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The genus, *Bregmatothrips* (Thysanoptera: Thripidae) in Iran with new record of a species from southern Iran

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ABSTRACT. The grass-living thripid species, *Bregmatothrips willcocksii* (Priesner) is recorded for the first time from Iran on the basis of materials of both sexes collected on Johnson grass, *Sorghum halepense* (family Poaceae). This is the second member of the genus *Bregmatothrips* from Iran and in contrast to most species in the genus has forked sense cones on antennal segments III and IV. An Illustrated key is provided for distinguishing *B. willcocksii* and *B. bournieri* Pelikan.

Key words: *Bregmatothrips willcocksii*, grass, new record, thrips

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Introduction

Although Phlaeothripidae is the largest family of Thysanoptera ([ThripsWiki 2017](#)), the most common species of thrips associated with living plants are members of the family Thripidae ([Mound 1997](#)). According to [Minaei and Alichii \(2013\)](#), a large proportion of this family (about 40%) is associated with grasses (family Poaceae) in Iran. *Bregmatothrips* Hood species are associated with grass leaves ([ThripsWiki 2017](#); [Mound 2011](#)). According to [Wang et al. 2016](#), the genus is recognized in the family Thripidae as follows: Head longer than wide with 3 pairs of ocellar setae present and projecting in front of compound eyes, antennae 7 or 8 segmented, segment I with 1 or 2 dorso-apical setae, segments III and IV with simple or forked sense cones; pronotum

weakly trapezoidal with 2 pairs of posteroangular setae, prosternal ferna complete medially; tarsi 2-segmented; tergites I-VIII with campaniform sensilla close to posterior margin with continuous craspedum along the posterior margin; sternite VII with setae S1 arising either at posterior margin or ahead of posterior margin.

An identification key to nine species of *Bregmatothrips* has been provided by [Mound \(2011\)](#). More recently two other species, *B. sinensis* Wang & Tong from China ([Wang et al. 2016](#)) and *B. ramani* Rachana & Varatharajan from India ([Rachana and Varatharajan 2017](#)) have been described. Thus, the genus includes 11 species at present worldwide ([ThripsWiki 2017](#)).

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Up to now, *B. bournieri* Pelikan was the only recorded species from Iran (Bhatti *et al.* 2007; Minaei 2017). The purpose of this paper is to record of another species of *Bregmatothrips* from Iran. Diagnostic characters, a key to distinguishing both species as well as relevant illustrations are provided. Problems on taxonomic studies of the genus *Bregmatothrips* is discussed briefly.

Material and methods

Thrips specimens discussed in this paper collected from Johnson grass in an olive garden in Shiraz, Fars province, southern Iran. The specimens mounted onto slides in Canada balsam using a form of the protocol given in ThripsWiki (2017). Most photomicrographs and measurements were made by the Olympus BX53 microscope with DIC illumination or phase-contrast with DP27 digital camera using cellSens software. Figure 13 has prepared by Laurence Mound with Leica DM2500 microscope with Nomarski illumination, and processed through Automontage software. Most slides are deposited in the Department of Plant Protection, College of Agriculture, Shiraz University, Shiraz, Iran. One male and one female specimen are deposited in Australian Insect National Collectin, Canberra, Australia.

Results

Key to species of *Bregmatothrips* from Iran

1. Body uniformly brown (Figs 9, 10). Antennae 7-segmented (Fig. 11), III and IV with forked sense cones.*B. willcocksii*
- . Body bicolored (Figs 1, 2). Antennae 8-segmented (Fig. 3), III and IV with simple sense cones.*B. bournieri*

