and BHATTI et al. (2003) demonstrated that the genus is related to *Anaphothrips*. Moreover, MOUND & MASUMOTO (2009) placed the genus in the *Anaphothrips* genus group. This group is recognized by the absence of any long setae on the pronotum, with few exceptions (MOUND & MASUMOTO 2009). The members of *Eremiothrips* are usually characterized by the presence of one pair of setae on the posterior angle of the pronotum. However, *E. efflatouni* (Priesner, 1965) has no long setae on the pronotum (BHATTI et al. 2003), and the purpose of this paper is to describe a second *Eremiothrips* species with no long setae. This species was collected on *Ephedra* sp. in Fars province, south of Iran. Full information on systematics and nomenclature of Thysanoptera is available on the web (THRIPSWIKI 2013).

### Material and methods

**Collection, preservation and slide preparation.** Thrips were beaten from *Ephedra* plants on a white tray and transferred to 2 mm vials containing 96% ethanol. The specimens were mounted onto slides in Canada balsam after dehydration through an ethanol series according to a form of the protocol given by MOUND & KIBBY (1998).

**Morphological examination techniques.** Morphological terminology follows BHATTI et al. (2003). The photomicrographs as well as measurements were obtained using a Motic BA310 microscope with attached camera.

**Depository.** The holotype is deposited in the Natural History Museum, London (BMNH). One male and one female paratypes are deposited in the Australian National Insect Collection (ANIC), CSIRO Ecosystem Sciences, Canberra. Other specimens are deposited in the Department of Plant Protection, Shiraz University.

### Taxonomy

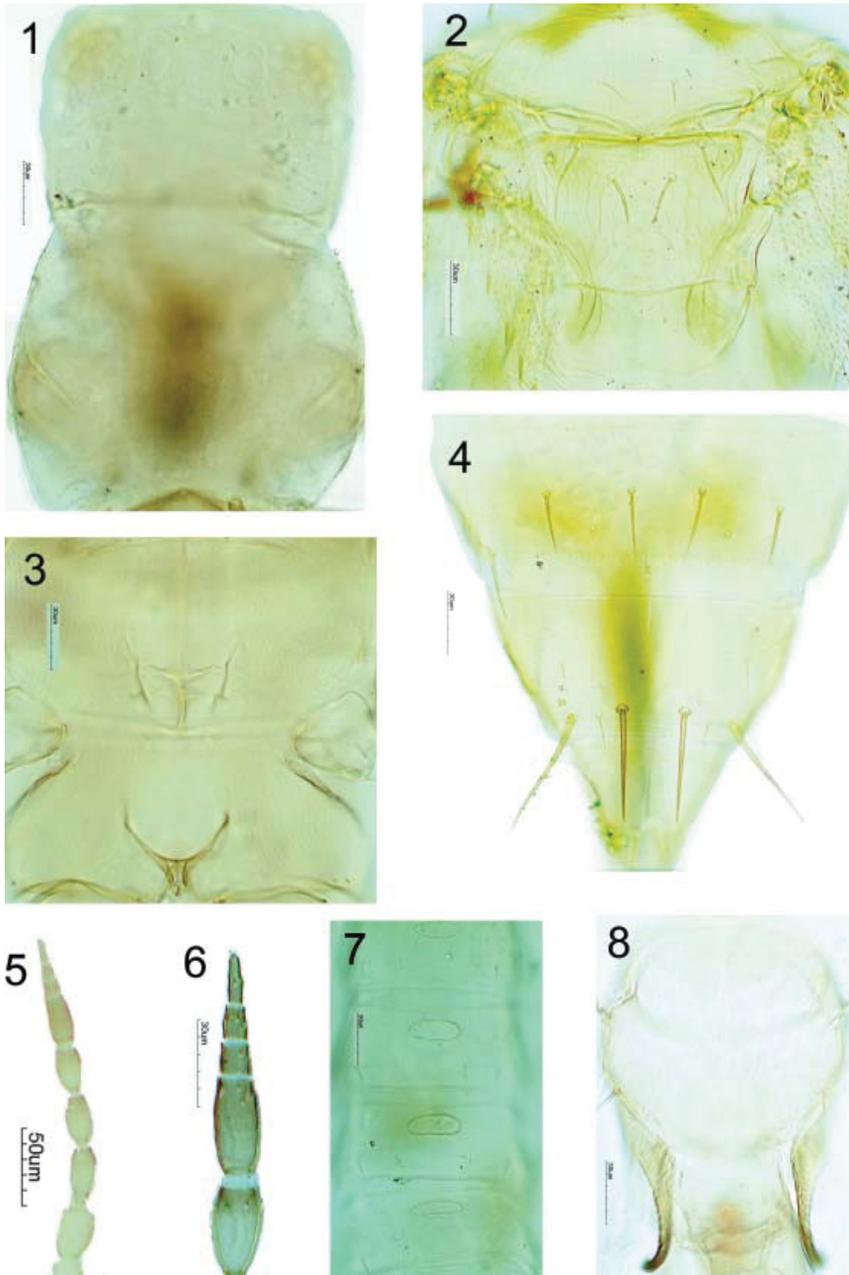
#### *Eremiothrips eshghii* sp. nov.

