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## Occurrence of *Tenothrips hispanicus* (Thysanoptera: Thripidae) in Iran

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**ABSTRACT.** *Tenothrips hispanicus* (Bagnall) was collected from Fars province, south of Iran. This is the first report of the species from Iran. Characterization of the species, comparison with its close species, *T. frici* (Uzel) as well as their illustrations are provided.

**Key words:** Fars province, Iran, new record, Fabaceae

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### Introduction

The genus *Tenothrips* Bhatti with 19 species worldwide is originally from the Mediterranean region but currently distributed to most parts of the world (ThripsWiki, 2019). The species in this genus are associated with many species of Asteraceae (Zhang et al., 2018). Four species of *Tenothrips* have hitherto been recorded from Iran: *T. discolor* (Karny), *T. frici* (Uzel), *T. latoides* (Pelikan) and *T. reichardt* (Priesner) (Minaei, 2017). In this paper, the fifth species of the genus, *T. hispanicus* (Bagnall) is recorded and illustrated for the first time from this country. Moreover, the widespread species in the genus i.e. *T. frici* is compared with *T. hispanicus*.

### Material and methods

Thrips specimens were collected, mounted onto slides using the method described by Mound & Kibby (1998). Photomicrographs and measurements were made using an Olympus BX51 phase-contrast microscope with DP27 digital camera and cellSens software. All specimens have been deposited in the Department of Plant Protection, College of Agriculture, Shiraz University, Shiraz, Iran.

### Results

*Tenothrips hispanicus* (Bagnall, 1921)

*Physothrips croceicollis* Priesner, 1919: 124.

*Physothrips hispanicus* Bagnall, 1921: 63.

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*Tenothrips hispanicus* was originally described as *Physothrips hispanicus* by Bagnall (1921). Priesner (1919) described *Physothrips croceicollis* as variety of *frici*. Although the name *croceicollis* Priesner was published earlier (see also zur Strassen, 2003), it is unavailable under the Code of Zoological Nomenclature (see Bhatti, 2003: 6). Thus the name *hispanicus* is to be used for the species. This is the first record of the species in Iran.

**Diagnosis:** Female fully winged (Fig. 1). Body bicolored, legs mostly yellow; antennal segment I light brown, II-III almost yellow, IV-VI yellow in basal half, VII-VIII almost brown (Fig. 6); fore wings pale; pronotum yellow (Fig. 2) or yellow brown (Fig. 3), meso and metanotum pale brown (Fig. 4); head and abdomen brown. Head wider than long; antennae 8-segmented; segments III & IV each with a short forked sense cone. Head with 3 pairs of ocellar setae, pair III slightly longer than distance between hind ocelli, arising just anterior to these ocelli.

Pronotum with transverse lines of sculpture, 2 pairs of long posteroangular setae and 4 pairs of posteromarginal setae. Mesonotum with median setae far from posterior margin; campaniform sensilla present. Metanotum weakly reticulate, concentric posteromedially; campaniform sensilla absent (Fig. 4). Fore wing first vein with 2–4 setae on distal half; second vein with complete row (Fig. 5). Abdominal tergites III–VII with no sculpture medially; tergite VIII with no ctenidia but with several scattered microtrichia anterior to spiracle, posteromarginal comb absent medially but with short microtrichia laterally (Fig. 7). Sternites without discal setae, abdominal sternum VII has the median pair of setae arising far ahead of posterior margin.

**Measurements of one female in microns:** Body length 1267. Head length (width) 100 (146), ocellar setae III length 35, postocular setae I length 11. Pronotum length (width) 120 (180), posteroangular setae I length 54, posteroangular setae II length 45. Fore wings length 665. Tergite IX S1 setae length 108. Antennal segments I to VIII length: 15, 30, 34, 37, 30, 43, 7, 13.

**Male macroptera** (Fig. 9). Similar to female in structure but smaller and the color is completely yellow. Sternites III–VII each with oval pore plate (Fig. 8). Hypomere extending beyond base and the parameres are strongly hooked ventrally at apex (Fig. 10).

**Measurements of one male in microns:** Body length 1084. Head length (width) 93 (128), ocellar setae III length 24, postocular setae I length 10. Pronotum length (width) 107 (160), posteroangular setae I length 41, setae II length 29. Fore wings length 640. Tergite IX S1 setae length 44. Antennal segments I to VIII length: 17, 30, 36, 35, 30, 40, 7, 11.