Bregmatothrips bournieri Pelikan

Bregmatothrips bournieri Pelikan, 1988: 464

Material examined: IRAN, Esfahan province, Esfahan, 6 females, 4 males on

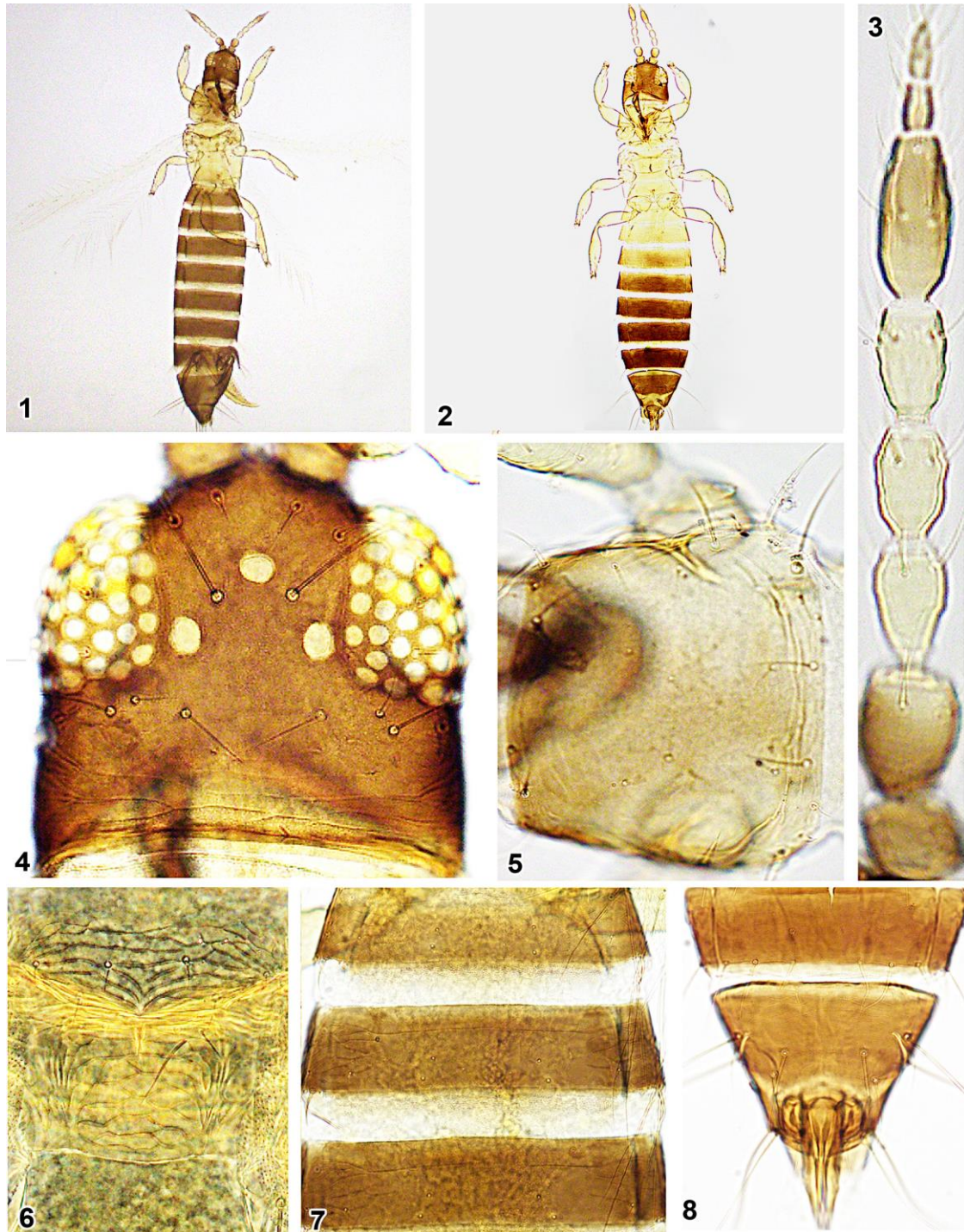
various grasses in corn field (family Poaceae), 19.x.2011 (Farinaz Haft-baradaran); Fars province, Shiraz, 5 males, 3 female on *Cynodon dactylon* (family Poaceae), 15.viii.2014 (KM 1241); same locality and plant, 2 females, 29.viii.2014 (KM 1250); same locality and plant, 2 females, 5.ix.2014 (KM 1256); same locality and plant, 2 females, 7.ix.2014 (KM 1259); same locality and plant, 1 female, 27.ix.2014 (KM 1268); same locality and plant, 1 female, 13.x.2014 (KM 1277); same locality, *Sorghum halepense* (family Poaceae), 2 males, 2 females 17.x.2014 (KM 1278); 3 males, 4 females on *Cynodon dactylon*, 10.x.2017 (KM 1722).

This species is originally described from Iran and its neighbor country, Turkmenistan from flowers of *Cynodon dactylon* (Pelikan 1988). The materials from Iran collected in Tehran by the known German Thysanopterist, Richard zur Strassen. After its description, there has not been any published reports of the species in any part of the world including Iran. The present author has collected a good series of both sexes from *C. dactylon* from southern Iran in recent years. Some specimens occasionally also were collected on *Sorghum halepense*. Females are macropterous in this bicolored species while in males the wings are reduced.

