The grass-living thrips (Insecta: Thysanoptera) from Iran with the first record of the genus *Arorathrips* Bhatti

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**Abstract**

A list of grass-dependent Thysanoptera genera in Iran is provided, including *Arorathrips* with one species, *A. mexicanus*, a *Chirothrips*-related thripid genus as a new record for Iranian fauna. The specimens of this species were collected from mixed grasses in the city of Minab located in Hormozgan Province, south of Iran. The importance of grasses as host plants for members of the family Thripidae is briefly discussed.

**Introduction**

The members of the insect order Thysanoptera exhibit a wide range of bionomics. About 50% are fungivorous, feeding on the hyphae or spores of fungi (Mound, 2003). Of the remaining species, although a few are obligate predators on other small arthropods (Palmer & Mound, 1990), most of them are phytophagous, including several opportunist species considered as crop pests (Lewis, 1997; Moritz et al., 2004). Nine families are recognized in the order Thysanoptera (Mound et al., 2013), of which five (Aeolothripidae, Stenurothripidae, Melanthriphidae, Phlaeothripidae, Thripidae) have been recorded in Iran so far (Minaei & Alichi, 2007).

The objective of this paper is to provide a list of Thysanoptera genera in which species breed on grasses (family Poaceae) in Iran, and to record the genus *Arorathrips* Bhatti as another grass-dwelling genus, for the first time in this country. Illustrations and diagnostic characters are also included. Full nomenclatural information about Thysanoptera is available on the web (ThripsWiki, 2013).

**Materials and methods**

The list of Iranian thrips that are associated with grasses is extracted from the published literature. The species discussed here, *A. mexicanus* (Crawford), was collected by beating mixed grasses (Poaceae) onto a plastic tray. The specimens were removed with a fine brush into a collecting vial containing 90% ethyl alcohol. They were then mounted onto slides in Canada balsam using the protocol of Mound & Kibby (1998). Microphotographs were obtained using a Dino-Lite Microscope, Eyepiece Camera. Digital images were enhanced and plates prepared by Adobe Photoshop™ (Adobe Systems Inc., San Jose, CA, USA). The terminology used here follows Minaei & Mound (2010a) and Hoddle et al. (2013). All specimens studied are deposited in the collection of the Plant Protection Department, College of Agriculture, Shiraz University, Shiraz, Iran.

**Results**

The only recorded member of the family Stenurothripidae in Iran, *Holanthrothrips josephi* Bhatti, feeds on the pollen of date palm (Bhatti, 1986). Concomitantly, two genera of Melanthriphidae (*Ankothrips* Bagnall and *Melanthriphus* Bagnall) include flower-feeding species in various plant families (Minaei et al., 2012). Grass-living thrips are distributed among another three families. Among these, there are a few species that breed on grasses in Aeolothripidae and Phlaeothripidae, but most grass-living Thysanoptera belong to the family Thripidae, including *Arorathrips mexicanus*, which is discussed below.

*Arorathrips mexicanus* (Crawford)

*Chirothrips mexicana* D.L. Crawford 1909: 114.

*Arorathrips mexicanus* (Crawford), Bhatti 1990: 196.

The genus *Arorathrips* was separated by Bhatti (1990) from the genus *Chirothrips*, and four species were placed in the new genus at that time. However, currently 15 species are placed in this genus, all of which are considered endemic to the New World and breed only in the flowers of grasses (Mound & Marullo, 1996; Mound, 2011; Nakahara & Footit, 2012). *Arorathrips mexicanus* is recorded here from Iran, and
this is the first record of this genus and species in this country. The
genus is distinguished from the closely related genus, *Chirothrips*, in
having the mesothoracic endofurca greatly reduced and fore tibia pro-
longed around the external margin of the fore tarsus.

**DIAGNOSIS:** Female fully winged. Body color light brown, tarsi yel-
low, forewing and clavus shaded (Figure 1). Antennae 8-segmented,
segment I with median dorsal setal pair wider apart than width of base
of segment II, segment II distinctly produced at apex on outer margin
with terminal sensorium, segments III-IV with simple sensorium
(Figure 2). Head small, with a distinct prolongation in front of eyes,
vertex with three pairs of setae. Pronotum trapezoidal, two pairs of
prominent posteroangular setae present (Figure 3). Mesothoracic end-
ofurca reduced (Figure 4). Fore tibia extending around external mar-
gin of fore tarsus (Figure 5). Tergites with transverse sculpture lines
medially; antecostal ridge of tergites II-V with row of small tubercles;
campaniform sensilla anterior to median, its setae on tergites I-VIII.
Sternites II-IV medially with pattern of tubercles.