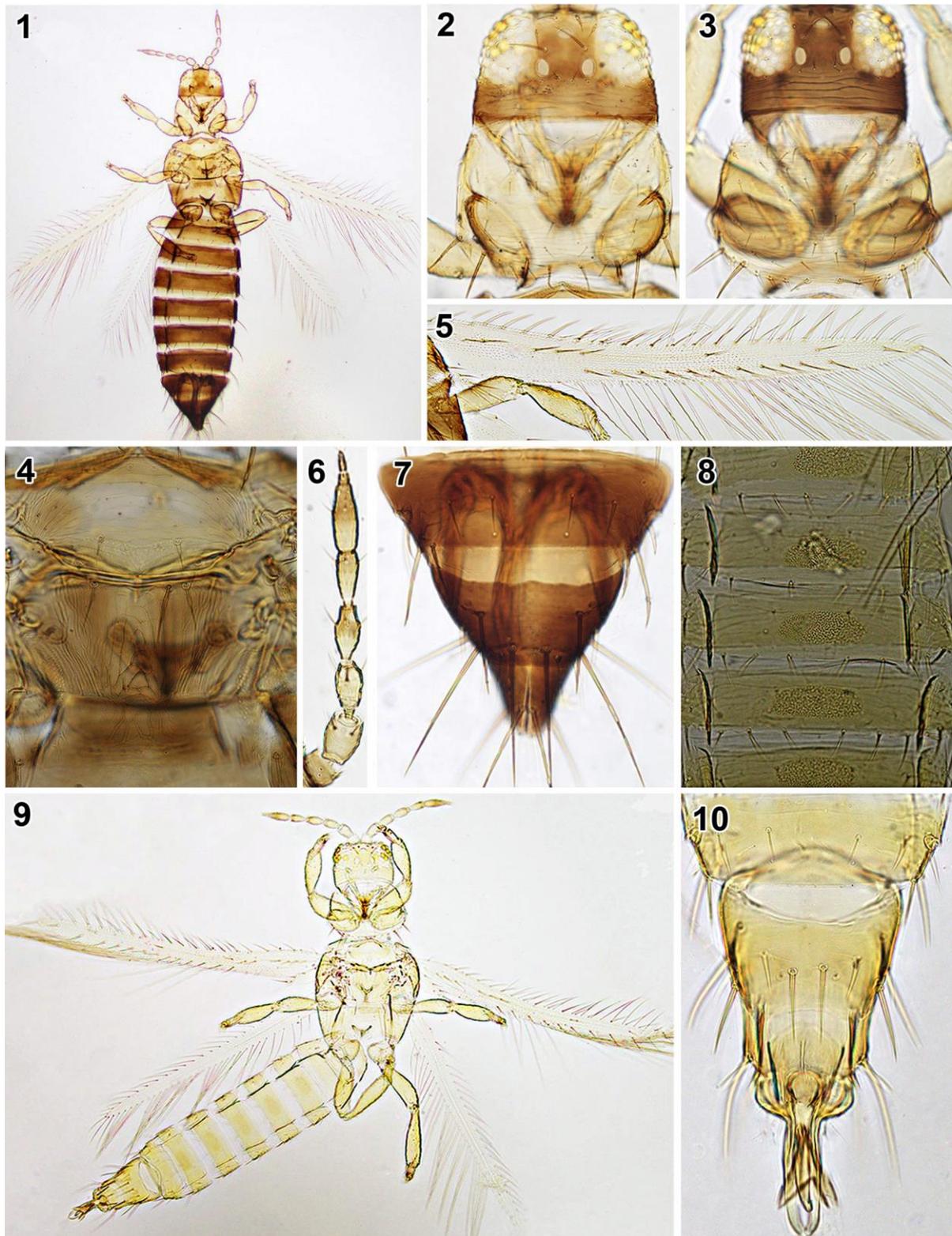
**Material examined:** Fars province, Badjgah, 3♀♀, 2♂♂, an unknown Fabaceae (on flowers), 16.X.2016, leg.: A. Afsharizadeh Bami.