Diagnosis: Female macroptera (Fig. 1). Body bicolored, head, prothorax and abdominal tergites II-X brown (sometimes prothorax and abdominal tergites II-VI yellowish brown), antennal segments I-II brown, III-V yellow, VI-VIII shaded, fore wings pale (Fig. 3). Head longer than wide, slightly projecting in front of compound eyes, ocellar setae pair I present, pair III arise almost outside the triangle just posterolateral to fore ocellus (Fig. 4); maxillary palps 2-segmented. Antennae 8-segmented (Fig. 3), segment I with two dorso-apical setae, III and IV each with simple sense cones. Pronotum trapezoidal

with two pairs of well-developed posteroangular setae (Fig. 5). Mesonotum with weakly transverse sculpture, with no campaniform sensilla (Fig. 6). Metanotum reticulate (Fig. 6), median setae close to the

anterior margin; campaniform sensilla absent. Prosternal ferna complete medially. Forewing first vein with 3 setae on distal half, clavus with 3 or 4 veinal and one discal setae.



Figures 1-8. *Bregmatothrips bournieri*. 1. Female; 2. Male; 3. Antenna; 4. Head; 5. Pronotum 6. Meso and metanotum; 7. Tergites II-IV; 8. Tergites VIII-X (male).

Abdominal tergite I weakly striate, I-VIII with campaniform sensilla close to posterior margin (Fig. 7), IX with two pairs of campaniform sensilla; X with dorsal split incomplete. Sternites without discal setae. Male microptera, similar in color and structure to female but smaller (Fig. 2). Tergite IX posterior without stout thorn-like setae (Fig. 8). Abdominal sternites with no pore plate.

Measurements of one female in microns:

Body length 1431. Head length 133, width 130. Pronotal median length 149, width 175. Forewing length 662, width at middle 45. Abdominal tergite IX median length 113, tergite X median length 67. Antennal segments I-VIII length 17, 29, 31, 27, 27, 42, 13 and 14, respectively.

Measurements of one male in microns:

Body length 1213. Head length 129, width 120. Pronotal median length 131, width 173. Forewing length 49. Antennal segments I-VIII length 19, 28, 34, 27, 28, 43, 11 and 13, respectively.

***Bregmatothrips willcocksii* (Priesner)**

Poethrips willcocksii Priesner, 1939: 128.

Material examined: IRAN, Fars province, Shiraz, 1 female, 4 males on *Sorghum halepense* (family Poaceae), 17.x.2014 (KM 1278); same locality and plant, 1 male, 15.viii.2017 (KM 1693); same locality and plant, 1 female, 1 male, 4.x.2017 (KM 1719). The species originally is described from Egypt from Poaceae ([Priesner 1939](#)). This is the first report of the species from Palearctic as well as Asia.

Diagnosis: Female macroptera. Body brown, but all tarsi, most part of fore tibiae, distal part of antennal segment II, the whole segments III-V and most part of segment VI yellow; fore wing almost pale (Figs 9, 12). Head a little longer than wide, slightly projecting in front of compound eyes, cheeks parallel; with 3 pairs of ocellar setae, pair III the longest, slightly longer

than the distance between compound eyes, arise outside the triangle just posterolateral to fore ocellus; post ocular setae III distinctly longer than others (Figs 12, 13); maxillary palps 2-segmented. Antennae 7-segmented (Fig. 11), segment I with two dorso-apical setae, III and IV each with forked sense cones. Pronotum weakly trapezoidal with two pairs of well-developed posteroangular setae (Fig. 13), inner pair longer; Mesonotum with transverse sculpture. Metanotum reticulate (Fig. 14), median setae close to the anterior margin; campaniform sensilla absent. Prosternal ferna complete medially. Forewing first vein with 2 setae on distal half, clavus with 3 or 4 veinal and one discal setae. Abdominal tergite I striate, the sculpture is absent medially on tergites II-VIII, I-VIII with campaniform sensilla close to posterior margin, IX with two pairs of campaniform sensilla; X with dorsal split complete. tergite IX large, almost 1.5 times as long as VIII. Sternites without discal setae.

Male macroptera, similar in color and structure to female but smaller (Fig. 10). Tergite IX posterior margin with 2 stout thorn-like setae (Fig. 15). Abdominal sternites with no pore plate.

Measurements of one female in microns:

Body length 1703. Head length 181, width 168. Pronotal median length 144, width 188. Forewing length 840, width at middle 47. Abdominal tergite IX median length 154, tergite X median length 94. Antennal segments I-VII length 24, 36, 49, 49, 43, 58 and 32, respectively.

