

First record of the genus *Sericothrips* (Thysanoptera: Thripidae) in Iran

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The genus *Sericothrips* Haliday is reported for the first time from Iran, based on the specimens collected on *Lotus* sp. and identified as *S. bicornis* (Karny). This is the third genus of subfamily Sericothripinae in Iran, and illustrations are provided to identify this species. The number of Thysanoptera genera now known from Iran is discussed, as well as the host associations of Iranian Sericothripinae.

Key words: Iran, genus, new record, Urmia, thrips.

INTRODUCTION

Thirteen families of insect order Thysanoptera or thrips are recognized, including 5 known only from fossils (Mound, 2011a). Of the eight living families, the members of family Thripidae have the most close association with plants. In this family, four subfamilies (Dendrothripinae, Panchaetothripinae, Sericothripinae, Thripinae) are recognized. Within Thripinae, most species feed on leaves or pollen although *Scolothrips* Hinds species exclusively prey on tetranychid mites on various plant leaves (Mound, 2011b; Minaei & Abdolahi, 2015) and *Frankliniella occidentalis* (Pergande), *F. schultzei* (Trybom) and *Thrips tabaci* Lindeman also sometimes feed on mites despite being important pest species (Mound & Teulon, 1995; Wilson et al., 1996). In two subfamilies Dendrothripinae and Panchaetothripinae, all species feed on leaves. The leaf-feeders are usually associated with young leaves, but some panchaetothripine species are associated with older leaves (Mound & Marullo, 2006). The species in the other subfamily, Sericothripinae, are associated with flowers and leaves (Mound & Tree, 2009). This subfamily (with 152 species) is the second largest one in comparison with Thripinae with 1690 species, the Panchaetothripinae with 135 species and the Dendrothripinae with 93 species (ThripsWiki, 2015).

Although 15 genera have been erected in this subfamily (Mound & Tree, 2009), currently only three genera are recognised for all 152 species. The species in *Hydatothrips* Karny and *Neohydatothrips* John are always fully winged, whereas *Sericothrips* Haliday includes all of the species in the group that are known to produce short-winged adults. However, the generic classification is thought to be a poor reflection of phylogeny, and *Sericothrips* appears to comprise species which show some level of wing-length reduction (Mound & Tree, 2009).

Sericothrips comprises eight species, seven of these being Palearctic or Nearctic in distribution (ThripsWiki, 2015) including *S. bicornis* (Karny) and *S. staphylinus* Haliday from Europe (zur Strassen, 2003) and one, *Sericothrips sativus* Hartwig from South Africa (Hartwig, 1952). Up to know, six species in the two genera *Hydatothrips* and *Neohydatothrips* are recorded from Iran (Minaei, 2016). In this paper, *Sericothrips bicornis* is recorded from the third genus, and the diagnosis characters are

illustrated. Furthermore, the number of Thysanoptera genera now known from Iran is discussed, also the host associations of Sericothripinae in Iran. Full nomenclatural information about Thysanoptera is available on the web (ThripsWiki, 2015).

MATERIAL AND METHODS

Thrips specimens discussed in this paper were collected into ethanol (70 %), and subsequently mounted onto slides in Hoyer's medium using a form of the protocol given in Mound and Kibby (1998) with some modifications. The photomicrographs were obtained using a Motic BA310 microscope with attached camera. Terminology follows Wang (2007) and Mound and Tree (2009). Most of the specimens are deposited in Department of Plant Protection, Shiraz University, Iran (PPSU).

RESULTS

***Sericothrips* Haliday, 1836: 444. Type-species *Sericothrips staphylinus* by monotypy.**

Usually micropterous, females rarely micropterous, Head transverse, wider than length, 3 pairs of ocellar setae present; antenna 8-segmented, segments III & IV each with a forked sense cone, segments V and VI with longitudinal sensorium; occipital apodeme present; pronotum reticulate, with a chitinized plate (blotch); mesosternum with spinula; metanotum with transverse rows of coarse microtrichia on posterior third. All femora and tibiae with closely spaced transverse rows of microtrichia. tarsi 2-segmented; first vein of forewing (if present) with a continuous row of setae, second vein with few distal setae or no setae, posterior fringe cilia wavy; abdominal tergites covered medially and laterally with microtrichia, major setae arising submarginally, posterior margins with complete microtrichial comb, median setae similarly placed and of equal size.

