



## The *Thrips formosanus* group from Asia and Australia with a new species of the genus *Thrips* (Thysanoptera: Thripidae) from India

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### Abstract

A new species-group in the genus *Thrips* is designated as *Thrips formosanus* group from Asia and Australia. This includes the following six species: *T. floreus* Kurosawa from Japan, *T. formosanus* Priesner from Taiwan, *T. obscuripes* Priesner and *T. rostratus* Priesner from Java, *T. tanicus* Bhatti from India and *T. hoddlei* Mound and Masumoto from Australia. One new species, *Thrips moundi* sp. n., is described in this group from specimens collected on grasses in Himachal Pradesh State of India. A key to the seven species of *Thrips formosanus* group is also provided. Partial sequence data for the gene mitochondrial cytochrome c oxidase (mtCOI) from the holotype and paratype of this new species is provided.

**Key words:** *T. formosanus* group, new species-group, *T. moundi*, new species, key, India

### Introduction

The genus *Thrips* is one of the oldest generic names in the order Thysanoptera. It was established by Linnaeus (1758) with type species *Thrips physapus* from Sweden. It is one of the largest genera of subfamily Thripinae of suborder Terebrantia (ThripsWiki 2015) with 291 species across the globe. Out of these, 38 species are known from India (Bhatti 1980, 1990, 1999).

The genus *Thrips* can be distinguished from other genera in the family Thripidae by the following characters: presence of paired ctenidia laterally on abdominal tergites V–VIII, terminating laterally at tergal setae S3 on tergites VI–VII; ctenidia on tergite VIII posteromesad of the spiracles; ocellar seta pair I absent (Mound, 2002); antennae 7- or 8-segmented; segment I without dorso-apical setae, III and IV each with forked sense cones; ocellar III longer than ocellar II; median pair of setae on posterior margin of pronotum longer than submedian but sometimes subequal; ferna entire, undivided; mesosternum with spinula, metasternum without spinula (Fig. 3); tergite X split longitudinally in both sexes.

The first objective of this paper is to designate a new species-group, the *Thrips formosanus* group, from Asia and Australia. The second objective is to describe a new species in this species-group, based on specimens collected from grasses at high altitude in Himachal Pradesh State of India. Identification keys are available for the species of *Thrips* genus from different parts of world (Bhatti 1980; Palmer 1992; Mound 2010; Mound & Masumoto 2005; Mound & Azidah 2009; Masumoto & Okajima 2013), and the females of the new species have been tested against each of these available keys. In the key to species of *Thrips* genus from India (Bhatti 1980), the new species tracked to *formosanus* and *tanicus* at couplet 24, but is distinguished below from these two species. Photographs were taken through a Leica Microscope Model DM-1000 using the Leica software application suite (LAS EZ).

### *Thrips formosanus* group

Palmer (1992) listed five taxonomic groups (I–V) for 91 species of genus *Thrips* from Pakistan and Pacific,

**Molecular data.** DNA barcode data of holotype and paratype of this species have been developed using the protocols published earlier (Kumar et al., 2014). The generated sequences were submitted to NCBI GenBank to get accession numbers (KP993173-KP993174) and BOLD (Barcode of Life Database) under the project titled “DNA Barcoding Thrips of India”.

**Comments:** This species is close to *T. tanicus*, *floreus*, *formosanus*, *obscuripes* and *rostratus* with which it shares a similar body colour. It can be distinguished from *tanicus*, *floreus*, *formosanus*, *obscuripes* because they all have the following characters: tergite II with 4 lateral marginal setae; ocellar setae III either inside or touching the tangent at outer margin. Whereas in this new species tergite II has 3 lateral marginal setae, and ocellar setae III are clearly outside the ocellar triangle.

This species shares with *Thrips rostratus* the following character states: body colour, long mouthcone, ocellar III outside the triangle, median pair of metanotal setae far back from the anterior margin, and tergite II with 3 lateral marginal setae. It differs from *rostratus* by the presence of metanotal campaniform sensilla, yellowish brown antennal segment III, and clear area at base of dark fore wing. In contrast, *rostratus* has no metanotal campaniform sensilla, antennal segment III is dark brown and the fore wing uniformly dark.

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