(Figs 1–8)

**Type locality.** Iran, Fars province, Eghlid, Emamzadeh Esmaeil (N 30°08'403", E 52°38'677").

**Type material.** HOLOTYPE: ♀, 'IRAN, Fars province, Eghlid / Emamzadeh Esmaeil, from *Ephedra* sp., 1660 m alt. / N 30° 8' 403", E 52° 38' 677" / 7.viii. 2013 (KM1085) (BMNH). PARATYPES: 16 ♀♀ 3 ♂♂, same label data (1 ♂ 1 ♀ in ANIC, rest in Department of Plant Protection, Shiraz University).

**Diagnosis.** *Eremiothrips* species usually have one pair of pronotal posteroangular setae, but the new species together with *E. efflatouni* are exceptions in that they have no long setae on the pronotum. Moreover, both *E. efflatouni* and *E. eshghii* sp. nov. have a comb of microtrichia developed on the posterior margin of tergite VIII. Male tergite IX bears two processes that are barbed laterally and this condition is also unique among *Eremiothrips* species. So it seems likely that these two species are closely related. However, the antennae in *E. efflatouni* have 8 segments in contrast to *E. eshghii* that has antennae with 9 segments, as do most other species in the genus. Moreover, in the male sex, the sternites have no pore plates in *E. efflatouni* whereas sternites IV–VII bear an oval transverse pore plate in the new species. Neither sex of



Figs 1–8. *Eremiothrips eshghii* sp. nov. 1–6 – female: 1 – head and pronotum; 2 – mesonotum and metanotum; 3 – meso- and metasternum; 4 – tergites VIII–X; 5 – antenna; 6 – antennal segments V–IX. 7–8 – male: 7 – sternites IV–VII; 8 – tergite IX.

*E. eshghii* has any dark abdominal spots, but in *E. efflatouni* (at least in the female) tergites III–VII have two brown spots laterally that are sometimes confluent (BHATTI et al. 2003).

**Description. Female (macropterous).** Body pale yellowish; antennal segments III–V shaded at margins, IV–V brownish yellow distally, VI–IX yellowish brown (Fig. 5); pronotum with dark spot in the middle, setae on head pale, other setae light brown; fore wing including clavus uniformly pale. Head broader than long (Fig. 1), slightly overhanging antennal segment I, compound eyes with 6 pigmented facets ventrally, arranged in 3 rows; 3 pairs of ocellar setae present, pair III in front of hind ocelli within triangle, about as long as ocellar setae I and II; 4–5 pairs of postocular setae, all setae on head short; maxillary palps 3-segmented. Antennae 9-segmented (Fig. 5), segment I without median dorsal apical setae, III and IV with weak microtrichia and forked sensoria; segment V with inner sensorium conspicuous, longer than apical width of segment, VI without pedicel (Fig. 6).

Pronotum weakly transversely striate, with no long setae (Fig. 1) (sometimes with inner pair of posteroangular setae longer than remaining setae, about 14 microns), about 30 discal setae present; anterior margin with 3–4 pairs of setae, posterior margin with 4 pairs of setae scarcely longer than discal setae, basantra membranous, without setae, ferna divided into two halves, not connected. Mesonotum with transverse lines, campaniform sensilla inconspicuous (Fig. 2). Mesosternal anterior margin with about 10 setae; mesoacrotergite with 4 pairs of microsetae. Metanotal sculpture longitudinally linear on anterior half, median setae well behind anterior margin; campaniform sensilla absent (Fig. 2); mesothoracic sternopleural suture present; spinula present on mesosternum, absent on metasternum (Fig. 3). Tarsi 2-segmented. Fore wing slender with posterior cilia wavy; first vein with 7–9 setae on basal half and 3 widely spaced setae on distal half, second vein with 8–9 widely spaced setae; clavus with 4–5 veinal and 1 discal seta.

