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Two new species and one new record species of the genus *Thrips* (Thysanoptera, Thripidae) with an updated checklist from Iran

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ABSTRACT. Two species, *Thrips golili* **sp. nov.** and *Thrips silybum* **sp. nov.** are described from flowering plants of northeastern Iran. The color forms of *T. golili* **sp. nov.** are discussed. *Thrips apicatus* Priesner is reported for the first time from Kish Island in the Persian Gulf. Published record as of *T. coloratus* Schmutz and *T. juniperinus* Linnaeus from Iran are not confirmed and description of *T. alavii* Mirab-balou, Tong & Chen is considered doubtful here. The checklist of Iranian *Thrips* is updated to contain 37 species.

Key words: *Thrips*, new species, northeast of Iran, checklist

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Introduction

The genus *Thrips* Linnaeus is the largest genus in the Thysanoptera, and currently includes worldwide, about 300 extant species (Thripswiki, 2020). Members of this genus exhibit a wide range of biologies. Many species live in flowers, others live only on leaves, and some species live in both habitats, particularly the pest species (Mound & Masumoto, 2005). For many species, due to the lack or deficiency of biological information such as biology, geographical distributions, host associations and structural variation, accurate identification continues to be a problem (Mound & Azidah, 2009).

Membership of the genus is characterized by lack ocellar setae I and having ctenidia on tergite VIII posteromesad to the spiracles. Other characters, such as body size, body colour, number of antennal segments, chaetotaxy of the body and wings are highly variable within the genus (Palmer, 1992; Nakahara, 1994; Mound & Masumoto, 2005).

Material and methods

Thrips specimens were collected by beating from plants, then preserved in Bhatti's collection fluid (10% ethyl alcohol, 9 parts; glacial acetic acid, 1 part; Triton X-100, 1 mL in 1000 mL of the mixture of 10% ethyl alcohol + acetic acid) (Bhatti, 1999), and mounted into

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Canada balsam after dehydration through a series of ethanol using the protocol given in ThripsWiki (2020). Some specimens of *T. golili* **sp. nov.** were mounted into Hoyer's medium. The images were taken using a Motic BA300 microscope equipped with LISSCAM 500-1 digital camera. The holotypes of the new species are deposited in Hayk Mirzayans Insect Museum (HMIM), Iranian Research Institute of Plant Protection, Tehran, Iran. One paratype female and one paratype male of *T. golili* **sp. nov.** are deposited in the Australian National Insect Collection. Other specimens including paratypes are deposited in the personal collection of the author.

Results

Thrips golili Alavi, sp. nov.

http://www.zoobank.org/232E83CA-FA80-4984-B7CD-2A501357137C

Type material. Holotype female: **IRAN**, **Khorasan-e Shomali province,** Shirvan, Sarany Protected Area, from flowering *Gypsophila aretioides* (Caryophyllaceae), 21.viii.2013, J. Alavi.

Paratypes: 26 females, 9 males, same data as holotype. 2 female, 3 males, from flowers of *Rosa*. sp.; 1 female, from flowering *Acantholimon* sp., all same locality, date and collector as holotype. **Bojnourd,** Langar village, 4 females, 3 male, from flowers of *Rosa canina*; 5 males, from flowers of *Rosa foetida*; 8 females, 1 male, from flowers of *Rosa moschata*; all 30.v.2013, J. Alavi. Ghasr-e Ghajar village, 1 female, from flowers of *Rosa moschata*, 30.v.2013, J. Alavi. Asadli village, Pelmis, 5 females, 2 males, from flowers of *Lepidium latifolium*, 18.vi.2006, J. Alavi. Sisab village, Natural Resources Research Station, 5 females, 1 male, from flowers of *Rapistrum rugosum*; 1 female, from flowers of *Convolvulus dorycnium*; all 29.v.2018, J. Alavi. **Esfarayen**, Sar-Cheshmeh village, 1 female, from *Carex* sp., 2.vi.2006, J. Alavi. **Khorasan-e-Razavi province, Neyshabour**, 2 females, from *Acanthophyllum* sp., 14.vi.2013, N. Gholami.

Female macroptera. Body light yellow to dark brown (Figs 13–15), in dark forms tarsi somewhat paler, antennal segments brown, segment III slightly paler (Fig. 3); forewings uniformly pale, weakly shaded in dark forms (Fig. 7). Major setae on pronotum and metanotum dark (Fig. 1). Antennae 7-segmented. Head wider than long; ocellar setae III arise on outer margins of triangle close to first ocellus; postocular setae in a row, seta II smaller than I and III, ocellar region with fine transverse striae (Fig. 1). Pronotum with well-developed transverse striae, 30–40 discal setae; 2 equal pairs of posteroangular setae, 3 pairs of posteromarginal setae (Fig. 1). Mesonotum with fine transverse striations; anteromedian campaniform sensilla present. Metanotum striated longitudinally except in anterior area with weak equiangular reticulation; median setae relatively short, situated behind of anterior margin; campaniform sensilla absent (Fig. 2). Forewing first vein with 7 setae on basal half, 3 setae on distal half; second vein with 12–14 setae (Fig. 7); clavus with 5 marginal setae, terminal seta longer than subterminal seta, with one discal seta. Abdominal tergite I with paired campaniform sensilla; tergite II with 3 lateral marginal setae (Fig. 5); tergite VIII posteromarginal comb absent medially, with several microtrichia laterally; tergite IX with 2 pairs of campaniform sensilla (Fig. 6). Pleurotergites without discal setae; sculpture lines with ciliate microtrichia (Fig. 4). Sternites II–VII with no discal setae, sternite I with three small setae between hind coxae; sternite VII marginal setae S1 arise in front of margin.

