

## New distributional records of thrips (Insecta, Thysanoptera) from West Bengal, India

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**ABSTRACT:** Several extensive field surveys conducted in West Bengal, India from 2022-2024, to explore the species diversity of order Thysanoptera, revealed a total of 10 species of thrips identify to be new for the state. These species come under three subfamilies of two families, Thripidae (six species) and Phlaeothripidae (four species). The subfamily Panchaethripinae is represented by *Helionothrips aino* (Ishida); subfamily Thripinae by *Arorathrips mexicanus* (D.L. Crawford), *Ctenothrips transeolineae* Chen, *Megalurothrips usitatus* (Bagnall), *Taeniothrips orchidi* Ananthakrishnan, and *Thrips florum* Schumtz; and subfamily Phlaeothripinae by *Androthrips flavipes* Schmutz, *Gynaikothrips cecidii* Ananthakrishnan, *Liophloeothrips ablusus* Ananthakrishnan, and *Mesandrothrips flavitibia* Ananthakrishnan & Jagadish. Species diagnoses and their distribution data are also provided. The study highlights the rich yet understudied diversity of thrips in West Bengal and underscores the need for continued faunistic exploration. © 2026 Association for Advancement of Entomology

**KEY WORDS:** New records, Phlaeothripidae, Thripidae, species diagnosis

### INTRODUCTION

Members of the insect order Thysanoptera are typically ranging from 1 to 15 mm in size. Thrips are unique due to presence of only left mandible; tarsal claws reduced to bladder-like arolium; and four slender wings, each with a long fringe of peripheral cilia (Ananthakrishnan, 1969; Mound and Marullo, 1996). Approximately, 6500 species are reported globally in nine families and six subfamilies within the two suborders (Terebrantia and Tubulifera) of the order Thysanoptera (ThripsWiki,

2025). Members of this group exhibit an extremely wide range of habitats from phytophagous to spore-feeders, and fungivorous. Around 150 species of this group are considered pests and the group includes the sole vectors of plant viruses of the genus *Orthotospovirus* (Riley *et al.*, 2011; Mound *et al.*, 2022). Few species are also act as pollinators and predators on aphids and mites (Corlett, 2004).

India is known by 836 species in 273 genera, which represents the ~12.9 percent of species reported globally (Tyagi *et al.*, 2025). Of these, 315 species

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are endemic to the India and major endemism is reported in the state of Tamil Nadu, Kerala and Karnataka. However, the fauna of Thysanoptera in West Bengal state of India is highly diverse due to the wide range of climates and vegetation ranging from the Himalayan foothills to the Gangetic plains and coastal mangroves. Currently, 156 species were reported from the West Bengal, of which 24 are endemic (Tyagi *et al.*, 2025). This state ranks fifth in India in terms of thrips biodiversity along with reporting of serious pests and vectors of *Orthospovirus*. Despite the large number of species reported in this state, several knowledge gaps remain because many areas are still poorly explored. The objective herein is to report 10 new records including three pest species of thrips collected from surveys undertaken from 2022 to 2024, in West Bengal to analyse the diversity, distribution and ecological significance of thrips in this state with a focus on endemic species, pest species and vector of *Orthospovirus* in order to provide baseline data for biodiversity assessment, pest management and conservation planning.

All these new distributional records belong to the two families, Thripidae (six species) and Phlaeothripidae (four species). The species are: *Heliothrips aino* (Ishida) under subfamily Panchaethripinae; *Arorathrips mexicanus* (D.L. Crawford), *Ctenothrips transeolineae* Chen, *Megalurothrips usitatus* (Bagnall), *Taeniothrips orchidi* Ananthakrishnan, *Thrips florum* Schumtzt under subfamily Thripinae; *Androthrips flavipes* Schmutz, *Gynaikothrips cecidii* Ananthakrishnan, *Liophloeothrips ablusus* Ananthakrishnan, *Mesandrothrips flavitibia* Ananthakrishnan & Jagadish under subfamily Phlaeothripinae.

