



The *Liothrips*-lineage of thrips (Thysanoptera: Phlaeothripidae) from Iran with the first record of micropterous morph of a *Liothrips* species

KAMBIZ MINAEI¹ & LAURENCE MOUND²

¹Department of Plant Protection, College of Agriculture, Shiraz University, Shiraz, Iran. E-mail: kminaei@shirazu.ac.ir

²Australian National Insect Collection, CSIRO, Canberra, Australia. E-mail: laurence.mound@csiro.au

Abstract

A key is provided to the three Phlaeothripinae genera of the *Liothrips*-lineage known from Iran, *Cephalothrips*, *Liothrips*, and *Liophloeothrips*. *Ataliothrips* is placed as a **new synonym** of *Liothrips*, and the micropterous morph of *L. reuteri* described, this morph being unique among species of *Liothrips*. Illustrated keys are provided to the species of these genera recorded from Iran, all of which are considered to be leaf-feeding. In addition, a key is provided to the three species of *Liophloeothrips* from Europe, because *L. hungaricus* has been recorded from Iran although with no known voucher specimens.

Key words: *Ataliothrips*, micropterae, *Liothrips*, new synonymy, *Liophloeothrips*, *Cephalothrips*

Introduction

Worldwide there is a lack of identification systems to the genera and species of the Phlaeothripinae, the larger of the two subfamilies recognised in the family Phlaeothripidae. The only available keys to the Phlaeothripidae fauna of Europe and western Asia were developed more than 50 years ago, and involve nomenclature and a classification that is out of date (Priesner 1964). For the 20 recorded genera comprising the Phlaeothripidae fauna of Iran (Minaei 2013b), keys are available to the taxa of subfamily Idolothripinae (Minaei 2011), and also to two of the three major lineages within the Phlaeothripinae, the Haplothripini (Minaei & Mound 2008) and the *Phlaeothrips*-lineage (Minaei 2013a). The objective of the study presented here is to provide a means of identifying the members reported from Iran of the third major group within the Phlaeothripinae, the *Liothrips*-lineage. This group is particularly diverse and species-rich in tropical areas, and Dang *et al.* (2014) provided keys to 100 genera of Phlaeothripinae recorded from southeastern Asia including 34 genera related to *Liothrips*. The species in these genera are all leaf-feeding, and many of them are gall-inducing or are associated with galls.

Within the Thysanoptera there are only four genera in each of which more than 200 species are listed (ThripsWiki 2014). These genera are *Frankliniella* and *Thrips* in the Thripidae, with 230 and 289 species respectively, and *Haplothrips* and *Liothrips* in the Phlaeothripidae with 242 and 277 species. The recognition and delineation of species, and hence recognition of host plant associations, involves far greater problems in the genera *Frankliniella* and *Liothrips* than in the genera *Thrips* and *Haplothrips*. Not only are the structural differences between many described species poorly defined, but in both *Frankliniella* and *Liothrips* many named species remain known from single samples, or even single individuals. There is thus little knowledge of structural variation within and between species (Okajima 2006; Hoddle *et al.* 2014), and limited evidence for any host-specificity in the breeding relationships of most species (Mound & Pereyra 2008; Cavaleri & Mound 2012). Even in common European species, such as *Liothrips setinodis* discussed below, misidentifications and host records based only on one or a few adults result in there being little reliable evidence concerning the plant species on which a thrips is dependent for survival (Mound 2013).

Pelta broadly triangular, reticulate, campaniform sensilla near postero-lateral angles (Figs 20–21); tergites II–VII each with 2 pairs of sigmoid wing-retaining setae; tergites I–VIII S1 seta capitate to blunt, more pointed toward posterior, tergite IX setae S1 and S2 about as long as tube; tube shorter than head.

Measurements (female macroptera/microptera in microns). Body length 3000/2522. Head, length 390/305; maximum width 260/210, po setae 21/20. Pronotum, length 154/142; median width 387/360; epim, 81/72. Fore wing length 1073/100; sub-basal setae 69/50, 83/63, 86/65. Pelta length 125/107, maximum width 150/155, tergite IX setae S1 120. Tube length 186/140; basal width 80/77; anal setae 145/110. Antennal segments I–VIII length 50/43, 62/53, 120/105, 104/88, 85/75, 74/70, 56/52, 38/31.

Male macroptera or microptera, smaller and usually paler; tergite IX setae S2 short and stout; sternite VIII with an extensive pore plate (cf. Fig. 22). Pseudovirga with two expanded lobes at the end and very similar to the pseudovirga of *austriacus* and *pragensis* (Fig. 8).

Measurements (male macroptera/microptera in microns). Body length 1950/1745. Head, length 288/260; maximum width 203/175. Pronotum, length 115/95; median width 293/288; epim, 80/67. Fore wing length 817/90; sub-basal setae 61/45, 65/48, 70/?. Pelta length 96, maximum width 124, tergite IX setae S1 143/120. Tube length 168/145; basal width 62/60; anal setae 113/75. Antennal segments I–VIII length 34/24, 55/43, 92/69, 78/77, 74/63, 65/60, 54/50, 34/30.

Material studied (macropterae except where stated). **IRAN, Hormozgan Province**, Bandarabas, Mazra village, 4 females, from leaves of *Tamarix* sp., 20.ix.2011; 1 female, 3 males, the same place and plant, 9.xi.2011; 2 females, the same place and plant, 8.xii.2011 (all collected by Mohsen Amiri). **Isfahan Province**, Isfahan, 2 females, 3 males, from leaves of *Tamarix* sp., 5.vii.2012 (Farinaz Haftbaradarn). **Fars Province**, Shiraz, 2 females (micropterae), from leaves of *Tamarix* sp., 21.iv.2012 (KM 753); 4 females, 1 male (microptera), the same place and plant, 26.iv.2012 (KM 756, 757); 1 female (microptera), the same place and plant, 29.iv.2012 (KM 764); Shiraz, 1 female, 1 male, the same place and plant, 14.vii.2012 (KM 876); Nurabad, 3 females, 3 males, from leaves of *Tamarix* sp., 4.vi.2012 (KM 844).

Liothrips setinodis (Reuter)

Phloeothrips setinodis Reuter, 1880: 310.

The only published record of this species from Iran is based on the synonymy by Bhatti *et al.* (2009) of *L. jakhontovi* Kreutzberg with *setinodis*. Kreutzberg (1955) described *jakhontovi* from Iran, and also from other areas where pistachio is grown including Turkmenia, and Afghanistan. In view of the association of *austriacus* with pistachio noted above, the validity of this synonymy remains in doubt. However, two females of *setinodis* have been studied from Iran (in SMF). These were collected from an unidentified plant in Assalam, Guilan Province, in 1970. Apart from this record, *setinodis* appears to be found mainly in northern Europe, with specimens in the collections at SMF from the following areas: Poland, Denmark, Scotland, England, France, Germany, Austria, Croatia, Italy and Spain.

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