Measurements (holotype female in microns). Body length 1400. Head, length 113; width across eyes 137; ocellar setae III length 17. Pronotum, median length 113, width 155; posteroangular setae outer (inner) 37 (37); median posteromarginal setae 21. Metanotum median setae 26. Tergite IX S1 and S2 setae length 57 and 82. Forewing, length 750. Antennal length 300; segments I–VII length 25, 37, 57, 48, 37, 52, 21.

Male macroptera. Body light brown; antennal segment I white, II–VII light brown, II lighter than rests; forewings clear. Tergite IX with two pairs of campaniform sensilla, median setae arising anterior to lateral pair and posterior to campaniform sensilla (Fig. 9). Abdominal sternites III–VI each with an almost indistinct broad transverse pore plate (Fig. 8).

Measurements (paratype male in microns). Body length 1100. Head, length 85; width across eyes 118; ocellar setae III 15. Pronotum median length 100, width 125; posteroangular setae outer (inner) 30 (32). Metanotum median setae 22; Forewing, length 560. Tergite IX median setae length 57, lateral setae length 58. Antennal length 252, segments I–VII length 17, 35, 45, 38, 33, 50, 16.

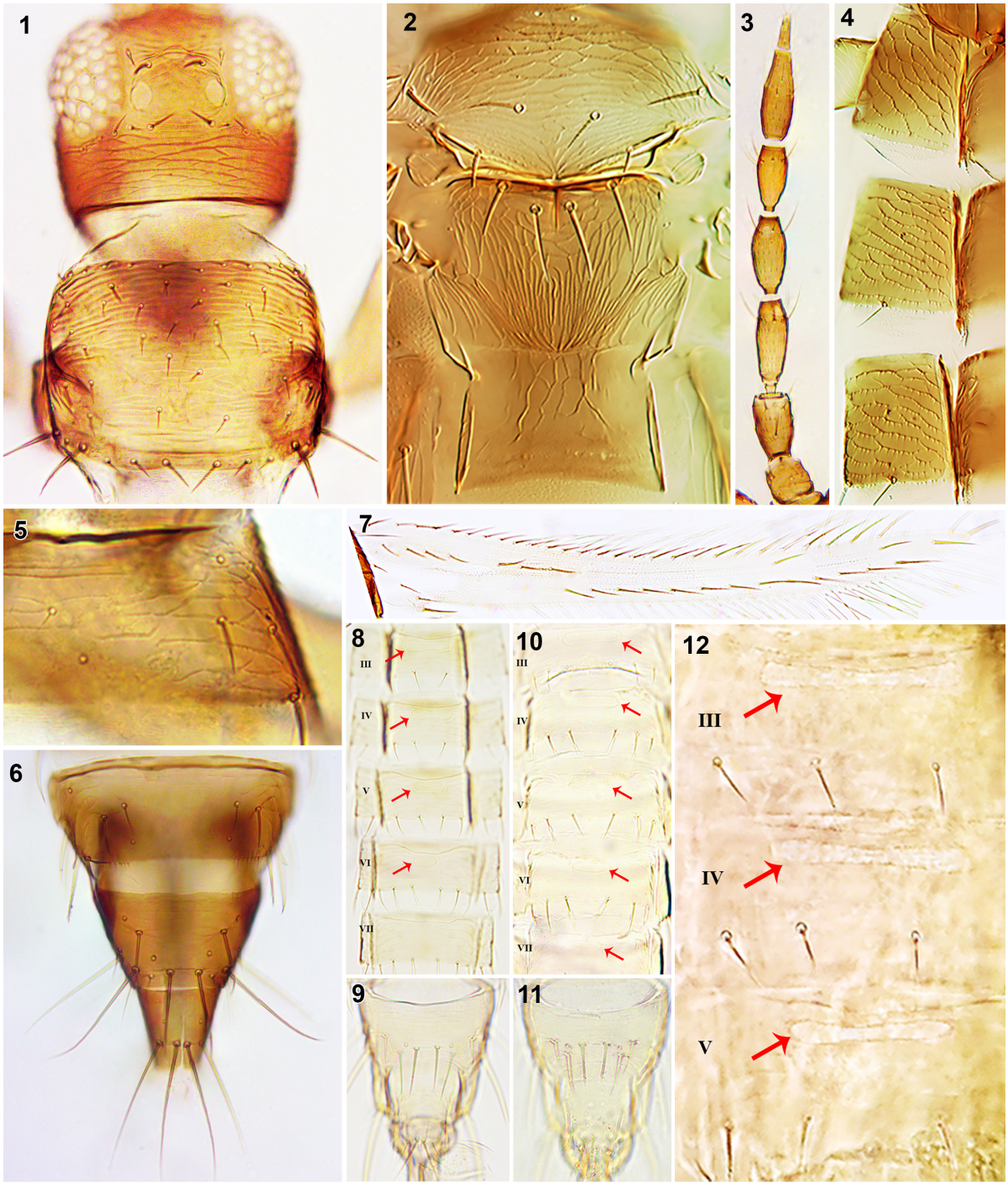
Comments. Judging from the identification key to British Thysanoptera by Mound et al. (1976), based on couplets 32 this new species is similar to the European species *T. juniperinus* and *T. major*. In using key to European species of genus *Thrips* by zur Strassen (2003), it runs down a gain to same species in couplets 69 and 70 for females, and in couplet 138 for male of *T. juniperinous*.