Abdominal tergites weakly sculptured medially, without ctenidia or craspeda; tergite II without lateral marginal setae; tergal campaniform sensilla posterolateral to median setae, near posterior margin; posteromarginal comb on VIII complete, surface with faint transverse reticulation, median campaniform sensilla situated between S1 seta and posterior margin, closer to the posterior margin; tergite VIII setae S1 a little longer than setae S2, tergite IX median dorsal setae not extending to posterior margin of tergite, and with two pairs of campaniform sensilla near the margin, setae S2 slightly longer than S1 (Fig. 4); tergite X with dorsal split short; ovipositor developed. Sternites without discal setae or marginal craspedum, II with 2 pairs of marginal setae, III–VII with 3 pairs; pleurotergites with no discal setae.

**Measurements** (holotype female, in  $\mu\text{m}$ ). Body length 1273. Head length 100; width across eyes 138. Pronotum, length 113; maximum width 172. Fore wing length 574. Metanotal median setae 20. Tergite VIII setae S1 28, S2 21; tergite IX setae S1 52, S2 63. Antennal segments III–IX length: 32, 31, 31, 35, 12, 11, 17.

**Male (macropterous).** Similar to female in colour and structure but smaller, with transverse pore plate on discal area of sternites IV–VII (Fig. 7); abdominal tergum VIII without comb on posterior margin, IX at posterior margin with two long, biserially toothed processes (Fig. 8).

**Measurements** (paratype male in microns). Body length 1000. Head length 87; width across eyes 120. Pronotum, length 116; maximum width 135. Fore wing length 470. Metanotal

median setae 20. Sternites IV–VII pore plates 27 width (w), 12 length (l); 29 w, 13 l; 30 w, 11 l; 31 w, 9 l. Antennal segments III–VIII length 33, 33, 31, 41, 6, 13.

**Etymology.** The species is named in honor of Dr. Saeid Eshghi, Associate Professor of Horticultural Sciences, Shiraz University who has helped me in identification of many plant materials for several years as well as in collecting the new species in this paper.

**Bionomics.** The new species was collected on *Ephedra* sp in wild almond woodlands in south of Iran.

**Distribution.** Iran, Fars province.

## Discussion

In the past ten years, a few species in the genus *Eremiothrips* have been described and recorded from Iran, mainly from southern parts (BHATTI et al. 2009, RAMEZANI et al. 2009, MINAEI 2012) and one from Mazandaran province, north of Iran (BHATTI et al. 2003). With the new species described above, 13 out of 19 species of *Eremiothrips* are now known from Iran (see also MINAEI 2012). Moreover, *E. eshghii* sp. nov. and 5 other species including *E. arya* (zur Strassen, 1975), *E. bhattii* (Minaei 2012), *E. farsi* (Bhatti et al., 2003), *E. taghizadehi* (zur Strassen, 1975), *E. zurstrasseni* (Bhatti et al., 2009) were originally described from Iran (ZUR STRASSEN 1975; BHATTI et al. 2003, 2009; MINAEI 2012). Considering that the fauna of Iran is poorly known (MINAEI 2013), such proportion is interesting and probably suggests a rich species fauna in the genus *Eremiothrips*. Iran is located in the Iranian plateau and is one of the largest countries of Southwest Asia, being the biogeographical bridge connecting the Palaearctic, the Oriental, and the Afrotropical Region (ABIVARDI 2001). Therefore, it is expected that for genera such as *Eremiothrips* more species will be discovered.

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## References

- ABIVARDI C. 2001: *Iranian Entomology – An Introduction. Vol. 1: Faunal Studies; Vol. 2: Applied Entomology.* Springer, Berlin, 1–444 and 445–1033 pp.
- BHATTI J. S. 1972: A review of the genus *Ascirtothrips* Priesner (Thysanoptera: Thripidae). *Oriental Insects* **6**: 217–228.
- BHATTI J. S. 1988: On the genera *Ascirtothrips* Priesner and *Eremiothrips* Priesner (Insecta: Terebrantia: Thripidae). *Zoology* **1**: 117–125.
- BHATTI J. S., BAGHERI S. & RAMEZANI L. 2009: A new species of *Eremiothrips* (Insecta: Terebrantia: Thripidae) from Khuzestan province in Iran. *Thrips* **10**: 1–23.