**Distribution in Iran:** Fars province (this study). New record for Iran.

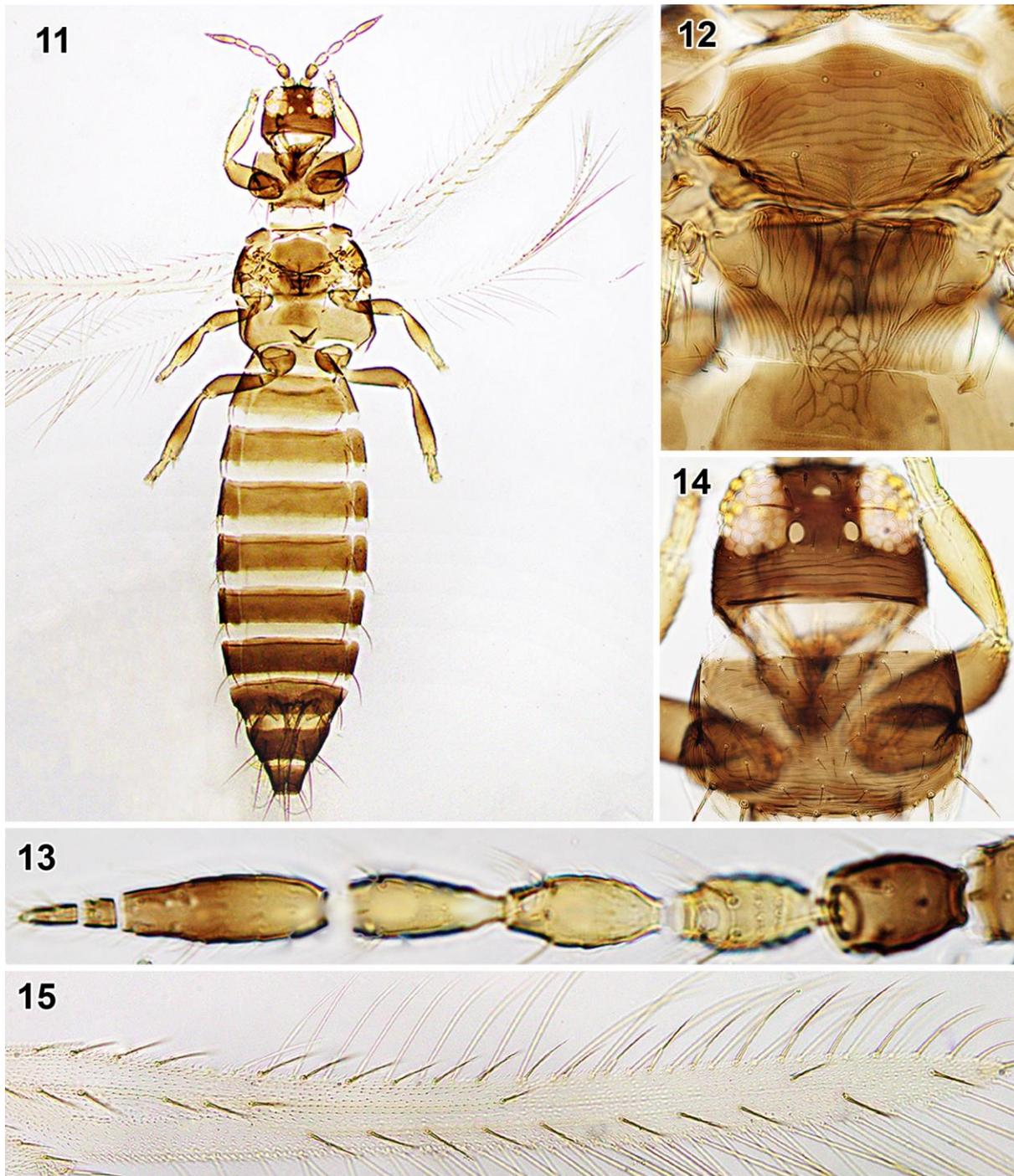
**Distribution in the world:** Iran (this study), Spain, Italy, Corsica, Greece, Albania, Rumania, Hungary, Georgia, Transcaucasia, Morocco (Bhatti, 2003)

## Discussion

According to Bhatti (2003), since 1926 nothing has been added in the literature to characterize the species discussed in this paper. Here for the first time the species is illustrated in details. *Tenothrips hispanicus* is very close to the widespread species, *T. frici* in structure (Fig. 11) in having the sculpture on meso- and metathorax (Figs 4, 12) and color of fore wings (Figs 5, 15). However, their females are different in color of thorax: prothorax yellow or pale brown, meso- and metathorax brownish yellow in *T. hispanicus* (Figs 2, 3, 4), but pro-, meso- and metathorax are brown in *T. frici* (Figs 12, 14). They also differ in the color of Antennae (Figs 6, 13).



**Figures 1-10.** *Tenothrips hispanicus*. Female (1-7): (1) Body; (2) Head and pronotum (light brown); (3) Head and pronotum (brown); (4) Meso and metanotum; (5) Fore wing; (6) Antenna; (7) Abdominal tergites VIII-X. Male (8-10): (8) Abdominal sternites III-VII; (9) Body; (10) Tergites VII-X.