It is distinguished from *T. juniperinus* by longitudinal striation on the metanotum posteromedially (Fig. 2) (vs. equiangular reticulation, see Mound, et al. 2018), short dorsal split on tergite X extending usually to half and at most two-thirds of length of tergite X (vs. longer split, extending to not far from the apical margin, although not actually reaching that) (Laurence Mound, personal communication, 7th May 2020). In male, pore plates on sternites in *T. golili* **sp. nov.** are somewhat broader, e.g. in sternite V about 4 times as wide as length (vs. slender and wide, in sternite V 9–11 times as wide as length) (Figs 8 and 12). Moreover, *T. juniperinus* is a monophagous species that feeds and breeds on the leaves of *Juniperus communis* (zur Strassen, 2003).

T. golili **sp. nov.** is also very similar to *T. major*, but is distinguished easily from that by having three small setae on sternite I between hind coxae (vs. absent). Furthermore, males have sternites III–VI with almost indistinct pore plates, but none on sternite VII (vs. sternites III–VII with distinct pore plates) (Figs 8 and 10), tergite IX median setae are equal to or slightly longer than the lateral pair (vs. slightly shorter), median pair arising posterior to campaniform sensilla (vs. arising anterior to campaniform sensilla) (Figs 9 and 11).

Females of *T. golili* **sp. nov.** vary greatly in color (Figs 13–15). Most were either light yellow or dark brown, even at the same date and locality. But this diversity was not seen within the members of any single sample. Initially it was assumed that two different species were involved, but this was rejected after finding intermediate color forms.

Etymology. Species name refers to the place of the collection. Golil is a region located in Sarany area bordering Turkmenistan. A protected area with a variety of forest and rangeland plants, and rich diversity.



Figures 1–12. *Thrips* species. **1–9.** *T. golili* **sp. nov.**: **1.** head and pronotum, **2.** pro, meso and metanotum, **3.** Antenna, **4.** pleurotergites II–IV, **5.** lateral of tergite II, **6.** tergites VIII–X, **7.** fore wing, **8.** sternites III–VII (male), **9.** tergites IX–X (male). **10–11.** *T. major*: 10. sternites III–VII (male), **11.** tergites IX–X (male). **12.** *T. juniperinus*: **12.** sternites III–V (male). The red arrows show pore plates.

Figures 13–15. Color forms of *Thrips golili* **sp. nov.**

Thrips silybum Alavi, sp. nov.

www.zoobank.org/C20A0874-0C8B-494C-BBC1-DF6415360F74

Type material. Holotype female: **IRAN**, Khorasan-e Shomali province, Bojnourd, Sisab, Natural Resources Research Station, from flowers of *Silybum marianum* (L.) (Asteraceae), 21.vi.2020, H. Yahuyan.

Paratypes: 5 females, same data as holotype. Oter-abad village, 2 females; Kalantar village, 20 females; Qaleh Joq village, 1 female; all from flowers of *Silybum marianum*, 20.v.2020, J. Alavi. Kohneh kand, Research station, 5 females, from flowers of *Onopordon leptolepis*, 2.vii.2020, J. Alavi. 1 female, same locality and plant, 23.vi.2020, H. Yahuyan. Kohneh kand, Golestan town road, 9 females, from flowers of *Onopordon leptolepis*, all 3.vi.2020, J. Alavi. Sisab village, Natural Resources Research Station, 13 females, from flowers of *Onopordon leptolepis*; 2 females, from flowers of *Convolvulus dorycnium*; 1 female, from flowers of *Centaurea* sp.; 1 female, from flowers of *Centaurea depressa*; 1 female, from flowers of *Phlomis cancellata*, 1 female, from flowers of *Salvia* sp.; all 29.v.2018, J. Alavi. 2 females, from flowers of *Centaurea bruguierana*, 18.vi.2018, J. Alavi. **Ashkhaneh,** Kastan village, 2 females, from flowers of *cirsium* sp., 12.v.2014. J. Alavi. Haver village, 5 females, from flowers of *Onopordon leptolepis*; 7 females, flowers of *Silybum marianum*; all 26.vi.2020, H. Yahuyan. Kerik village, 6 females, from flowers of *Onopordon leptolepis*, 30.vi.2020, H. Yahuyan. **Shirvan,** city belt**,** 7 females, from flowers of *Onopordon leptolepis*, 7.vi.2014, J. Alavi. **IRAN, Golestan Province,** 4 females, Maraveh-tappeh, Gug-darreh village, from flowers of *Silybum marianum*, 2.vi.2002. J. Alavi.

