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New records of terebrantia thrips from Karnataka, India

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Abstract

Ten terebrantian thrips species in ten genera of family Thripidae are newly added to the fauna of Karnataka, India. These species collected from various host plants are being reported for the first time from Karnataka. Four species, *Frankliniella intonsa* (Trybom), *Lefroythrips lefroyi* (Bagnall), *Plesiothrips perplexus* (Beach) and *Thrips atactus* Bhatti are recorded as new distribution reports from South India whereas, *Opimothrips tubulatus* Nonaka and Okajima and *Trichromothrips antidesmae* Li, Li and Zhang have been newly reported from India. This survey reports newly added six genera namely *Ceratothripoides* Bagnall, *Chaetanaphothrips* Priesner, *Lefroythrips* Priesner, *Opimothrips* Nonaka and Okajima, *Plesiothrips* Hood and *Sciothrips* Bhatti to the fauna of Karnataka. Diagnostic features, distribution and data on material studied for these species are given. Salient findings from our research demands further survey and study in this field from Karnataka state.

Keywords: Fauna, thysanoptera, Thripidae

Introduction

The suborder Terebrantia is the most economically important suborder in Thysanoptera because of the presence of agriculturally important pest and vectors of plant viruses. It comprises of eight families which are mainly recognisable based on the antennal differences. Out of eight families, members of family Aeolothripidae are exclusively predators and all agriculturally important pests and vectors are members of family Thripidae. This suborder consists of 333 species from India^[5]. So far, 70 terebrantian thrips species have been reported from Karnataka^[6, 7]. In a recent survey, ten species of family Thripidae were discovered and are reported here for the first time from Karnataka. The aim of the study was to explore the terebrantian thrips fauna of the state Karnataka, India.

Material and Methods

Extensive random taxonomic surveys were conducted from 2017-2020 across Karnataka for the collection of thrips. Specimens were collected by the standard beating method^[1] and were preserved in thrips collecting media (9 parts 10% alcohol + 1 part glacial acetic acid + 1 ml Triton X-100 in 1000 ml of the mixture). Specimens were mounted in Canada balsam for permanent preservation. The specimens were collected at random, subsequently sorted out and identified using appropriate keys^[1, 3]. Voucher specimens are deposited with ICAR - National Bureau of Agricultural Insect Resources (ICAR-NBAIR), Bangalore, Karnataka, India. All collections were made by the first author unless otherwise stated.

Results and Discussion

During the survey, around 2000 specimens of thrips were collected from Karnataka state. Ten terebrantian thrips species representing ten genera of family Thripidae are reported as new distribution records for the state as listed below. Notes on distribution and hosts are provided for all the species.

New distributional records for Karnataka**Family Thripidae****Subfamily Panchaethripinae****1. *Opimothrips tubulatus* Nonaka and Okajima (Fig. D)**

Material examined: 3 Females, INDIA, Karnataka, Chitradurga, Hiriya, 04.xii.2017

Female macroptera: Antennae 8 segmented; III–IV with thin, Y-shaped sense cones, the arms unusually thin and curving around the segment. Head wider than long; ocellar hump weakly developed, ocelli visible; eyes not bulged, covering lateral side almost completely; genae much reduced, without protruding transparent fringe. Forewing base humped, costal setae shorter than fringe; first vein with 7 basal setae, 2 at middle and 2 distally. Abdominal tergite I reticulations extending beyond margin; II laterally with wart-like tubercles; thick sublateral antecostal line on III to VII, laterally forming a posterior directed notch; VIII with complete posteromarginal comb of minute teeth.

Host plant: Unidentified weed (Asteraceae)

Distribution: Karnataka

Subfamily Thripinae

2. *Ceratothripoides claratris* (Shumsher) (Fig. A)

Material studied: 9 Females, INDIA, Karnataka, Hesaraghatta, IIHR campus, 9.xi.2018

Female macroptera: Head wider than long; ocellar pair III long, within ocellar triangle; small postocular setae. Metanotum with median reticulations; longitudinally striate laterally; median setae at anterior margin; without campaniform sensilla. Forewing pale, lightly shaded with brown medially; first vein with 2 distal setae; second vein with complete setae row. Abdominal tergite VIII with bare microtrichia anterior to spiracle; postero-marginal comb complete with well-developed microtrichia.

