

A first record of the fungus-feeding genus *Tylothrips* (Thysanoptera, Phlaeothripidae) from Iran

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ABSTRACT. The American species, *Tylothrips osborni* (Hinds) is reported for the first time from Iran and presented with detailed photos. The single macropterous female, which has been collected in the Ilam province, shows an unusual variation regarding the number of sense cones on antennal segment III. This variation affects both antennae in form of a reduction of the number of sense cones.

Key words: distribution, new record, thrips, *Tylothrips osborni*

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INTRODUCTION

The insect order Thysanoptera is classified into two suborders, Terebrantia and Tubulifera, which are regarded as sister-groups (Buckman et al., 2013). The first one includes eight extant families, whereas Tubulifera comprises only one large family, the Phlaeothripidae (ThripsWiki, 2021) with two subfamilies, Idolothripinae and Phlaeothripinae. Recognizing subgroups within Tubulifera is exceptionally difficult because much of their diversification has involved reduction or loss of characters and homoplasy is evident (Mound & Marullo, 1996). Therefore, classifying new species within Tubulifera is not an easy task and Thysanopterists often face challenges while working on this group (Mound & Tree, 2021a, 2021b). The Iranian thrips fauna includes 270 species, but only 22% of them are associated with Tubulifera (i.e. 59 species) (Mirab-balou, 2018). These finding differs considerably with the number of species worldwide, which allocates 60% (i.e. 3769 out of 6337) to Tubulifera (ThripsWiki, 2021). In Iran, the shifted ratio is caused by different reasons, of which the most important is that the main focus of thrips studies is restricted to agriculture (Minaei et al., 2007). As a consequence, much more attention has been paid to Terebrantia, as they include more species of economic impact as pests.

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Furthermore, many Tubuliferan species are associated with fungi and thus with wet habitats. In the worldwide fauna, Phlaeothripinae alone comprises 3025 species, about half of which are fungivores mainly on hyphae (ThripsWiki, 2021). In Iran, such species play a rather minor role due to the continental and predominantly arid climate. Nonetheless, the thrips fauna of Iran is rich and hundreds of species still remain to be discovered (Minaei, 2013). In this paper, we report a species associated with fungi. It belongs to *Tylothrips* Hood, a genus which is recorded for the first time in Iran.

MATERIAL AND METHODS

The female specimen has been collected from *Quercus* leaf litter in the Ilam province (details below). It was prepared onto slide using the method of Mirab-balou & Chen (2010) and is deposited in the collection of the Department of Plant Protection, College of Agriculture, Ilam University, Iran (ILAMU).

RESULTS

Tylothrips Hood, 1937

Tylothrips Hood, 1937:494. Type species *Tylothrips concolor* Hood, 1937, by monotypy.

Antennae 8-segmented, III with 3 and IV with 4 sense cones. Head without reticulate sculpture, genae constricted behind rounded eyes; maxillary stylets wide apart, retracted into head. Pronotum with anteromarginal setae not longer than discal setae. Prosternal basantra well developed and meso and metathorax ventro-laterally each with a pair of long, capitate setae (see Ulitzka, 2013, p. 144 fig. 5; Uzun Yigit et al., 2021).

Tylothrips osborni (Hinds, 1902)