Female macroptera. Body brown (Fig. 16), femura brown, fore tibia yellowish brown, darker in outer margin, mid and hind tibia brown as dark as body color, fore and mid tarsus yellow, hind tarsus yellowish brown; antennae bicolored, segments I–II brown, as dark as head, III–V yellow, VI–VIII brownish yellow, VI yellowish in basally (Fig. 18); forewings uniformly shaded brown, with dark setae; major setae of body dark (Fig. 21). Antennae 8-segmented, Head wider than long (Fig. 17); ocellar setae III arise anterior of posterior ocelli, outside ocellar triangle; postocular setae in a row, seta III smallest, II slightly smaller than I and IV, ocellar region with distinct transverse striae. Pronotum with faint transverse striae in anterior half and mid of posterior half, striae weaker than on head, about 40 discal setae; 2 equal pairs of posteroangular setae, 3–4 pairs of posteromarginal setae, median pair distinctly longer than laterals (Fig. 17). Mesonotum with weak transverse

striations; anteromedian campaniform sensilla present. Metanotum with sparse lines of sculpture longitudinal medially, but oblique at anterior; median setae situated behind of anterior margin, campaniform sensilla absent (Fig. 19). Forewing first vein with 7 setae on basal half, 3 setae on distal half; second vein with 14–17 setae (Fig. 21); clavus with 5 marginal setae, terminal seta longer than subterminal seta, with one distinct discal seta. Abdominal tergite I with paired campaniform sensilla; tergite II with 4 lateral marginal setae (Fig. 22); tergite VIII posteromarginal comb complete, microtrichia relatively short and widely spaced (Fig. 23); tergite IX with 2 pairs of campaniform sensilla. Pleurotergites without discal setae; sculpture lines without ciliate microtrichia. Sternites III–VII with 6–11 discal setae in one row (Fig. 20), sternite I with three small setae between hind coxae; sternite VII marginal setae S1 arise in front of margin.

Measurements (holotype female in microns). Body length 1730. Head, length 140; width across eyes 170; ocellar setae III length 23. Pronotum, median length 160, width 220; outer (inner) posteroangular setae length 67 (70); median posteromarginal setae length 32. Metanotum median setae length 40. Tergite IX S1 and S2 setae length 102 and 125. Forewing, length 850. Antennal length 300; segments I–VII length 30, 37, 57, 50, 37, 53, 10, 15.

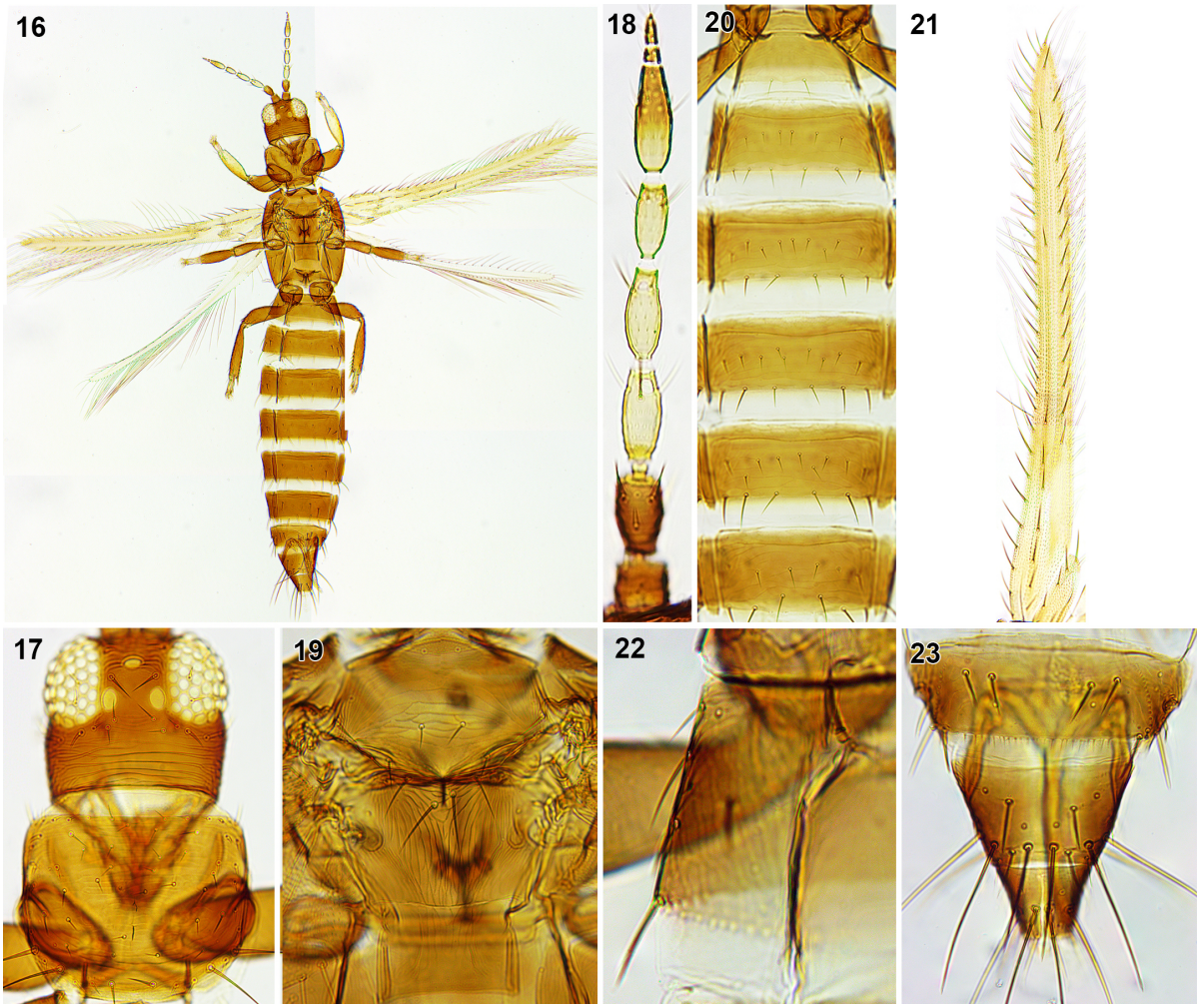
Male unknown.