Sericothrips bicornis (Karny)

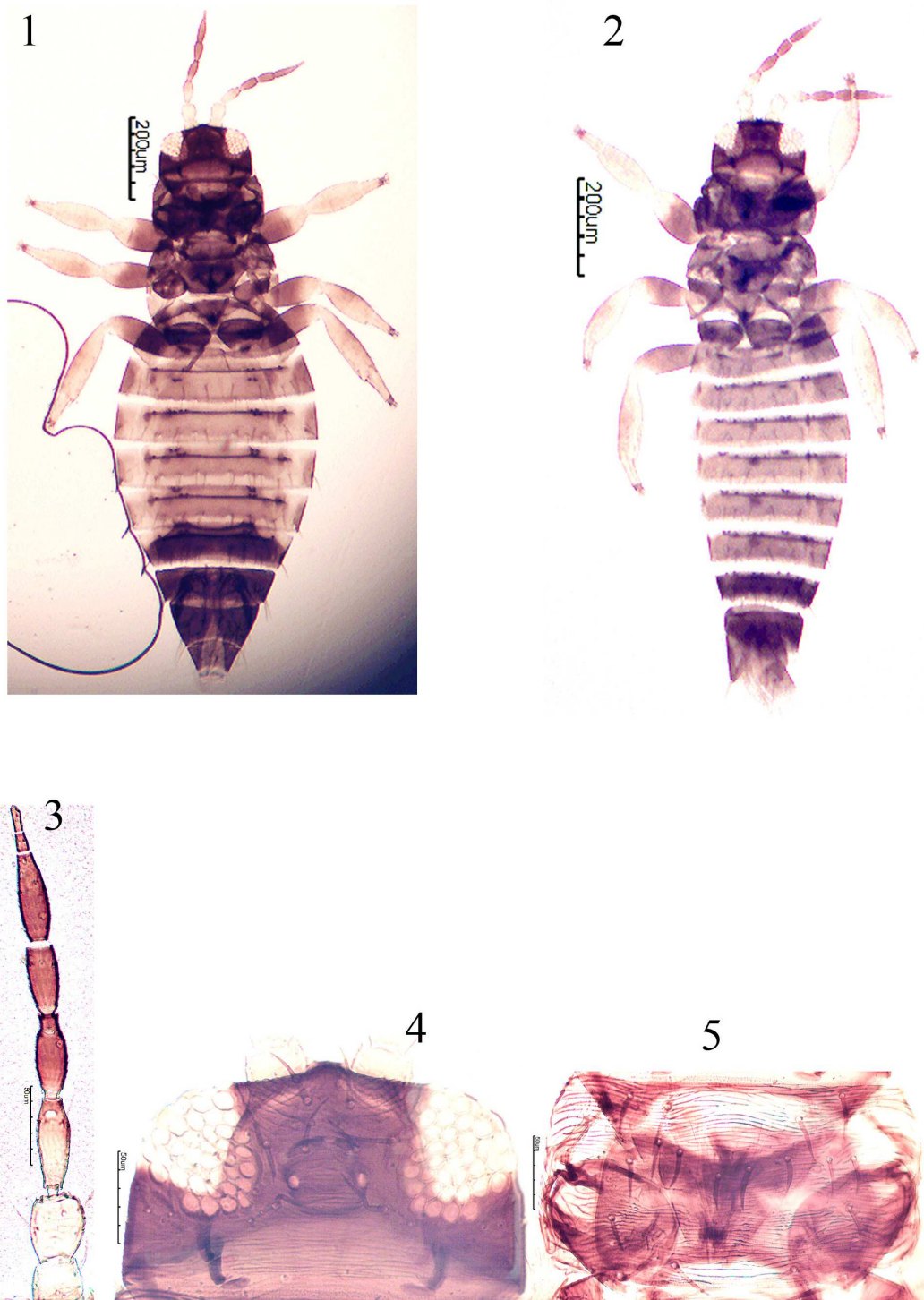
Rhytidothrips bicornis Karny, 1910: 50.

