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Additions to the terebrantian (Insecta: Thysanoptera) fauna of Kerala, India

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Abstract: Extensive surveys were carried out in Kerala in order to explore the thysanopteran fauna since the state has hardly been studied for the fauna of thrips after Dr. T.N. Ananthakrishnan's era of Indian thysanopteran taxonomy. Nine species of terebrantian thrips, one in the family Aeolothripidae and the remaining eight in the family Thripidae are being listed as new to Kerala state records collected from different hosts. Diagnostic features, distribution and data on material studied for these species are given. The number of known species of terebrantian thrips in Kerala is thus increased to forty two.

Keywords: Kerala, New state records, Terebrantia, Thrips, Thysanoptera

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 8 families, members of family Aeolothripidae are exclusively predators and all agriculturally important pests and vectors are members of family Thripidae. This suborder consists of 309 species from India (Tyagi and Kumar, 2016).

So far, Ananthakrishnan and Sen (1980) and Bhatti (1990) reported a total of 33 terebrantian thrips species occurring in Kerala. In a recent survey, eight species of family Thripidae and one species from family Aeolothripidae were discovered and are reported here for the first time from Kerala. The aim of the study was to explore the thysanopteran fauna of the state Kerala, India.

MATERIALS AND METHODS

Extensive random taxonomic surveys were conducted from 17th to 24th November 2015 at Vellayani, Peringammala, Kovalam, Balaramapuram and Neyyatinkara areas of Thiruvananthapuram district for collection of thrips. Specimens were collected by the standard beating method 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 approprate keys (Ananthakrishnan and Sen, 1980; Palmer *et al.*, 1989).

RESULTS AND DISCUSSION

The classification adopted in the article is that of Mound *et al.*, (1980). Voucher specimens are deposited with ICAR - National Bureau of Agricultural Insect Resources (ICAR-NBAIR), Bangalore, Karnataka, India. All collections were made by the author unless otherwise stated.

During the survey, 450 specimens of thrips were collected. Nine terebrantianthrips species representing nine genera, two families and three subfamilies of Thysanoptera are reported as new distribution records for Kerala as listed below. Notes on distribution and hosts (wherever known) are provided for all the species.

New distributional records for Kerala

Family Aeolothripidae

1. *Indothrips bhushani* Bhatti, 1967

Specimen examined: 4 Females, Kerala: Vellayani, 01-XII-2015

Diagnosis: Sexually dimorphic species. Maxillary palp 2 segmented and labial palp 3 segmented. Antennal segments III and IV with broad lens shaped sensory area ventrally at apex.

Distribution: India (Delhi, Karnataka, Kerala, Madhya Pradesh, Rajasthan, Uttar Pradesh)

Host: *Azadirachta indica* A. Juss.

Family Thripidae

Subfamily Dendrothripinae

2. *Dendrothrips minutus* (Ananthakrishnan, 1961)

Specimen examined: 6 Females, Kerala: Peringammala, 03-XII-2015

Diagnosis: Pronotum with transverse lines of sculpture. Forewings at middle with only a narrow naked

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area bearing transverse wrinkles instead of microtrichia, rest of the surface covered with microtrichia and with 28--29 costal setae and lower vein without setae. Sides of abdominal terga II-VIII partIy reticulate and partly with longitudinal lines.

Distribution: India (Karnataka, Kerala, Madhya Pradesh, Uttar Pradesh)

Subfamily Sericothripinae

3. *Neohydatothrips gracilipes* (Hood, 1924)

Specimen examined: 5 Females, Kerala: Peringammala, 07- XII -2015

Diagnosis: Both sexes are macropterous. Body and legs mainly yellow, tergites II–VII with dark antecostal line and brown shadings anterolaterally. Ocellar triangle, pronotal median area and pteronota weakly shaded brown. Ocellar setae III close together behind fore ocellus; three pairs of postocular setae, median pair long and arising laterally. Pronotal sculpture mainly transverse, blotch weakly defined. Metanotum with irregular linear sculpture, without markings between the main lines. Tergites II–VI with no marginal comb medially. Sternites with discal microtrichia extending fully across median area of II–VI, posterior margins with long microtrichia; sternite VII medially with neither discal nor marginal microtrichia.

Distribution: India (Chandigarh, Delhi, Karnataka, Kerala, Tamil Nadu), Costa Rica, Hawaii, Jamaica, Mexico, Texas, Trinidad

Host: *Achyranthes aspera* L.

Subfamily Thripinae

4. *Jakthrips ignacimuthui* Bhatti and Ranganath, 2006

Specimen examined: 9 Females, 1 Male, Kerala: Peringammala, 01- XII -2015

Diagnosis: Both sexes are macropterous. Antennal segments I, II and VII, VIII dark brown with proximal 1/3 of VII yellow, III, 1V and V yellow with 3rd quarter of IV pale brownish. Femora and tibiae black, with distal ½ of fore tibia yellow, tarsi yellow. Fore wing beyond proximal ¼ with a dark cross band.