Comments. In determining the new species, when using the identification keys for the species of genus *Thrips* by zur Strassen (2003) as well as Mirab-balou (2016), it runs down to couplets 20 and 15, respectively, where stated metanotum with campaniform sensilla and tergite II with four lateral marginal setae OR metanotum without campaniform sensilla and tergite II with three lateral marginal setae. While, in *T. silybum* **sp. nov.** metanotum have no companiform sensilla and the number of lateral marginal setae on tergite II is four. This new species is similar to *T. trehernei*, *T. physapus* and *T. pelikani* in having discal setae on abdominal sternites II (or III)–VII, absence of companiform sensilla on metanotum, number of antennal segments and color pattern of forewings. However, it is easily distinguished from them by having four lateral marginal setae on abdominal tergite II (vs. three). Judging from the key to British thysanoptera by Mound et al. (1976), this new species is similar to *T. simplex*. But it differs in having uniformly shaded forewings (vs. paler at the base), lacking markings inside reticles of metanotum (vs. presence), and having four lateral marginal setae on tergite II (vs. three). A host plant relationship between *T. sylibum* **sp. nov.** and the family Asteraceae is evident.

Etymology. This species is named after the genus of plant from which it was collected.

Thrips juniperinus Linnaeus, 1758

This species was reported from Iran on the basis of three females collected on *Acanthophyllum* sp. from Khorasan-e Razavi province (Gholami et al. 2014). This report is the result of a misidentification of *T. golili* **sp. nov.**, and is therefore not accepted here. Gholami et al. (2014) were noticed the difference of metanotal sculpture between the collected specimens and *T. juniperinus* according to what is stated and illustrated by Mound et al. (1976), and concluded that these differences might be due to intraspecific variations. There are a few morphological and biological differences between the two species, which were discussed above.



Figures 16–23. *Thrips silybum* **sp. nov.**: **16.** Body, **17.** head and pronotum, **18.** Antenna, **19.** pro, meso and metanotum, **20.** sternites I–VII, **21.** fore wing, **22.** lateral of tergite II, **23.** tergites VIII–X.

Thrips apicatus Priesner, 1934

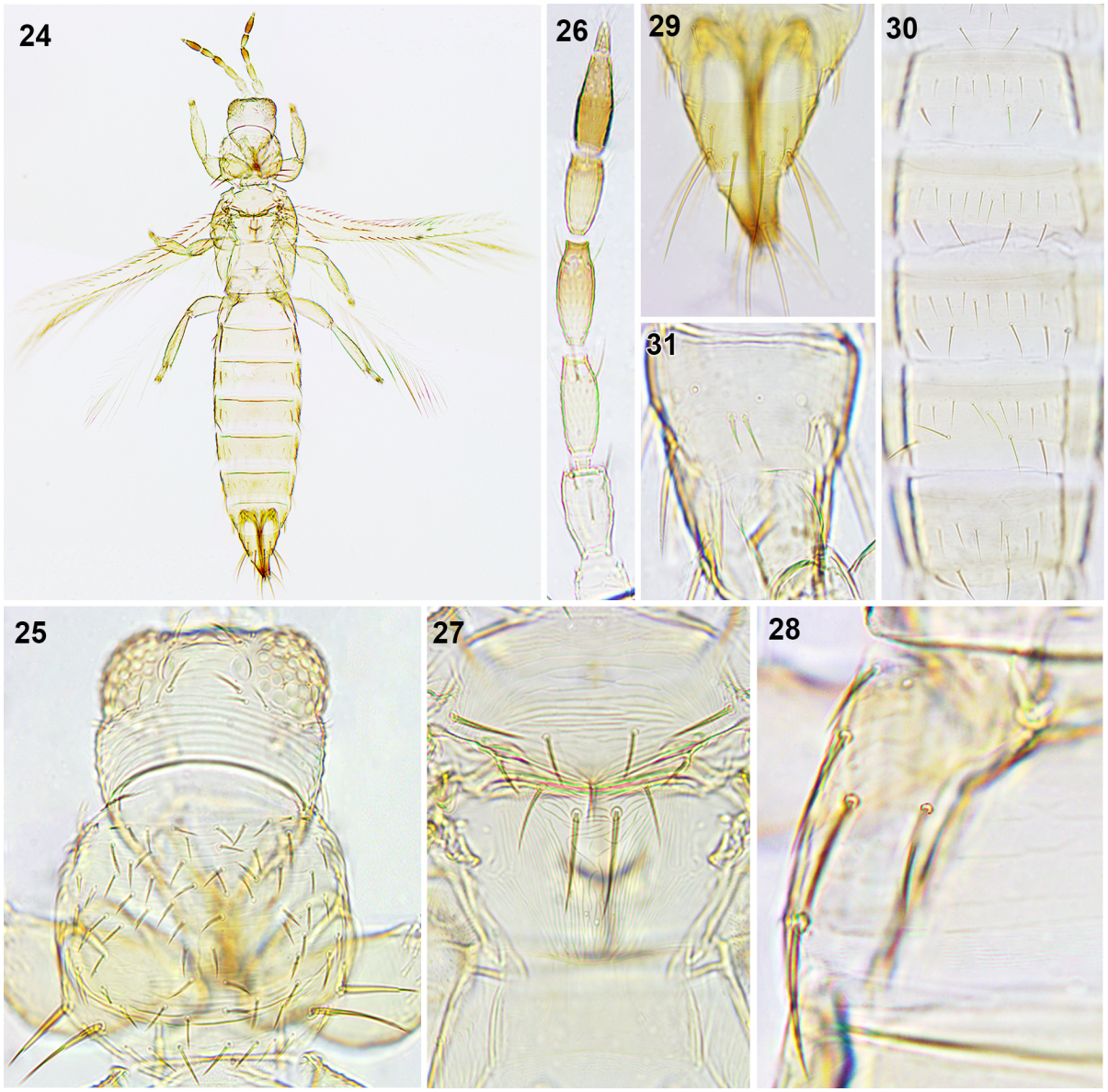
Material studied. **IRAN**, Hormozgan province, Kish Island, 2 females, 1 male from flowers of *Parkinsonia aculeata* L. (Fabaceae), 28.III.2016, J. Alavi.