## MATERIALS AND METHODS

Specimens were collected by the bush beating method on different plant families on a white tray and preserved in (70%) alcohol (Tyagi *et al.*, 2017). The vials were labelled with their host plant, date of collection, and GPS coordinates. The collected specimens were first initially sorted out using a stereoscopic binocular microscope (Leica EZ4) and further processed for the permanent slide mounting protocol. All the specimens were mounted on to

the glass slides using natural canada balsam for morphological analysis. Photographs were captured using the Leica software application suite (LAS EZ) and a Leica compound microscope (DM-1000). Published morphological keys were used for the identification of specimens (Mound and Ng, 2009; Mirab-Balou *et al.*, 2013). Each slide was properly labelled with a registration number, locality, and deposited in the National Zoological Collections (NZC) at the Zoological Survey of India in Kolkata.

## RESULTS AND DISCUSSION

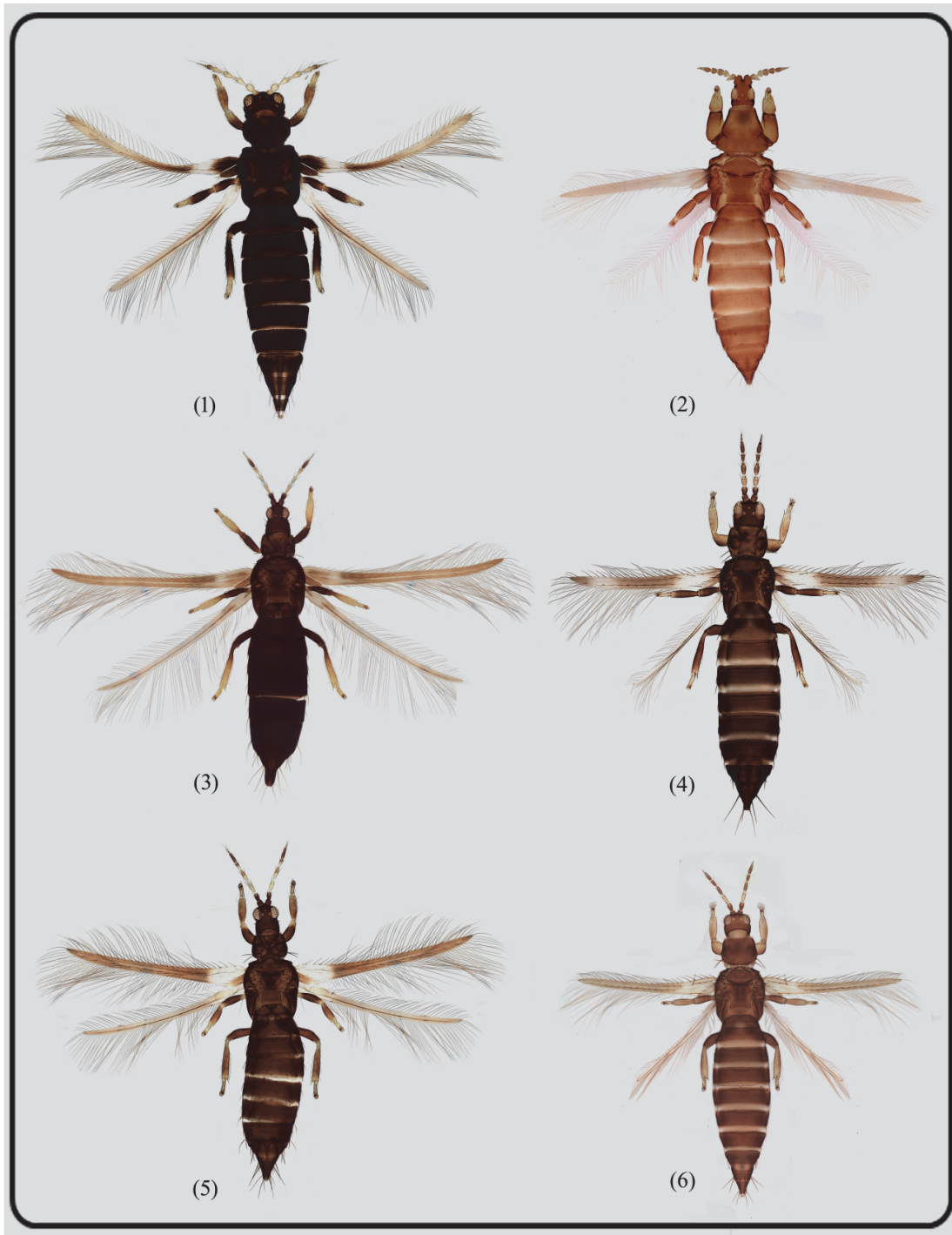
**1. *Helionothrips aino* (Ishida, 1931):** The genus *Helionothrips* Bagnall is known by twenty-nine species from Old World tropics and generally associated with leaves of different plant families. Among these, only nine species are recorded from India. *Helionothrips aino* was originally described from Japan but also widespread from southern China to Timor Leste. This species is primarily associated with the leaves of *Colocasia esculenta*. *H. aino* is differentiated from other members by constricted apex of the antennal segment IV which is shorter in comparison to segment III. Other body characters, sculpture and chaetotaxy are similar to *H. ananthakrishnani* Wilson.