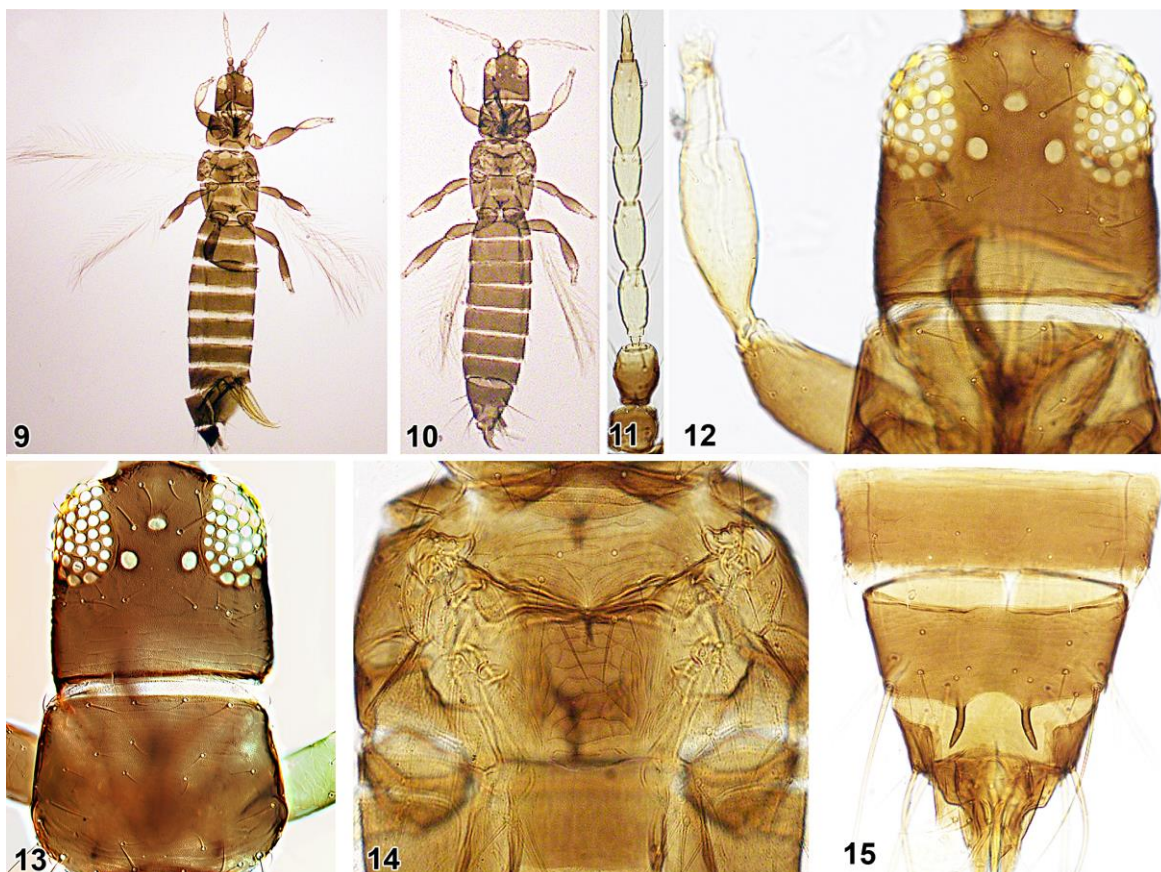
Measurements of one male in microns:

Body length 1376. Head length 159, width 155. Pronotal median length 123, width 178. Forewing length 675. Stout thorn-like seta on tergite IX 27, the distance between two stout thorn-like setae on tergite IX 33. Antennal segments I-VII length 24, 31, 42, 42, 34, 48 and 25, respectively.

Discussion

Most species of the genus *Bregmatothrips* are from the Old World (Mound 2011). However just one species is recorded across Europe (zur Strassen 2003). Among 11 species in the genus, *B. willcocksii* together with two other species (*B. furcatus* (Faure) and *B. ramani*) have forked sense cones on the third and fourth antennal segments and a key to these 3 species is provided by Rachana and Varatharajan (2017). All specimens of *B. bournieri* was collected on *C. dactylon* i. e. the same plant that this species has been collected and described (Pelikan 1988). Priesner (1965) stated that *B. willcocksii* lives on two grass species, *Imperata cylindrica* and *Polypogon monspeliensis* while in this study the species is collected on *Sorghum halepense*. A problem on taxonomic studies of genera

such as *Bregmatothrips* is the lack of availability of good population samples as well as revisionary studies (see also Mound et al. 2016). For instance, the genus was established in 1912 (Hood 1912) but a key for separation of nine species was provided almost a century later (Mound 2011). However, in the key, the species of *B. furcatus* and *B. willcocksii* are not distinguished from each other and the same is true for *B. dimorphus* (Priesner) and *B. brachycephalus* (Shumsher). Moreover, the key is not illustrated unlike to most keys that published in recent years. Another example for lack of good studies on the genus is related to both species reported in this paper. In fact the report here is the second report of these two species after their descriptions.