This species was identified based on descriptions by Bhatti (1980) and Palmer (1992). Described from India, recorded from Thailand and Philippines, and often found in *Acacia* flowers (ThripsWiki, 2020). Alavi et al. (2018) noted that the thrips fauna of the Iranian islands of the Persian Gulf is largely influenced by the fauna of East Asia, India and Africa.

Diagnosis. Female macroptera; body uniformly yellow (Fig. 24), abdominal segment X sometimes dark in distal half (Fig. 29), wings pale, antennae pale with segments III or IV–V bicoloured, VI & VII dark (Fig. 26), major setae on body and wings dark. Antennae 7-segmented; ocellar setae III situated outside ocellar triangle (Fig. 25). Metanotal campaniform sensilla present; sculpture longitudinally striate in posterior half; median setae situated behind anterior margin (Fig. 27). Forewing first vein with 7 basal and 3 distal

setae; scale with 5 setae. Abdominal sternites III–VII with numerous, usually more than 20 long discal setae (Fig. 30). Pleurotergites with 2–6 discal setae; tergite II with 4 lateral marginal setae (Fig. 28); tergite VIII posteromarginal comb irregular and sometimes absent medially (Fig. 29).

Male. macropterous; body yellow; sternites III–VII each with a transverse and indistinct pore plate; tergite VIII posteromarginal comb absent; tergite IX S1 setae longer than S2 (Fig. 31).



Figures 24–31. *Thrips apicatus*: **24.** body, **25.** head and pronotum, **26.** antenna, **27.** pro, meso and metanotum, **28.** lateral of tergite II, **29.** tergites VIII–X, **30.** sternites II–VII, **31.** tergites IX–X (male).

Thrips coloratus Schmutz, 1913

Although, Minaei (2013) referred to the report of *T. coloratus* from Iran by Manzari (2004) as a doubtful report and excluded the species from his list, but Mirab-balou (2013; 2016; 2018) included "*T. coloratus*" in the list of *Thrips* species in Iran. Recently, during a personal communication with Shahab Manzari (Iranian Research Institute of Plant Protection), he explained that his identification has been as "*Thrips* near *colarutus*" which was mistakenly printed as *Thrips coloratus* in informal publication, Newsletter of Entomological Society of Iran, and reassured that the record of *T. coloratus* in Iran is certainly not accepted.

Discussion

In Iran, this genus includes 37 known species (including two new species and one new record here), and this represents 12.5% of the known world species of this the largest genus of Thysanoptera. So far, four species, *T. iranicus* Yakhontov, *T. pistaceae* Yakhontov, *T. fraudulentus* (Priesner) and *T. alavii* Mirab-balou, Tong & Chen have been described from Iran. The first two species have been described very briefly with few characters. Bhatti et al. (2009) considered them as dubious species because are not recognizable from their poor original description. The validity of *T. fraudulentus* is also considered as a doubtful species by Minaei (2013) duo to its high similarity to *T. atratus* Haliday. However, it was later reported by Mirab-balou et al. (2013) and Fekrat & Manzari (2014) from other parts of Iran.
T. alavii has been described based on one female from west of Iran on *Euphorbia* sp. The recognition of *T. alavii* as a distinct species remains doubtful because of confusing the situation of the median metanotal setae in the original description by Mirab-balou et al. (2012). In the description of the species as well as in the remarks section where *T. alavii* is compared with the close species, *vulgatissimus* Haliday, it is claimed that median setae of metanotum are situated at the anterior margin of the metanotum, while in the same paper, in couplet 11 of the identification key to species from Iran, and again in the remarks section where the species is compared with another similar species, *T. alliorum* (Priesner), it is stated that these setae are located near anterior margin of metanotum. Moreover, according to the original description of *T. alavii*, the metanotum lacks campaniform sensilla, while the metanotal campaniform sensilla are not always stable in presence or absence (Laurence Mound (Australian National Insect Collection CSIRO), personal communication, 25 June 2020). Moreover, judging this character based on just one female specimen cannot be expected to be entirely reliable. For example, among 97 studied specimens of *T. silybum* **sp. nov.** here, one specimen was found with one metanotal campaniform sensilla, while the rest of the specimens have no campaniform sensilla on metanotum.