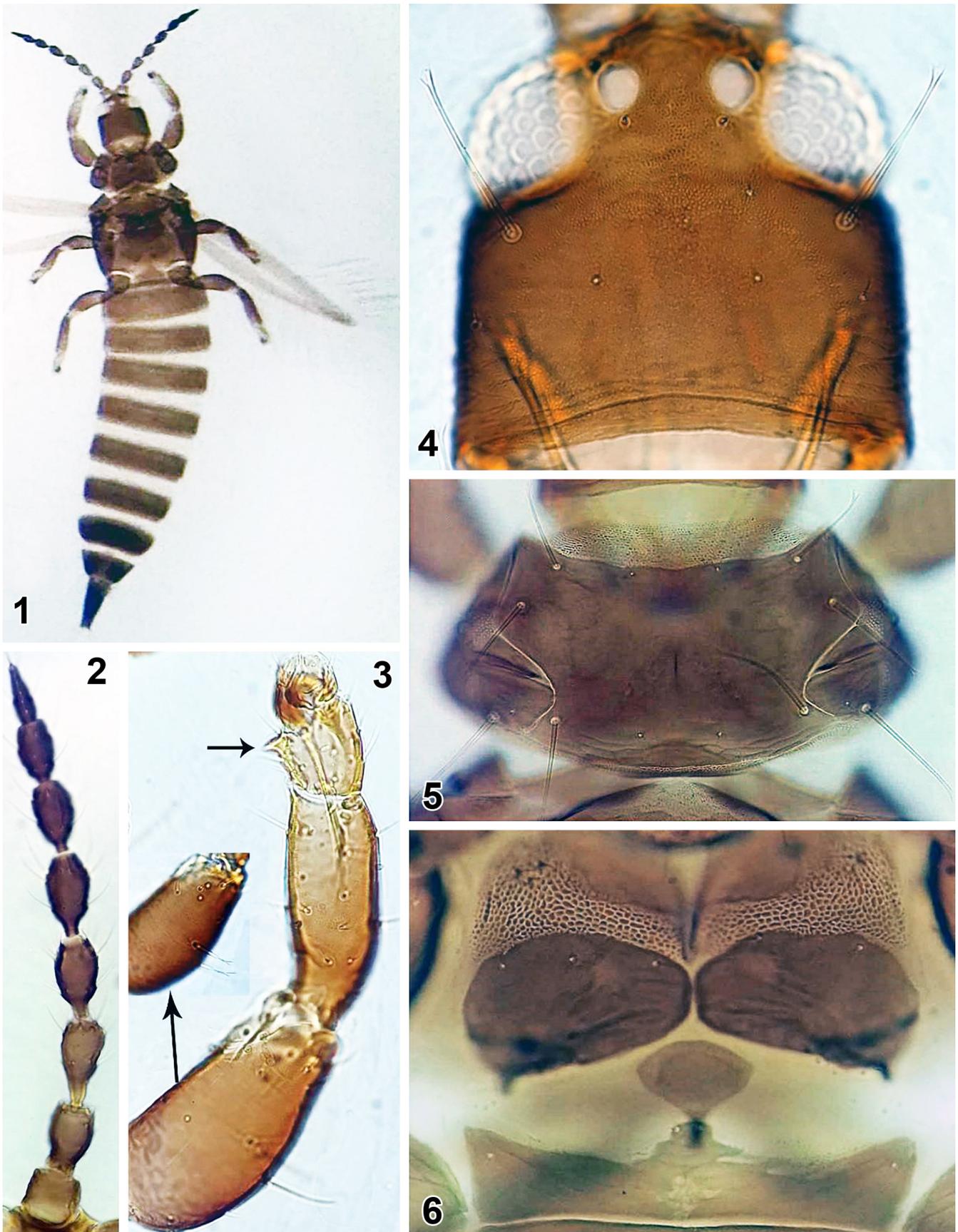
Eurythrips osborni Hinds, 1902:203

Female macroptera. Body and legs brown (Fig. 1), abdominal segments VIII, IX, tube and antennal segments V–VIII darkest; III yellowish brown at the base (Fig. 2); fore tibiae paler distally and all tarsi brownish yellow (Fig. 3); all major setae pale.