Diagnosis: Female microptera. Body generally brown, antennal segments I-II yellow, III shaded; abdominal tergites I-VI pale brown, antecostal ridges on terga II-VII dark brown, all tibiae and tarsi brownish yellow, distal part of femora yellow, major setae shaded (Fig. 1). Head wider than long; three pairs of ocellar setae present, ocellar setae III situated almost outside of ocellar triangle (Fig. 4); occipital apodeme very near to posterior margin of eyes; maxillary palps 3 segmented. Antennae 8-segmented (Fig. 3), segments I-III with microtrichia, III and IV each with forked sense cone. Pronotum wider than long, reticulate with a large blotch and thick setae (Fig. 5); metanotum with transverse band of microtrichia, median setae situated behind anterior margin (Fig. 7). Legs bearing microtrichia (Fig. 6). Abdominal tergites with dense rows of microtrichia; tergites I-VIII with posteromarginal comb complete medially (Fig. 8), median setae placed equidistant on terga I-VIII. Abdominal sterna without discal setae; sterna II-VI with setae on posterior margin, on VII situated anterior to margin.

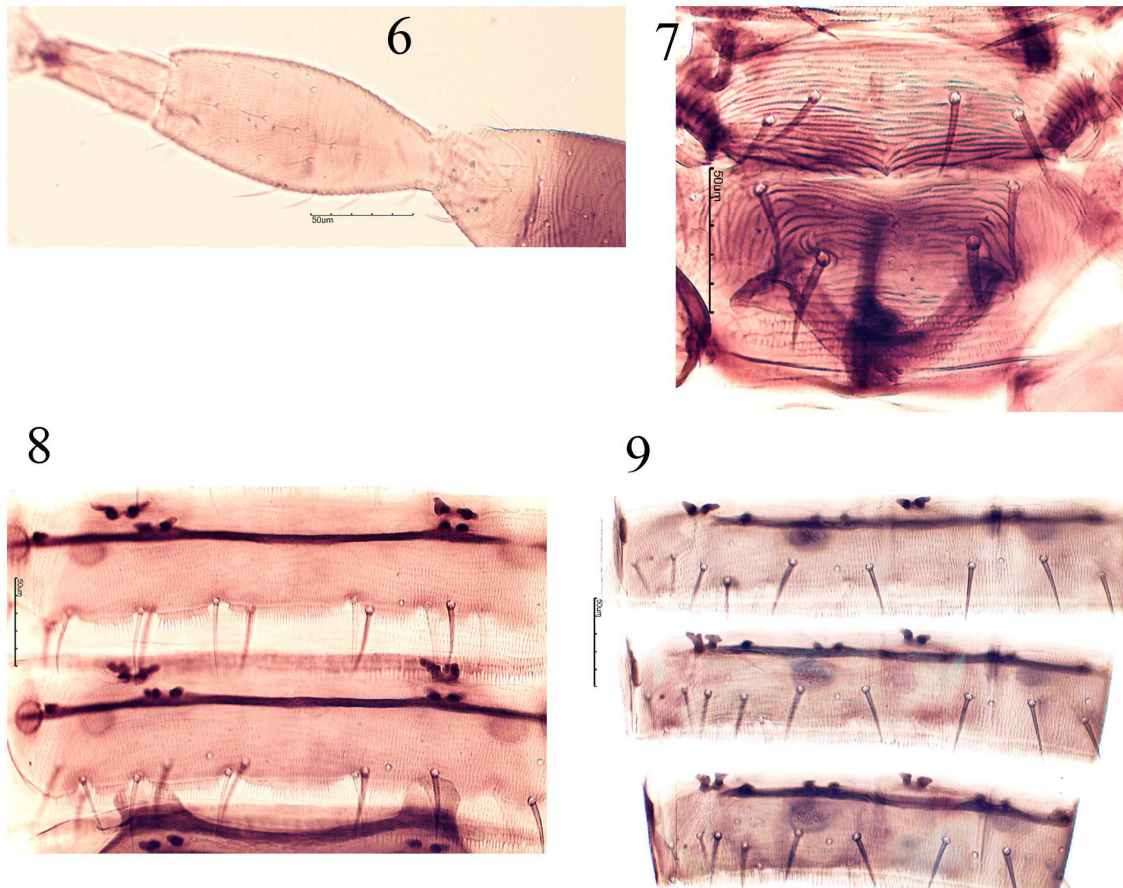
Male microptera, similar to female but smaller (Fig. 2) with a small circular pore plate on abdominal sterna IV-VII (Fig. 9).

Remarks. *S. bicornis* is similar to *S. staphylinus* Haliday. However, transverse band of metanotal microtrichia (instead of the irregular group in *S. staphylinus*); also the relatively posterior position of the metanotal median setae (Fig. 7) are distinctive in *S. bicornis*.