Distribution: India (Karnataka, Kerala)

Host: *Artocarpus heterophyllus* Lam.

***5. Megalurothrips peculiaris* (Bagnall, 1918)**

Specimen examined: 12 Females, 2 Males, Kerala: Vellayani, 08-XII-2015

Diagnosis: Body uniformly yellowish to orange brown. Antennal segments III & IV equal and longer than V1. Basal fourth and near apex of forewing paler making the appearance of the wing banded. Forewings with 23-26 costal, 15-16 (13-14+2) upper vein and 13-14 lower vein setae. All abdominal sternites with short stout spiny projections and sternites of male medially with 70-80 lanceolate setae.

Distribution: India (Bihar, Delhi, Karnataka, Tamilnadu, Uttar Pradesh), Nepal, Bangladesh, Philippines

***6. Plutonothrips cus* (Bhatti, 1967)**

Specimen examined: 3 Females, Kerala: Vellayani, 03-XII-2015

Diagnosis: Tergites and sternites with posteromarginal craspeda. Male tergite IX with horn like process bear 2 short stout setae.

Distribution: India (Delhi, Karnataka, Kerala, Madhya Pradesh, Uttar Pradesh,)

***7. Pseudodendrothrips suvarna* Bhatti, 1997**

Specimen examined: 5 Females, Kerala: Vellayani, 04-XII-2015

Diagnosis: Body bicoloured, Antennal segments I to III dark brown, II darkest, IV to V1 brown in about distal third and VII to IX brown. Head with 2 pairs of anteocellar setae, dorsal postoculars absent; but a prominent lateral postocular present on either side. Median pair of mesonotal setae placed along posterior margin in line with the submedian pair. Median pair of metascutal setae placed close together a little ahead of the middle of sclerite or almost at middle and submedian pair along anterior margin. Mesonotum sculptured transversely without wrinkles. Metascutum with fairly close longitudinal anastomosing striae along mid line and with wrinkles among these lines**.**

Distribution: India (Delhi, Karnataka, Kerala, Maharashtra)

Host: *Azadirachta indica* A. Juss.

***8. Scirtothrips mangiferae* Priesner, 1932**

Specimen examined: 9 Females, 5 Males, Kerala: Peringammala, 04-XII-2015

Diagnosis: Body pale yellow. Head transversely striate with 2 pairs of anteocellar setae. Interocellar setae situated in line with anterior margins of hind ocelli. Antennae 8 segmented. Pronotum with 4 pairs of posteromarginal setae. Tergum VIII and IX with microtrichia medially.

Distribution: India (Delhi, Karnataka, Kerala, Madhya Pradesh), Africa, Europe, Iran, Israel, Yemen

Host: *Mangifera indica* L.

***9. Stenchaetothrips faurei* (Bhatti, 1962)**

Specimen examined: 3 Females, 2 Males, Kerala: Vellayani, 01-XII-2015

Diagnosis: Abdominal segments VIII and X dark brown. Postocular setae relatively longer. Pronotum with numerous setae on surface and are fairly well developed. Antennal segment VI shaded a little more than distal half. Gland areas present on sterna III to VII.

Distribution: India (Delhi, Haryana, Jammu & Kashmir, Karnataka, Kerala, Punjab, Uttar Pradesh), Malaysia

Host: Wild grass

A total of 33 terebrantian thrips species have been earlier reported from Kerala by various thrips taxonomists (Ananthakrishnan, 1961; Ananthakrishnan and Sen, 1980). Now we have added 9 more terebrantian species to the fauna of Kerala and thus increased the known species to 42. The newly reported 9 species represented two families *viz.*, Aeolothripidae and Thripidae and three subfamilies *viz.*, Dendrothripinae, Sericothripinae and Thripinae. The families Aeolothripidae and Thripidae represent predatory and

agriculturally important pests, respectively and hence demand significance. Since rice is an important staple crop of Kerala, presence of *Stenchaetothrips faurei* on wild grass needs attention. *S. biformis* is a serious pest of rice and hence the former species may also form an association with rice. *Jakthrips ignacimuthui* has been first described and reported from Karnataka in 2006 (Bhatti and Ranganath, 2006). Since then, the same species has not been reported from any other parts of India or world. Our survey confirms the presence of the species from Kerala also. Even though many workers had extensively explored Kerala fauna for thrips, salient findings from our survey demands further survey and study in this field from Kerala state.

Conclusion

Our study has newly added nine species of terebrantian thrips, one in the family Aeolothripidae and the remaining eight in the family Thripidae to Kerala state records collected from different hosts. Thus we have increased the number of known species of terebrantian thrips in Kerala from 33 to 42. Since thrips are economically very important as crop pests, virus vectors and pollinators, further surveys and studies in this field are needed to thoroughly understand the thysanopteran fauna of Kerala.

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