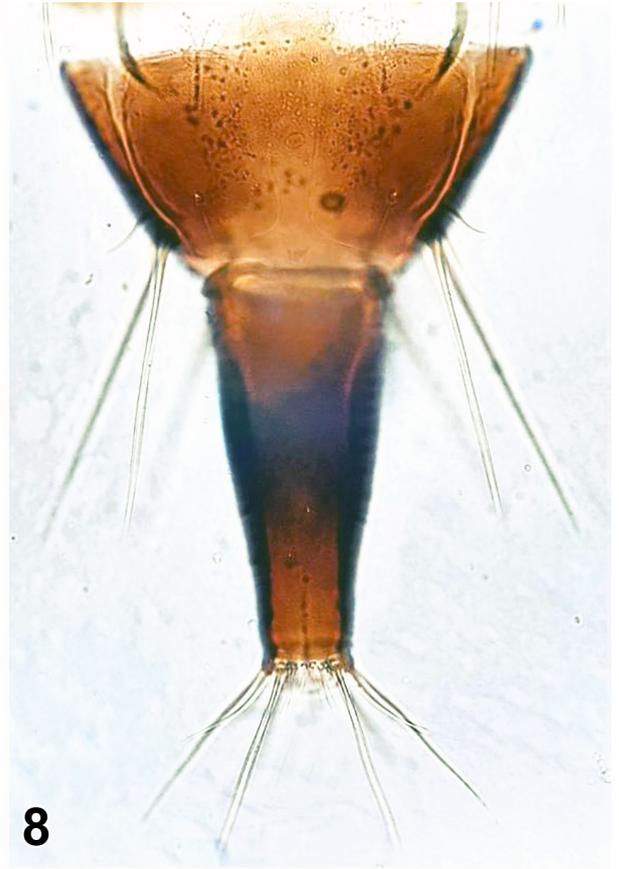
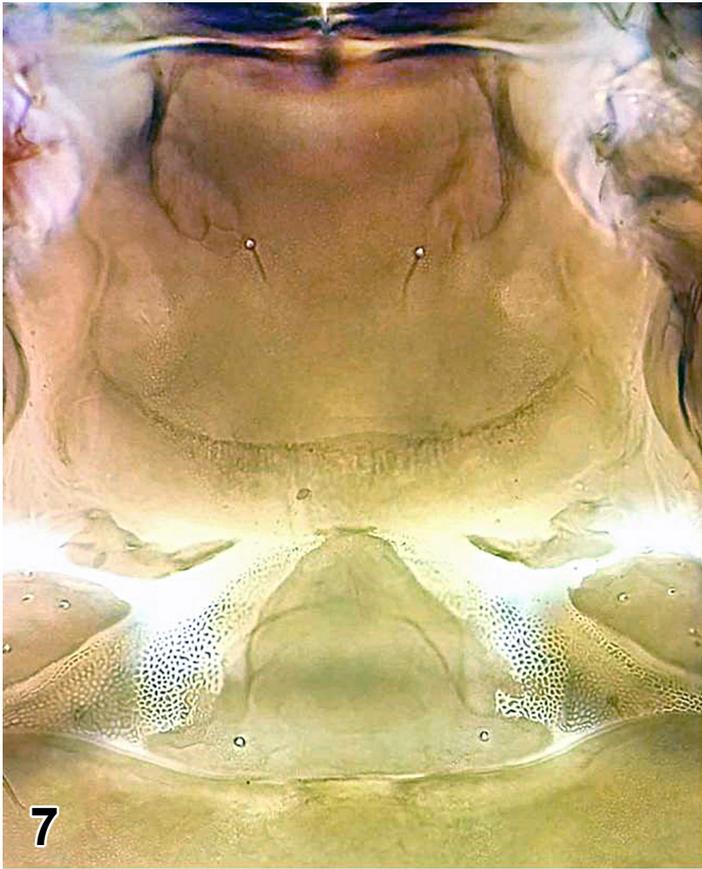
Head as long as wide, not reticulate between the postocular setae, genae narrowed to compound eyes without setae; vertex irregularly transversely striate; stylets retracted less than half-way to postocular setae; postocular setae capitate (Fig. 4). Antennal segments III and IV with 2 and 4 sense cones respectively. Pronotum smooth, with 4 pairs of capitate setae (anteroangulars, midlaterals, epimerals and posteroangulars) (Fig. 5). Prosternal basantra and ferna developed, ferna wider than long (Fig. 6); mesopresternum transverse; metathoracic sternopleural sutures absent. Fore tarsal tooth developed; fore femora with two pairs of long capitate setae, mid and hind femora each with one long capitate seta (Fig. 3); meso and metathorax ventro-laterally each with a similar pair of setae. Forewing without duplicated cilia, bases of sub-basal setae arranged in a line, all capitate. Pelta almost bell shaped (Fig. 7); abdominal tergites lateral setae capitate (Fig. 9), setae on IX long and finely pointed (Fig. 8); tube smooth with straight sides, anal setae shorter than tube. Abdominal sternites with a row of short setae.