**Material examined:** 3 females, India, West Bengal, Beliatare Barjora Road, 61m, 2.x.2023, coll. D. Mondal (Reg. No. 27170/H17, 27176/H17 and 27177/H17).

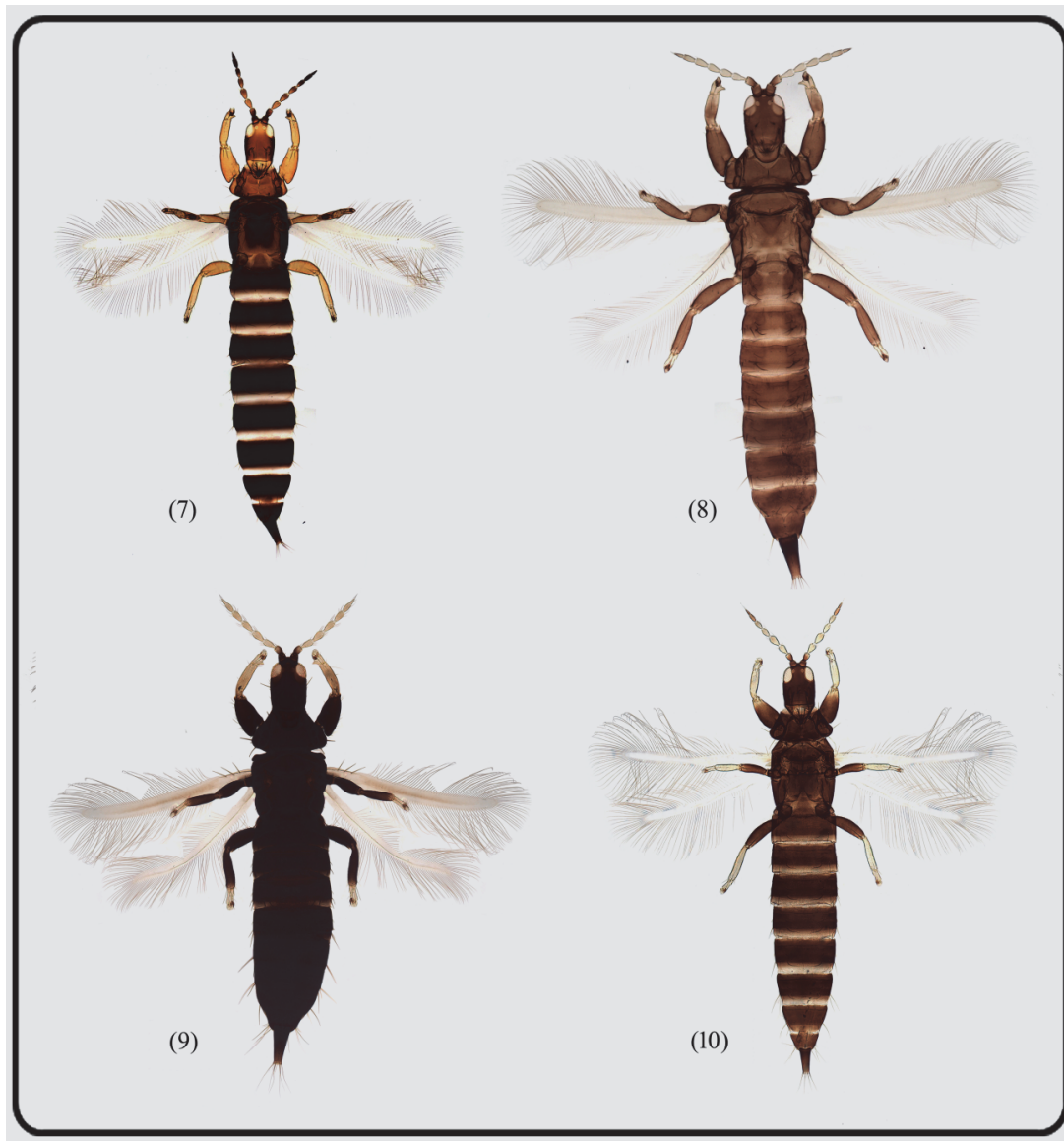
**Distribution:** India: Himachal Pradesh, West Bengal (new record).