- BHATTI J. S., TELMADARRAIY Z., KUMAR V. & TYAGI K. 2003: Species of Eremiothrips in Iran (Terebrantia: Thripidae). *Thrips* **2**: 49–110.
- CAVALLERI A., KAMINSKI L. A., MENDONCA M. S. Jr. 2010: Ectoparasitism in Aulacothrips (Thysanoptera: Heterothripidae) revisited: host diversity on honeydew-producing Hemiptera and description of a new species. *Zoologischer Anzeiger* **249**: 89–101.
- MINAEI K. 2012: The genus Eremiothrips (Thysanoptera: Thripidae) in Iran, with one new species. *Zootaxa* **3349**: 56–62.
- MINAEI K. 2013: Thrips (Insecta: Thysanoptera) of Iran: a revised and updated checklist. *ZooKeys* **330**: 53–74.
- MORITZ G., MOUND L. A., MORRIS D. C. & GOLDARAZENA A. 2004: *Pest thrips of the world: an identification and information system using molecular and microscopical methods*. Central Biological Information Technology, Brisbane. CD-ROM.
- MORITZ G., O'DONNELL C. & PARRELLA M. 2009: *Pest Thrips of North America Associated with Domestic and Imported Crops*. QAAFI Biological Information Technology (QBIT), The University of Queensland, CD-ROM.
- MOUND L. A. 1989: Systematics of thrips (Insecta: Thysanoptera) associated with mosses. *Zoological Journal of the Linnean Society* **96**: 1–17.
- MOUND L. A. 1997: Biological diversity. Pp. 197–215. In: LEWIS T. (ed.): *Thrips as Crop Pests*. CAB International, Wallingford, 740 pp.
- MOUND L. A. 2011: Species recognition in the genus Scolothrips (Thysanoptera, Thripidae), predators of leaf-feeding mites. *Zootaxa* **2797**: 45–53.
- MOUND L. A. & KIBBY G. 1998: *Thysanoptera: An Identification Guide. Second edition*. CAB International Institute of Entomology and British Museum (Natural History), London, 70 pp.
- MOUND L. A. & MASUMOTO M. 2009: Australian Thripinae of the Anaphothrips genus-group (Thysanoptera), with three new genera and thirty-three new species. *Zootaxa* **2042**: 1–76.
- MOUND L. A. & MORRIS D. 2007: The insect order Thysanoptera: classification versus systematics. *Zootaxa* **1668**: 395–411.
- MOUND L. A. & PALMER J. M. 1983: The generic and tribal classification of spore-feeding Thysanoptera. *Bulletin of the British Museum (Natural History), Entomology* **46**: 1–174.
- MOUND L. A. & TEULON D. A. J. 1995: Thysanoptera as phytophagous opportunists. Pp. 3–20. In: PARKER B. L., SKINNER M. & LEWIS T. (eds.): *Thrips Biology and Management*. Plenum Press, 636 pp.
- PALMER J. M. & MOUND L. A. 1990: Thysanoptera. Pp. 67–75. In: ROSEN D. (ed.): *The Armoured Scale Insects, Their Biology, natural Enemies and Control*. Elsevier, Amsterdam, 688 pp.
- PRIESNER H. 1965: A monograph of the Thysanoptera of the Egyptian deserts. *Publications de la Institut Desert Egypte* **13**: 1–549.
- RAMEZANI L., BHATTI J. S., MOSSADEGH M. S. & SOLEIMANNEJADIAN E. 2009: Discovery of Eremiothrips similis Bhatti 1988 in Iran (Insecta: Terebrantia: Thripidae). *Thrips* **11**: 1–18.
- THRIPSWIKI 2013: *ThripsWiki-providing information on the World's thrips*. Available from: <http://thrips.info/wiki/> (Accessed 20 Dec. 2013).
- ZUR STRASSEN R. 1975: Eremophile Blütenbewohner der Fransenflüglergattung Ascirtothrips Priesner 1964 (Insecta: Thysanoptera). *Senckenbergiana Biologica* **56**: 257–282.