Measurements. Body length 1790. Head length 165; width behind eyes 145; postocular setae 60. Pronotum, length 135; width 280; major setae anteroangulars 60, midlaterals 70, epimerals 85, posteroangulars 75. Tergite IX setae S1 148. Tube length 166, basal width 60. Antennal segments I–VIII length 34, 48, 63, 57, 59, 48, 39, 41.

Specimens examined. *Female macroptera*. IRAN, Ilam province, Manesht Mountain, on *Quercus* leaf litter, 18.vii.2017, leg. M. Mirab-balou.



Figures 1-6. *Tylothrips osborni* (Hinds, 1902), female *macroptera*. 1. Dorsal view; 2. Antenna; 3. Fore leg; 4. Head; 5. Pronotum; 6. Prosternum.



Figures 7-9. *Tylothrips osborni* female macroptera. 7. Metanotum and pelta; 8. Abdominal segments IX and X; 9. Abdominal tergites III and IV.

DISCUSSION

Although two *Tylothrips* species have been recorded from India, their congeneric identity with the genus is under question (Uzun Yigit et al., 2021). Of the 22 remaining *Tylothrips* species, 21 are Neotropical and exclusively found south of Panama. *T. osborni* (Hinds) is the only species that is widespread northwards across the eastern North America, and that also has been introduced into various parts of Europe where it had been recently reported from Turkey (Uzun Yigit et al., 2021). The specimen collected from Iran and discussed here is remarkable regarding the number of sense cones on antennal segment III. It only has two on both antennae instead of three. This anomaly should be given special attention in future finds because many species of mycophagous Phlaeothripidae are well-known to vary greatly in various details of structure. A variable number of sense cones is also known from other Phlaeothripidae, e.g. *Hoplothrips polysticti* (Morison, 1949) (Kobro & Rafoss, 2006).

The presence of *T. osborni* in Iran is not surprising since it has been recorded from the neighbor country, Turkey (Uzun Yigit et al., 2021). The current data, however, do not allow any conclusions to be drawn as to whether its distribution is due to natural dispersal or to an effect of extensive plant trade turning sometimes thrips into tramps (Mound, 1983).

AUTHOR'S CONTRIBUTION

The authors confirm contribution to the paper as follows: MMB: Identification, photography, mounting the specimen, writing and reviewing; KM: Identification, writing and reviewing; MRU: writing and reviewing. All authors approved the final version of the manuscript.

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AVAILABILITY OF DATA AND MATERIAL

Not applicable.

ETHICS APPROVAL AND CONSENT TO PARTICIPATE

Not applicable.

CONSENT FOR PUBLICATION

Not applicable.

CONFLICT OF INTERESTS

The authors declare that there is no conflict of interest regarding the publication of this paper.

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اولین گزارش از تریپس قارچ‌خوار جنس *Tylothrips* (Thysanoptera, Phlaeothripidae) از ایران

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چکیده: گونه‌ی آمریکایی، *Tylothrips osborni* (Hinds) برای اولین بار از ایران گزارش و شکل‌های دقیق آن ارائه شده است. تنها ماده‌ی بالدار (ماکروپتروس)، که از استان ایلام جمع‌آوری شده است، از لحاظ تعداد سنسوریاها (مخروط‌های حسی) بر روی بند سوم شاخک تنوع غیرمعمولی را نشان می‌دهد. این تنوع بر روی هر دو شاخک به شکل کاهش تعداد سنسوریاها تأثیر می‌گذارد.

واژگان کلیدی: پراکنش، گزارش جدید، تریپس، *Tylothrips osborni*