An updated checklist of Thrips species from Iran

The first consolidated list of Iranian thrips (Mortazawiha & Dern, 1977) included only four species *T. flavus*, *T. iranicus*, *T. pistaciae* and *T. tabaci*. Bhatti et al. (2009) listed 26 species of *Thrips* reported until 2007 in Iran. Two checklists along with illustrated keys for Iranian species of *Thrips* were provided by Mirab-balou et al. (2012) and Mirab-balou (2016) for 26 and 31 species respectively, with no mention of *T. albopilosus* that was recorded new for the fauna of Iran by Khanjani & Mirab Balou (2005).

In 2013, two checklists for Iranian Thysanoptera were published: Minaei (2013) listed 28 *Thrips* species in his list, and excluded *T. coloratus* from the list because it had been reported in an informal newsletter. In contrast, Mirab-balou (2013) listed 29 species including *T.*

coloratus without referring to Minaei (2013), and without considering the report of *T. albopilosus* by Khanjani & Mirab-balou (2005). However, after a report by Fekrat & Manzari (2014), this species was finally included in the last checklist prepared by Mirab-balou (2018). The record of *T. juniperinis* from Iran by Gholami et al. (2014) is excluded here from the Iranian list because it is misidentification of *T. golili* **sp. nov.**, as discussed above.

In the most recent checklist provided by Mirab-balou (2018), 35 species of *Thrips* are listed from Iran. By excluding the *T. juniperinus* and *T. coloratus*, adding *T. praetermissus* Priesner that was recently reported by Minaei et al. (2018), plus one new report and two new species provided here, the list of *Thrips* species in Iran now includes 37 species (Table 1).

Table 1. Updated list of *Thrips* species (Thysanoptera: Thripidae) from Iran.

Species	Species
1- *Thrips alavii* Mirab-balou, Tong & Chen, 2012	20- *Thrips mareoticus* (Priesner, 1932)
2- *Thrips albopilosus* Uzel, 1895	21- *Thrips meridionalis* (Priesner, 1926)
3- *Thrips alliorum* (Priesner, 1935)	22- *Thrips minutissimus* Linnaeus, 1758
4- *Thrips angusticeps* Uzel, 1895	23- *Thrips nigropilosus* Uzel, 1895
5- *Thrips apicatus* Priesner, 1934	24- *Thrips praetermissus* Priesner, 1920
6- *Thrips atratus* Haliday, 1836	25- *Thrips pelikani* Schliephake, 1964
7- *Thrips australis* (Bagnall, 1915)	26- *Thrips physapus* Linnaeus, 1758
8- *Thrips carthami* Shumsher, 1946	27- *Thrips pillichi* Priesner, 1924
9- *Thrips dubius* Priesner, 1927	28- *Thrips pistaciae* Yakhontov, 1951
10- *Thrips euphorbiae* Knechtel, 1923	29- *Thrips simplex* (Morison, 1930)
11- *Thrips flavus* Schrank, 1776	30- *Thrips silybum* Alavi, **sp. nov.**
12- *Thrips fraudulentus* (Priesner, 1954)	31- *Thrips tabaci* Lindeman, 1889
13- *Thrips fuscipennis* Haliday, 1836	32- *Thrips trehernei* Priesner, 1927
14- *Thrips golili* Alavi, **sp. nov.**	33- *Thrips trybomi* (Karny, 1908)
15- *Thrips hawaiiensis* (Morgan, 1913)	34- *Thrips verbasci* (Priesner, 1920)
16- *Thrips iranicus* Yakhontov, 1951	35- *Thrips viminalis* Uzel, 1895
17- *Thrips italicus* Bagnall, 1908	36- *Thrips vuilleti* (Bagnall, 1933)
18- *Thrips longiceps* (Bagnall, 1916)	37- *Thrips vulgatissimus* Haliday, 1836
19- *Thrips major* Uzel, 1895	

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Conflict of Interests

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

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References

Alavi, J., Manzari, S. & Minaei, K. (2018) Fauna of thrips (Insecta: Thysanoptera) in some Iranian islands of the Persian Gulf. In: R. Pourrahim & S. Farzadfar (eds.) *Proceedings of the 23rd Iranian Plant Protection Congress, 27–30 Aug., Gorgan University of Agricultural Sciences and Natural Resources, Iran.* Ministry of Agriculture, Tehran, p. 902.

Bhatti J.S. (1980) Species of the genus *Thrips* from India. *Systematic Entomology*, 5, 109–166. https://doi.org/10.1111/j.1365-3113.1980.tb00404.x

Bhatti J.S. (1999) Enigmatic complete anterior tentorium and tentorial body in adults of the onion thrips, *Thrips tabaci* (Thripidae), with review of the tentorium in the Order Terebrantia. *Thrips*, 1, 15–30. https://doi.org/10.46318/Thrips.1.1999.15-30

Bhatti J.S., Alavi J., zur Strassen R. & Telmadarraiy, Z. (2009) Thysanoptera in Iran 1938–2007: An Overview. *Thrips*, 7–8, 1–373.