**Elsewhere:** Japan, Taiwan.

**2. *Arorathrips mexicanus* (D.L.Crawford, 1909):** The grass-associated genus *Arorathrips* Bhatti comprises sixteen species, all from the New World, except *A. mexicanus* is a widely distributed species across tropical and subtropical regions. Members of this genus are grouped into three subgroups: *mexicanus* group, *crassus* group, and *vestis* group (Nakahara & Footitt, 2012). *A. mexicanus* lied under the *mexicanus* group and differentiated from other group members by the presence of long fore tibial outer apical process,



**Figs. 1-6:** (1) *Helionothrips aino*, female; (2) *Arorathrips mexicanus*, female; (3) *Ctenothrips transeolineae*, female; (4) *Megalurothrips usitatus*, female; (5) *Taeniothrips orchidi*, female; (6) *Thrips florum*, female



**Figs. 7-10:** (7) *Androthrips flavipes*, female; (8) *Gynaikothrips cecidii*, female; (9) *Liophloeothrips ablusus*, female; (10) *Mesandrothrips flavitibia*, female

metanotal campaniform sensilla situated medially or sometimes slightly posteriorly, five pairs of dorsal setae on tergites III-VII, and presence of dermal tuberculate scallops in a row on anterior part of abdominal tergites, on sternites, and on mesonotum.

**Material examined:** One female, India, West Bengal, Rabindra Sarobar, 16.iv.2024, coll. A. Datta and Party (Reg. No. 27551/H17).

**Distribution:** India: Karnataka, Kerala, Tamil Nadu, West Bengal (new record).

**Elsewhere:** Mexico, USA, Argentina.

**3. *Ctenothrips transeolineae* Chen, 1979:** Holartic genus *Ctenothrips* Franklin comprises five species, mainly associated with the families Liliaceae, Orchidaceae, and Asparagaceae. India is known by only one species, *C. transeolineae*

which was originally described from Taiwan. This species can be differentiated from other species of this group by the position of ocellar setae III arising posterior to the ocellar triangle, uniserial arrangement of postocular setae, the presence of transverse striations on the pronotum, and a pair of thorn-like setae on tergite IX in males.

**Material examined:** One female, India, West Bengal, Ichha forest, 1247m, 24.v.2024, coll. A. Datta and Party (Reg. No. 27828/H17); One female, India, West Bengal, Pashupati phatak, 1780m, 11.vii.2024, coll. A. Ghosh (Reg. No. 27899/H17).

**Distribution:** India: Himachal Pradesh, West Bengal (new record).

**Elsewhere:** Taiwan.

**4. *Megalurothrips usitatus* (Bagnall, 1913):** This genus *Megalurothrips* Bagnall comprises fourteen species distributed across the Old World tropics and is predominantly associated with flowers of the Fabaceae. Among these, five species are recorded from India, including *M. peculiaris* (Bagnall) and *M. usitatus*, both originally described from the India. Several members of this genus are serious pests of cultivated legumes. *M. usitatus* is the most common and widespread species of the genus in the Oriental region and is a recognised pest causing yield losses in several legume crops in Asia, including mung bean, groundnut, and soybean. Members of this group can be identified by males as females show similar resemblance to each other. Prothorax of males yellow, abdominal sternites without spine-like setae, posterior margin of abdominal tergite IX without a pair of seta like projections.

**Material examined:** One female, India, West Bengal, Beliatare barjora road, 61m, 2.x.2023, coll. D. Mondal (Reg. No. 27206/H17); One female: India, West Bengal, Ranigunj siuri road, 32m, 29.ix.2023, coll. D. Mondal (Reg. No. 27207/H17).

**Distribution:** India: Assam, Delhi, Karnataka, Manipur, Nagaland, Tamil Nadu, Uttar Pradesh, West Bengal (new record).