Figures 9–15. *Bregmatothrips willcocksii*. 9. Female; 10. Male; 11. Antenna; 12. Head, part of pronotum and left foreleg; 13. Head and pronotum; 14. Meso and metanotum; 15. Tergites VIII-X (male).

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Conflict of Interests

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

References

- Bhatti, J.S., Alavi, J., zur Strassen, R. & Telmadarraiy, Z. (2009) Thysanoptera in Iran 1938-2007. An Overview. Part 1. *Thrips*, 7, 1-82.
- Hood, J.D. (1912) New genera and species of North American Thysanoptera from the South and West. *Proceedings of the Biological Society of Washington*, 25, 61-76.
- Minaei, K. (2017) *Thrips, minute insects but opportunist*. Shiraz University Press. 254 pp. (in Persian).
- Minaei, K. & Alichy, M. (2013) The grass-living thrips (Insecta: Thysanoptera) from Iran with the first record of the genus *Arorathrips* Bhatti. *Journal of Entomological and Acarological Research*, 45(2), 65-68. <https://doi.org/10.4081/jear.2013.e12>
- Mound, L.A. (1997) Biological diversity. In Lewis T. (ed.), *Thrips as Crop Pests*. CAB International, Wallingford, pp. 197-215.
- Mound, L.A. (2011) Grass-dependent Thysanoptera of the family Thripidae from Australia. *Zootaxa*, 3064, 1-40.
- Mound, L., Lima, E., O'Donnell, C. & Cavalleri, A. (2016) New World grass thrips of the genus *Plesiothrips* (Thysanoptera: Thripidae). *Austral Entomology* 55, 340-346. <https://doi.org/10.1111/aen.12198>
- Pelikan, J. (1988) A new Irano-Turkmenian species of *Bregmatothrips* Hood, 1912 (Thysanoptera). *Acta Entomologica Bohemoslovaca*, 85, 464-468.
- Priesner, H. (1939) Contributions towards a knowledge of the Thysanoptera of Egypt, XII. *Bulletin de la Societe Royale entomologique d'Egypte*, 22, 123-132.
- Priesner, H. (1965) A monograph of the Thysanoptera of the Egyptian deserts. *Publications de l'Institut Desert d'Egypte*, 13, 1-549.
- Rachana, R.R., Varatharajan, R. (2017) A new species of the genus *Bregmatothrips* (Thysanoptera: Thripidae) from the Andaman Islands of India. *Zootaxa*, 4317, 597-600. <https://doi.org/10.11646/zootaxa.4317.3.13>
- ThripsWiki. (2017) ThripsWiki - providing information on the World's thrips. Available from <https://thrips.info/wiki> [Accessed at 26th October 2017].
- Wang, Z., Zhao, C., Chen, J. & Tong, X. (2016) Two newly recorded genera and a new species of Thripinae from China (Thysanoptera: Thripidae). *Zoological Systematics*, 41, 253-260. <https://doi.org/10.11865/zs.201626>
- zur Strassen, R. (2003) Die terebranten Thysanopteren Europas und des Mittelmeer-Gebietes. *Die Tierwelt Deutschlands*, 74, 1-271. [in German].

جنس *Bregmatothrips* (Thysanoptera: Thripidae) در ایران همراه با گزارش جدید یک گونه از جنوب ایران

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چکیده: گونه *Bregmatothrips willcocksii* (Priesner) بر اساس نمونه‌های جمع‌آوری شده از هر دو جنس نر و ماده از روی قیاق، *Sorghum halepense* (خانواده گندمیان) برای اولین بار از ایران گزارش می‌شود. این دومین عضو جنس *Bregmatothrips* در ایران است و بر خلاف بیشتر گونه‌های این جنس روی شاخک‌های سوم و چهارم اندام حسی چنگالی دارد. کلید مصور برای جدا کردن دو گونه ارائه شده است.

واژگان کلیدی: *Bregmatothrips willcocksii*، گندمیان، گزارش جدید، تریپس