Host plant: *Adhatoda vasica* (L.) Nees (Acanthaceae)

Distribution: Delhi, Karnataka, Maharashtra, Odisha, Tamil Nadu ^[7]

3. *Chaetanaphothrips orchidii* (Moulton) (Fig. E)

Material studied: 2 Females, INDIA, Karnataka, Hesaraghatta, IIHR campus, 9.xi.2018

Female macroptera: Body yellow, forewing pale with basal and median brown cross bands. Antennae 8 segmented, III–IV with a slender and forked sensorium. Head wider than long; 2 ocellar setae pairs, pair III within ocellar triangle. Metanotum feebly reticulate, median setae small and positioned far behind anterior margin. Forewing first vein with 3 distal setae. Abdominal tergites feebly sculptured medially, posterior margins with craspedum; VIII with stippled area extending anteromesad from spiracle.

Host plant: *Aerides odorata* Reinw. ex Blume (Orchidaceae)

Distribution: Karnataka, Maharashtra, Tamil Nadu, West Bengal ^[7]

4. *Frankliniella intonsa* (Trybom) (Fig. B)

Material studied: 15 Females, INDIA, Karnataka, Kolar, Mallur, 20.iv.2019

Female macroptera: Head wider than long; interocellar setae developed, on the anterior margin of ocellar triangle; postocular setae pair IV shorter than interocellar setae. Antennal segments III and IV with a forked sense cone. Pronotum smooth; anteroangular setae a little longer than anteromarginals; posteroangular setae with inner pair longer than outer pair. Metanotum with median transverse

reticulations; longitudinal striae laterally; median setae near anterior margin. Abdominal tergite VIII with complete posteromarginal comb.

Host plant: *Cassia* sp. (Fabaceae)

Distribution: Bihar, Karnataka, Meghalaya, West Bengal ^[7]

5. *Lefroyothrips lefroyi* (Bagnall) (Fig. C)

Material studied: 3 Females, INDIA, Karnataka, Chitradurga, 26.iv.2017

Female macroptera: Head wider than long; interocellar setae inside ocellar triangle; postocular setae longer than preocellar setae. Antennae 8 segmented, III and IV with a forked sense cone. Forewing yellow with 2 narrow, dark cross bands; pale apex; first vein with 7 basal, 2 distal setae. Mesonotum with median pair placed far ahead of posterior margin. Metanotum reticulate; median setae much longer than submedian setae, placed near anterior margin. Abdominal tergite VIII with complete posteromarginal comb.

Host plant: *Triticum aestivum* L. (Poaceae)

Distribution: Assam, Himachal Pradesh, Karnataka, Punjab, Uttarakhand, West Bengal ^[7]

6. *Megalurothrips distalis* (Karny) (Fig. F)

Material studied: 16 Females, INDIA, Karnataka, Bagalkot, 02.x.2018

Female macroptera: Head as wide as long; preocellar setae around as long as postocular setae; interocellar setae 3 - 4 times as long as distance between their bases; postocular setae developed. Antennae brown; segments III and IV with a forked sense cone. Forewing brown, pale sub basally and subapically; first vein with 2 distal setae. Metanotum transversely reticulate on anterior half, reticulate on posterior half; lateral longitudinally striate; median setae placed at anterior margin; with campaniform sensilla. Abdominal tergite VIII with posteromarginal comb, interrupted medially.

Host plant: *Cajanus cajan* (L.) Millsp. (Fabaceae)

Distribution: Andaman Islands, Arunachal Pradesh, Assam, Karnataka, Meghalaya, Nagaland, Tamil Nadu, Tripura, Uttar Pradesh, West Bengal ^[2,7].

7. *Plesiothrips perplexus* (Beach) (Fig. G)

Material studied: 2 Females, INDIA, Karnataka, Bagalkot, 02.x.2018

Female macroptera: Body bicoloured. Antennae 7 segmented; III and IV with a forked sensorium. Head longer than wide, projecting in front of eyes; 2 ocellar setae pairs present, pair III just in front of hind ocelli and around as long as side of ocellar triangle; postocular setae small. Metanotum without median sculpture, without campaniform sensilla; median setae small, well behind anterior margin. Forewing first vein with 2 distal setae. Abdominal tergite VIII posterior margin with a few lateral small microtrichia; ovipositor weak, without teeth.