**Elsewhere:** Sri Lanka, Australia, Thailand.

**5. *Taeniothrips orchidi* Ananthakrishnan, 1968:** The Holarctic genus *Taeniothrips* Amyot & Serville is known by 32 extant species and associated with flowers and young leaves of different plant families. Only four species, *T. bharokariensis* Kumar & Tyagi, *T. major* Bagnall, *T. orchidi* and *T. tigris* Bhatti are described from India. Mound *et al.*, (2012) indicated that three species *T. orchidi*, *T. picipes* (Zetterstedt), *T. oreophilus* Priesner were difficult to separate from each other based on females, but based on males there are possibly slight differences in the genitalia and chaetotaxy of the ninth tergite. *T. orchidi* was originally described by Ananthakrishnan from India. Moreover, we did not found a single male of *T. orchidi* during the survey of West Bengal. Based on female specimens, we have considered these specimens under *T. orchidi*.

**Material examined:** 2 females, India, West Bengal, Ichha forest, 1247m, 24.v.2024, coll. A. Datta and Party (Reg. No. 27833/H17 and 27855/H17).

**Distribution:** India: Sikkim, Uttar Pradesh, West Bengal (new record).

**Elsewhere:** This species is endemic to India.

**6. *Thrips florum* Schumtz, 1913:** The genus *Thrips* Linnaeus is the second largest genus in the order Thysanoptera and currently comprises about 285 species worldwide, of which 54 are recorded from India. *Thrips florum* was originally described from Sri Lanka and is now widespread across Asia and eastern Australia. This species is closely related to *T. hawaiiensis* (Morgan), but can be distinguished by the length of the subapical veinal seta on the forewing clavus, which is longer than the apical seta, and the absence of sculpture lines on the mesonotum around the anterior pair of campaniform sensilla.

**Material examined:** 2 females, India, West Bengal, Baghmundi forest office, 240m, 24.ix.2024, coll. A. Ghosh (Reg. No. 28160/H17 and 28161/H17).

**Distribution:** India: Andaman Island, Delhi, Karnataka, Punjab, West Bengal (new record).

**Elsewhere:** Australia, Indonesia, Java, Nigeria, Sri Lanka, The Bahamas, USA.

**7. *Androthrips flavipes* Schmutz, 1913:** The Asian genus *Androthrips* Karny comprises twelve species, usually invading galls induced by other thrips species. India is known by five species including originally described three species, *A. coimbatorensis* Ramakrishna, *A. flavitibia* Moulton, and *A. ramachandrai* Karny. *A. flavipes* is a predatory thrips and is frequently associated with thrips galls on various plants in India, Southeast Asia, and other regions. This species is a beneficial inquiline that preys on gall-forming thrips species and is considered an effective natural enemy. *A. flavipes* can be differentiated from others by the presence of bicoloured legs, and well developed postocular, posteroangular, and epimeral setae.

**Material examined:** 2 females, India, West Bengal, Bankura, 39m, 4.x.2023, coll. D. Mondal (Reg. No. 27179/H17, 27180/H17).

**Distribution:** India: Assam, Kerala, Manipur, Meghalaya, Tamil Nadu, Tripura, Uttarakhand, West Bengal (new record).

**Elsewhere:** Sri Lanka.

**8. *Gynaikothrips cecidii* Ananthkrishnan, 1968:** The Asian genus *Gynaikothrips* Zimmermann comprises thirty-eight species, of which twelve are recorded from India, including eleven that were originally described from the country. Members of this genus are gall-inducing on leaves, particularly on *Ficus* species. Species of the genus *Gynaikothrips* lied in the *Liothrips* lineage group due to presence of one sense on antennal segment III and three sense ones on IV. *G. cecidii* was originally described from India and can be distinguished from other species by yellow antennal segments III–VIII, brown femora and tibiae, parallel-sided head which is never constricted at the base; broadly rounded mouthcone; incomplete mesopraesternum represented by two triangular

sclerites, long pronotal anteroangular setae, vestigial anteromarginals, and subequal posteroangular and epimeral setae.

**Material examined:** 3 females, India, West Bengal, Beliatare barjora road, 61m, 2.x.2023, coll. D. Mondal (Reg. No. 27170/H17, 27176/H17 and 27177/H17).