Male smaller, wingless, yellow (Figure 6); sternites III-VII medially
with circular glandular area (Figure 7).

**MATERIAL EXAMINED:** 5 females, 5 males, Hormozgan, Minab, from
mixed grasses, 20.1.2009 (KM 259).

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**Figure 1.** Arorathrips mexicanus, female: adult.

**Figure 2.** Arorathrips mexicanus, female: antennal segments II-IV.

**Figure 3.** Arorathrips mexicanus, female: head and pronotum.

**Figure 4.** Arorathrips mexicanus, female: meso and metathorax furca reduced.

**Figure 5.** Arorathrips mexicanus, female: foretibia and tarsus.

**Figure 6.** Arorathrips mexicanus, male: adult.

**Figure 7.** Arorathrips mexicanus, male: sternites vi-vii.
Discussion and conclusions

About 40 Thripidae genera are recorded from Iran (Bhatti et al., 2009), and a large proportion of these (about 40%) live on grasses (Table 1). This is in accordance with the situation reported from Australia (Mound, 2011). Grasses support a rich fauna of thrips (Table 1), possibly due to the availability of a range of such plants in most areas (unpublished lecture by LA Mound at 20th Iranian Plant Protection Congress, Shiraz, Iran, August 2012). Some of the species in the genera listed in Table 1 are considered plant pests in other countries (Lewis, 1997; Moritz et al., 2004). However, no thripid pest is recorded on grasses in Iran. In contrast, one species in the genus *Arorathrips* (Thysanoptera: Phlaeothripidae) of Iran (Minaei & Mound, 2008, 2010b), is an important pest throughout Iran on wheat. All species in the genus *Arorathrips* have been considered endemic to the New World (Mound & Marullo, 1996; Mound, 2011; Nakahara & Footitt, 2012). However, the presence of *A. mexicanus* is not surprising in Iran because this species is introduced around the world and is widely distributed in the tropics and subtropics in association with grasslands (Mound & Palmer, 1972; Mound & Marullo, 1996).

Table 1. The genera of Thysanoptera associated with grasses in Iran.

<table>
<thead>
<tr>
<th>Family</th>
<th>Genus</th>
<th>Reference</th>
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<tbody>
<tr>
<td>Aeolothripida</td>
<td><em>Aeolothrips Haliday</em></td>
<td>Hoddle et al., 2013</td>
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<td><em>Rhipidothrips Uzel</em></td>
<td>Mound et al., 1976</td>
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<td>Phlaeothripida</td>
<td><em>Haplothrips Aanyol and Serville</em></td>
<td>Minaei &amp; Mound, 2008</td>
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<td><em>Cephalothrips Uzel</em></td>
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<tr>
<td>Thripida</td>
<td><em>Aeothrips Uzel</em></td>
<td>Mound &amp; Masumoto, 2009</td>
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<td></td>
<td><em>Aptothrips Haliday</em></td>
<td>Palmer, 1975</td>
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<td></td>
<td><em>Arathrips Bhatti</em></td>
<td>Nakahara &amp; Footitt, 2012</td>
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<td><em>Bregmatothrips Hool</em></td>
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<td><em>Calothrips Daniel</em></td>
<td>Wilson, 1975</td>
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<td></td>
<td><em>Chirothrips Haliday</em></td>
<td>Minaei &amp; Mound, 2010a</td>
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<td><em>Collombolothers Priersner</em></td>
<td>zur Strassen, 2003</td>
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<td><em>Eriendothrips Priersner</em></td>
<td>Ramezani et al., 2009</td>
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<td><em>Exothrips Priersner</em></td>
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<td><em>Florothrips Bhatti</em></td>
<td>zur Strassen, 2003</td>
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<td><em>Frankliniella Kary</em></td>
<td>zur Strassen, 2003</td>
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<td><em>Limothrips Haliday</em></td>
<td>Minaei et al., 2007</td>
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<td><em>Sithrips Priersner</em></td>
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<td><em>Stenothrips Bagall</em></td>
<td>zur Strassen, 2003</td>
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<td></td>
<td><em>Stenochetaothrips Uzel</em></td>
<td>zur Strassen, 2003</td>
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</table>

*Not all species breeding on grasses.

References


Bhatti J.S., 1986 - A new species of *Holarthrothrips* from Iraq, with notes on host plants and key to species, along with clarification of the position of this genus among Thysanoptera. - Zoology (JPAZ). 1: 1-33.