Host plant: Grass

Distribution: Karnataka, Tripura ^[4]

8. *Sciothrips cardamomi* (Ramakrishna) (Fig. H)

Material studied: 11 Females, INDIA, Karnataka, Madikeri, Coorg, 10.v.2017

Female macroptera: Body dark brown. Metanotum with median faint sculpture but reticulate basally; median setae pair far behind anterior margin; without campaniform sensilla. Forewing first vein with a series of setae broadly interrupted beyond basal third; second vein with 5 setae, placed apart. Abdominal tergites I - VIII fully sculptured; I-VII with lateral triangular pointed teeth along posterior margin; II with 3 lateral marginal setae; VI - VIII with reduced S3 seta; VIII with a complete posteromarginal comb. Intermediate abdominal sternites with lateral dentate microtrichia along posterior margin.

Host plant: *Elettaria cardamomum* (L.) Maton (Zingiberaceae)

Distribution: Arunachal Pradesh, Karnataka, Tamil Nadu ^[7]

9. *Thrips auctus* Bhatti (Fig. J)

Material studied: 2 Females, INDIA, Karnataka, Davanagere, Kathalagere, 12.i.2019

Female macroptera: Body bicoloured. Head yellow, weakly brown on cheeks; ocellar setae III positioned on the anterior margins of ocellar triangle. Metanotum longitudinally sculptured in posterior half; median pair far behind of anterior margin, without campaniform sensilla. Forewing with a dark transverse cross band beyond basal third; first vein with 7

basal setae and 3 discal setae. Abdomen primarily dark brown; tergite I yellow, posterior margins and lateral sides shaded; II-VI dark greyish brown; VII median brown in proximal two thirds; VIII mostly yellow, proximal one third shaded; IX yellow, shaded dorsally towards apex; X yellow, shaded faintly less than distal half. Abdominal tergites VIII with complete posteromarginal comb.

Host plant: *Clerodendrum splendens* G. Don (Verbenaceae)

Distribution: Karnataka, West Bengal ^[7].

10. *Trichomothrips antidesmae* Li, Li and Zhang (Fig. I)

Material studied: 3 Females, INDIA, Karnataka, Chitradurga, Hiriyur, 22.xi.2017

Female macroptera: Body and legs yellow. Head not constricted behind compound eyes; ocellar setae III situated at tangent of hind ocelli posterior margin; 5 postocular setae pairs, I the longest, III minute. Antennal segments II-VI with microtrichia. Pronotum with 2 posteromarginal setae pairs. Metanotum smooth medially but with longitudinal striations at each side; campaniform sensilla absent; median setae pair close to anterior margin. Forewing first vein with 6 basal setae and 2 distal setae.

Host plants: *Citrus limon* (L.) Burm. (Rutaceae)