Fekrat, L. & Manzari, S. (2014) Faunistic study of Thysanoptera (Insecta) in Khorasan-e- Razavi Province, north-east Iran. *Iranian Journal of Animal Biosystematics*, 10 (2), 161–174.

Gholami, N., Fekrat, L. & Manzari, S. (2014) First record of *Thrips juniperinus* (Thys.: Thripidae) from Iran. *Journal of Entomological Society of Iran*, 34 (2), 65–66. https://doi.org/10.4081/jear.2015.5090

Khanjani, M. & Mirab-balou, M. (2005). Some natural enemies of Eriophyid mites from western Iran. *IOBC/wprs Bulletin*, 28 (1), 147–150.

Manzari, S. (2004) Report of three species of thrips from Iranian islands in Persian Gulf. *Newsletter of Entomological Society of Iran*, 21, 2 [In Persian].

Minaei, K. (2013) Thrips (Insecta, Thysanoptera) of Iran: a revised and updated checklist. *Zookeys*, 330, 53–74. https://doi.org/10.3897/zookeys.330.5939

Minaei, K., Afsharizadeh Bami, A., Bagheri, F., & Zahedian Nezhad, M. (2018). The first report of *Thrips praetermissus* (Thysanoptera: Thripidae) from Iran. *Journal of Entomological Society of Iran*, 38 (2), 257–260.

Mirab-balou, M. (2013) A checklist of Iranian thrips (Insecta: Thysanoptera). *Far Eastern Entomologist*, 267, 1–27.

Mirab-balou, M. (2016) An illustrated key to species of the genus Thrips Linnaeus Thysanoptera: Thripidae) from Iran, with an updated checklist. *Journal of Insect Biodiversity and Systematics*, 2 (1), 167–180.

Mirab-balou, M. (2018) An updated checklist of Iranian thrips (Insecta: Thysanoptera). *Far Eastern Entomologist*, 361, 12–36. https://doi.org/10.25221/fee.361.2

Mirab-balou, M., Tong, X.L. & Chen, X.X. (2012) A new record and new species of the genus *Thrips* (Thysanoptera: Thripidae), with a key to species from Iran. *Journal of Insect Science*, 12 (90), 1–15. https://doi.org/10.1673/031.012.9001

Mirab-balou, M., Tong, X.L. & Chen, X.X. (2013) A checklist of Thysanoptera (Insecta) in Hamedan province, Iran. *Natura Montenegrina*, 12 (1), 71–95.

Mortazawiha, A. & Dern, R. (1977). Ein Beitrag zur Thysanopterenfauna des Irans. *Entomologie et Phytopathologie Appliquées*, 45, 8–13 [in German]

Mound, L.A. & Azidah A.A. (2009) Species of the genus *Thrips* (Thysanoptera) from Peninsular Malaysia, with a checklist of recorded Thripidae. *Zootaxa*, 2023, 55–68. https://doi.org/10.11646/zootaxa.2023.1.4

Mound, L.A. & Masumoto, M. (2005) The genus *Thrips* (Thysanoptera, Thripidae) in Australia, New Caledonia and New Zealand. *Zootaxa*, 1020, 1–64. https://doi.org/10.11646/zootaxa.1020.1.1

Mound, L.A., Collins, D.W. & Hastings, A. (2018) Thysanoptera Britannica et Hibernica - Thrips of the British Isles. Lucidcentral. org, Identic Pty Ltd, Queensland, Australia. Available from: https://thrips.info/wiki/ [accessed 12th October 2020].

Mound, L.A., Morison, G.D., Pitkin, B.R. & Palmer, J.M. (1976) *Thysanoptera. Handbooks for the Identification of British Insects*, 1 (11), 1–79.

Nakahara, S. (1994) The genus *Thrips* Linnaeus (Thysanoptera: Thripidae) of the New World. *United States Department of Agriculture. Technical Bulletin*, 1822, 1–183.

Palmer, J.M. (1992) *Thrips* (Thysanoptera) from Pakistan to the Pacific: a review. *Bulletin of the British Museum (Natural History) Entomology*, 61, 1–76.

ThripsWiki (2020) ThripsWiki-providing information on the World's thrips. Available from: https://thrips.info/wiki/[accessed 12th October 2020].

zur Strassen, R. (2003) Die terebranten Thysanopteren Europas und des Mittelmeer-Gebietes. *Die Tierwelt Deutschlands*, 74, 1–271. [in German].

دو گونه جدید و یک گزارش جدید از جنس *Thrips* (Thysanoptera, Thripidae) همراه با فهرست به روز گونه‌های ایران

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چکیـــده: دو گونه *Thrips golili* **sp. nov.** و *Thrips silybum* **sp. nov.** از روی گیاهان گلدار از شمال شرق ایران گزارش شد. فرم‌های رنگی *T. golili* **sp. nov.** بحث شده‌اند. گونه *Thrips apicatus* Priesner برای اولین بار از جزیره کیش در خلیج فارس گزارش شد. گزارشات دو گونه *T. coloratus* Schmutz و *T. juniperinus* Linnaeus از ایران در این مقاله تایید نشد و توصیف *T. alavii* Mirab-balou, Tong & Chen مشکوک در نظر گرفته شد. فهرست گونه‌های ایرانی *Thrips* شامل ۳۷ گونه به روزرسانی شد.

واژگـان کلیدی: *Thrips*، گونه جدید، شمال شرق ایران، فهرست