Material examined. Iran. 3 females, 2 males, Urmia, West Azerbaijan province, from *Lotus* sp., 6 June 2014. 37 ° 39', 31.09" N, 44 ° 59' 27.06" E (Mohammad Poorkashkooli).



FIGURES 1–5. *Sericothrips bicornis* (1) female; (2) male; (3) Antenna (female); (4) Head (female); (5) Pronotum (female).



FIGURES 6–9. *Sericothrips bicornis* (6) fore leg (female); (7) mesonotum and metanotum (female); (8) Abdominal tergites 5-6 (female); (9) Abdominal tergites 5-7 (male).

DISCUSSION

According to Minaei (2013), 70 genera of Thysanoptera from 5 families have been recorded in Iran. At the same time, Mirab-balou (2013) listed 74 genera in his Iranian checklist. On the other hand, *Liophloeothrips* Priesner as well as *Florithrips* Bhatti were missing from Minaei's checklist (Minaei, 2013), and *Hydatothrips* was not included because the paper reporting the genus was published simultaneously (Mirab-balou et al., 2013). Finally, in contrast to Mirab-balou (2013), the report of *Chaetanaphothrips* Priesner in Iran was rejected by Minaei (2013). So, if we consider 70 genera listed by Minaei (2013) together with *Florithrips*, *Hydatothrips* and *Liophloeothrips*, 73 genera have been reported until 2013. Furthermore, five other genera have been added after that checklist: *Iranodendrothrips* Alavi, Minaei and Fekrat (Alavi et al., 2014), *Eryngyothrips* Bhatti (Minaei et al., 2014), *Karnyothrips* Watson (Miramirkhani et al., 2014), *Nesothrips* Kirkaldy (Mirab-balou, 2014) and *Podothrips* Hood (Minaei, 2015). Considering the synonymy of *Ataliotrips* Bhatti with *Liotrips* Uzel (Minaei & Mound, 2014) and the record of *Sericothrips* in this paper, the number of thrips genera in Iran is now 78.

Many thrips species are highly dispersive in their behavior, thus adults land on a wide range plants, on which they cannot breed and may not even be able to feed (Mound, 2013). In addition, it seems

likely that host exploitation in Sericothripinae has involved capture of various unrelated plant species. Despite these, in Iran there is evidence that most species in this subfamily are in association with Fabaceae. Beside the report of *S. bicornis* in the present paper on *Lotus* (Fabaceae), *Neohydatothrips tadschicus* as well as *N. gracilicornis* are usually collected on various species of Fabaceae especially *Glycyrrhiza glabra* and *Medicago sativa* although there are a few other plant families from which these species have been collected (Mortazawiha and Dern, 1977; Cheraghian, 1996; Minaei et al., 2002; Alavai and Kamali, 2003). Moreover, the present author usually collects *N. tadschicus* (Pelikan) from *Glycyrrhiza glabra* in Fars province, south of Iran. Also, there are a few specimens of *Neohydatothrips gracilicornis* Williams in PPSU collected on *Medicago sativa* from East Azarbaijan. In Europe, this species is generally considered specific to Fabaceae such as *Vicia cracca*, but it has also been reported causing damage to the needles of *Pinus* in Italy and Spain (Marullo, 1990). *Neohydatothrips gracilipes* (Hood) was reported by Mirab-balou and Chen (2013) from Alborz province on *Glycyrrhiza glabra*, and *Neohydatothrips ilamensis* Mirab-balou, Jamali and Tong was collected on the flowers of *Cicer arietinum* (Fabaceae) from Ilam province (Mirab-balou et al., 2014). The fifth species of *Neohydatothrips*, *N. abnormis* (Karny) was collected on *Astragalus* sp. (Fabaceae) from Kohgiluyeh and Boyer-Ahmad province (Minaei, 2016). In contrast *Hydatothrips abdominalis* (Kurosawa) is recorded from Kurdistan province on Poaceae (Mirab-balou & Chen, 2013). As the European species *S. staphylinus* was introduced to Hawaii and Australia for the biological control of the noxious weed, *Ulex europaeus* (Ireson et al., 2008), it seems that there is a possibility that some of the seven Sericothripinae species in Iran may have some use as biological control agents for weedy Fabaceae.

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