Distribution: Karnataka

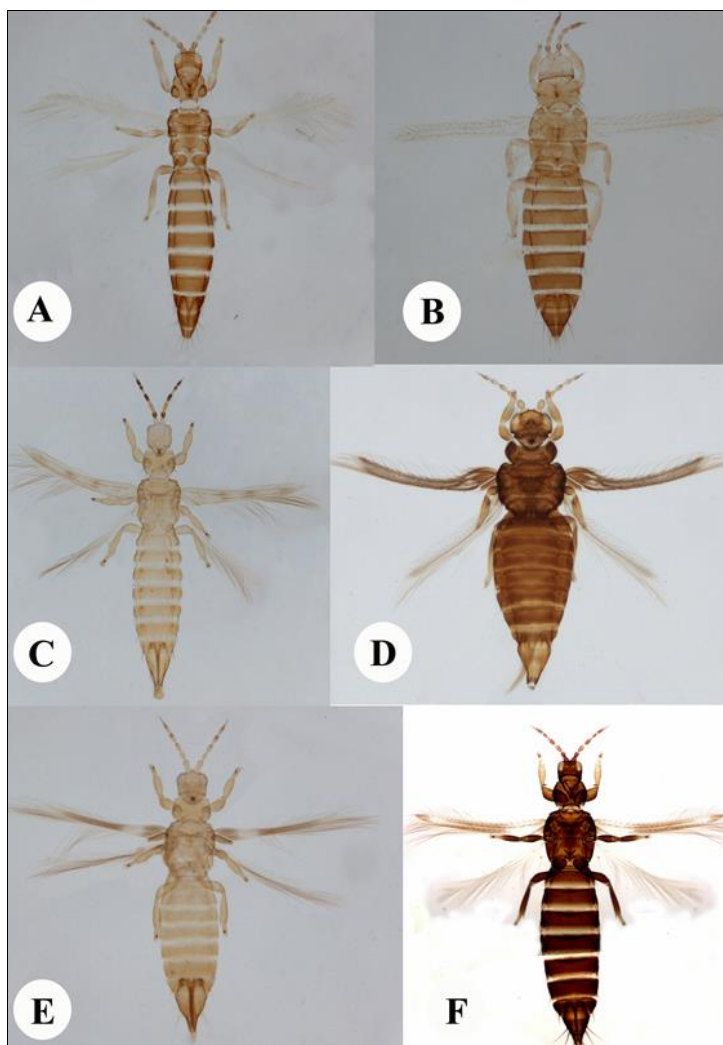


Fig A-F: A. *Ceratothripoides claratris* (Shumsher); B. *Frankliniella intonsa* (Trybom); C. *Lefroythrips lefroyi* (Bagnall); D. *Opimothrips tubulatus* Nonaka and Okajima; E. *Chaetanaphothrips orchidii* (Moulton); F. *Megalurothrips distalis* (Karny)

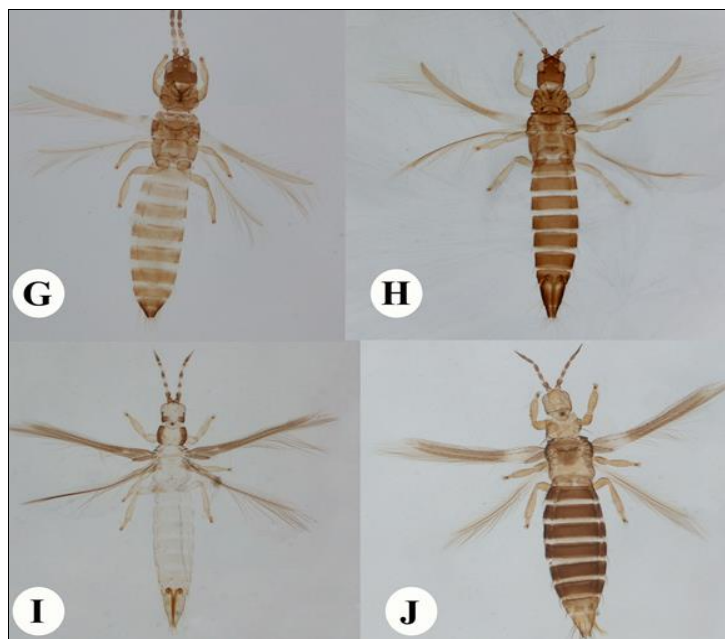


Fig G-J: G. *Plesiothrips perplexus* (Beach); H. *Sciothrips cardamomi* (Ramakrishna); I. *Trichromothrips antidesmae* Li, Li and Zhang; J. *Thrips atactus* Bhatti

Conclusion

The study has added 10 thrips species in family Thripidae, two subfamilies and 10 genera to the fauna of Karnataka and thus increased the thysanopteran fauna of Karnataka to 80. Our survey reports newly added six genera namely *Ceratothripoides*, *Chaetanaphothrips*, *Lefroyothrips*, *Opimothrips*, *Plesiothrips* and *Sciothrips* to the fauna of Karnataka. Four species, *F. intonsa*, *L. lefroyi*, *P. perplexus* and *T. atactus* have been newly added to the fauna of South India. *O. tubulatus* and *T. antidesmae* are new reports from India. Salient findings from our survey demands further survey and study in this field from Karnataka state.

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