**Distribution:** India: Assam, Madhya Pradesh, Manipur, Tamil Nadu, West Bengal (new record).

**Elsewhere:** This species is endemic to India.

**9. *Liophloeothrips ablusus* Ananthkrishnan, 1971:** The leaf-feeding genus *Liophloeothrips* Priesner comprises 19 species, 13 from India and six species from Europe. Species of the genus are usually gall inducing on different plant families (Tyagi & Kumar 2011). Species of the genus *Liophloeothrips* lied in the *Liothrips* lineage group due to presence of one sense on antennal segment III and three sense ones on IV. *L. ablusus* can be differentiated from others by brown body, and complete mesopraesternum, constricted in middle.

**Material examined:** 3 females, India, West Bengal, Radhamadhavpur, 51m, 29.ix.2023, coll. D. Mondal (Reg. No. 27184/H17, 27185/H17, 27186/H17); 10 females, India, West Bengal, Beliatare barjora road, 61m, 2.x.2023, coll. D. Mondal (Reg. No. 27168/H17, 27169/H17, 27173/H17, 27174/H17, 27175/H17, 27183/H17, 27188/H17, 27189/H17, 27194/H17, 27205/H17); 2 females, India, West Bengal, Simlapat road, 61m, 4.x.2023, coll. D. Mondal (Reg. No. 27171/H17, 27178/H17).

**Distribution:** India: Kerala, West Bengal (new record).

**Elsewhere:** This species is endemic to India.

**10. *Mesandrothrips flavitibia* (Ananthkrishnan & Jagadish, 1969):** The genus *Mesandrothrips* Priesner comprises nine species that are widespread in tropical regions of Asia, of which, seven are recorded from India. This species was originally described by Ananthkrishnan & Jagadish in 1969 in the genus *Xylaplothrips* Priesner. Mound & Tree (2019) re-diagnoses species under the genus

*Xylaplothrips* based on the three sense cones of antennal segment III and four on IV placed in the genus *Mesandrothrips*. *M. flavitibia* can be differentiated from others by body colour, absence of anteromarginals, and S1setae on tergite IX expanded apically.

**Material examined:** 3 females, India, West Bengal, Uparbandha, 74m, 2.x.2023, coll. D. Mondal (Reg. No. 27190/H17, 27191/H17 and 27193/H17).

**Distribution:** India: Chandigarh, Delhi, Madhya Pradesh, Tamil Nadu, Uttar Pradesh, West Bengal (new record).

**Elsewhere:** This species is endemic to India.

The present study significantly contributes to the understanding of the order Thysanoptera faunal diversity in West Bengal, India. Prior to this work, 124 species had been reported from the state (Sanyal *et al.*, 2012). After 12 years of knowledge gap, few systematic field surveys were conducted from 2022-2024. This led to the identification and documentation of ten additional species, enriching the known thrips fauna of the region. These findings highlight the rich but underexplored diversity of thrips in West Bengal.

The newly recorded 10 species belong to two families: Thripidae (six species) and Phlaeothripidae (four species), representing a diverse range of ecological niches and host plant associations. Moreover, *Helionothrips aino* and *Ctenothrips transeolineae*, were previously known only from Himachal Pradesh, India or neighboring countries such as Taiwan, suggesting that their wider distribution has been under-documented due to limited sampling efforts. Similarly, *Thrips florum*, with a broad distribution across Asia and beyond, underscores the biogeographical connectivity of the West Bengal region. Moreover, the identification of endemic species like *Gynaikothrips cecidii*, *Liophlaeothrips ablusus*, and *Mesandrothrips flavitibia* from West Bengal enhances the conservation value of the local agricultural ecosystems. These species, restricted to India, might be sensitive indicators of environmental

changes and habitat specificity.

The findings emphasize the importance of continued, targeted fieldwork across diverse habitats to uncover hidden insect diversity. Thrips are not only agricultural pests but also vectors of plant viruses such as *Orthospoviruses* (Rotenberg *et al.*, 2015), understanding their distribution is critical for pest management strategies and for monitoring potential threats to biodiversity and agriculture. Overall, this study contributes to filling the knowledge gaps in the taxonomy and distribution of Indian thrips, particularly from the state of West Bengal. It also provides a valuable baseline for future ecological, agricultural, and conservation research involving thrips.

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