**Figures 11-15.** *Tenothrips frici*, female (11) Body; (12) Meso and metanotum; (13) Antenna; (14) Head and pronotum; (15) Fore wing.

Males of these species can be distinguished based on the color of body (brown in *T. frici* while almost uniformly yellow in *T. hispanicus* (Fig. 9)). Interestingly, specimens of both species were collected together in the same plant in this study. Although the females of these two species are similar somehow but there is a distinction between color of males as mentioned above. According to Mound et al. (2019 a, 2019b), in population of *T. frici* from Britanica and California, fore wings are “light brown”. Laurence Mound (personal communication, 2019)

also pointed that the wing color is variable in this species from remarkably dark to quite light brown with the wing apex clearly paler. However there are only 3 individuals with uniformly pale wings in the Australian National Collection. In contrast all specimens collected in this study as well as specimens in Plant Protection Department, Shiraz University have uniformly pale wings (Fig. 15). This is true for specimens that the authors recently received from Khuzestan province. Furthermore, all the 20 specimens examined by Jalil Alavi from both sexes of *T. frici* have uniformly pale wings (Jalil Alavi, personal communication, 2019). In parallel, all specimens in the Hayk Mirzayans Insect Museum (HMIM), have also uniformly pale fore wings (Shahab Manzari, personal communication, 2019). Finally, all materials (from both sexes) that identified as *T. frici* and deposited in Ilam University have the same color wing (Majid Mirab-balou, personal communication, 2019). Thus it seems likely that Iranian population of *T. frici* has pale fore wings. Species of *Tenothrips* apparently breed in flowers (Zhang et al., 2018) and the specimens of *T. frici* and *T. hispanicus* in this survey were collected from flowers of an unknown Fabaceae.

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### Conflict of Interests

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

### References

- Bagnall, R.S. (1921) On *Physothrips latus* Bagn. and some allied species. *Entomologist's monthly Magazine*, 57, 61–64.
- Bhatti, J.S. (2003) The genera *Tenothrips* and *Ewartithrips* (Terebrantia: Thripidae) and pigmented facets of eye in some Terebrantia. *Thysanoptera*, 2003, 1–10.
- Minaei, K. (2017) *Thrips, minute insects but opportunist*. Shiraz University Press, Shiraz, Iran, 254 pp. [in Persian].
- Mound, L.A., Collins, D. & Hastings, A. (2019a) *Thysanoptera Britannica et Hibernica. A guide to British thrips*. Lucidcentral.org, Identic Pty Ltd, Queensland, Australia. [https://keys.lucidcentral.org/keys/v3/british\\_thrips/](https://keys.lucidcentral.org/keys/v3/british_thrips/) [Accessed 15 October 2019].
- Mound, L.A., Hoddle, M.S. & Hastings, A. (2019b) *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/](https://keys.lucidcentral.org/keys/v3/thrips_of_california_2019/) [Accessed 15 October 2019].
- Mound, L.A. & Kibby, G. (1998) *Thysanoptera: An Identification Guide*. CAB International, Wallingford. 70 pp.
- Priesner, H. (1919) Zur Thysanopteren-Fauna Albaniens. *Sitzungsberichte der Kaiserlichen Akademie der Wissenschaften*, 128, 115–144.
- ThripsWiki. (2019) *providing information on the World's thrips*. Available from: <https://thrips.info/wiki/> [Accessed 29 September 2019].

- Zhang, S.M., Mound, L.A. & Hastings, A. (2018) Thysanoptera Chinensis. Thripidae Genera from China. [https://keys.lucidcentral.org/keys/v3/thysanoptera\\_chinensis/index.html](https://keys.lucidcentral.org/keys/v3/thysanoptera_chinensis/index.html) [Accessed 29 September 2019].
- zur Strassen, R. (2003) Die terebranten Thysanopteren Europas und des Mittelmeer-Gebietes. *Die Tierwelt Deutschlands*, 74, 1–271. [in German].

## وجود گونه افشاری زاده بمی و کامبیز مینایی\* (Thysanoptera: Thripidae) *Tenothrips hispanicus* در ایران

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**چکیده:** گونه *Tenothrips hispanicus* (Bagnall) از استان فارس، جنوب ایران جمع آوری شد. این اولین گزارش این گونه از ایران است. خصوصیات گونه، در مقایسه با گونه‌ی نزدیک به آن، (*T. frici* (Uzel) همراه با تصاویر آنها ارائه شد.

**واژگان کلیدی:** استان فارس، ایران، گزارش جدید، باقلائیان