Persian J. Acarol., 15(3): 150304.

https://www.persianacarology.org

Research Article https://biotaxa.org/pja https://doi.org/10.22073/pja.150304

Biodiversity of dust mites (Acari) in western West Bengal, India

Setwasri Kundu[1] | Sagata Mondal[2*] | Salil K. Gupta[1]

1. Medicinal Plants Research and Extension Centre, R.K. Mission, RKMVERI, Narendrapur, Kolkata-700103, India; E-mail: setwasrikundu@gmail.com, salil_zsidumdum@yahoo.com

2. Post Graduate Department of Zoology, Vidyasagar College, Kolkata-700091, India; E-mail: sagata.mondal@rediffmail.com

**** Correspondence***

✉ *sagata.mondal@rediffmail.com*

Received:
06 August, 2025
Accepted:
25 February, 2026
Published:
15 July, 2026

Subject Editor:
A. Saboori

ABSTRACT

Paschim Bardhhaman district of West Bengal, India, represents a semi-urban transitional zone where indoor dust accumulation provides suitable microhabitats for mite population. This paper reports dust mite fauna from Paschim Bardhhaman based on the study conducted during May, 2024 to July, 2025. Altogether, 38 species of dust mites belonging to 31 genera, 19 families, and 4 orders are examined here. Out of these, the highest representation of species was from Astigmata followed by Mesostigmata, Prostigmata, and Brachypylina. Out of 38 species, 14 species were allergy causing mites, 16 were predatory mites, and 8 were fungal associated mites. Collection data, distribution, nature of association with dust samples have also been discussed. In addition, different indices like Diversity Index, Index of dominance, Simpson's and Shannon-Wiener Diversity Index were calculated using standard formulae. The recorded Shannon Index values at order-level were 1.60 (Mesostigmata), 1.39 (Prostigmata), and 1.342 (Astigmata), while Oribatida was represented by a single species. Evenness values ranged between 0 and 0.89, indicating variation in distribution patterns of individuals among taxa. Simpson's and Margalef's indices further described dominance structure and species richness within the mite population. Among Astigmata, the most dominant species belonged to the genus *Dermatophagoides*, followed by *Acarus* and minimum representation was from the genus *Pyroglyphus*. The present study provides baseline taxonomic documentation and diversity index-based assessment of dust mite assemblages from an acarologically unexplored district of West Bengal, which may serve as a reference for future ecological and public health studies.

KEYWORDS

Dust mites, Paschim Bardhhaman, relative abundance, Shannon-Wiener index, Simpson's diversity index, West Bengal

CITE: Kundu, S., Mondal, S. & Gupta, S.K. (2026) Biodiversity survey of dust mites (Acari) in western West Bengal, India *Persian Journal of Acarology*, 15(3): 150304.
https://doi.org/10.22073/pja.150304

INTRODUCTION

Dust mites occur in fine layer of dust accumulated under bed or in the floor or underneath carpet or in other human habitation. They feed on dander, human scales, human semen, etc. They are responsible for different allergic manifestations including breathlessness, rhinitis, bronchial asthma, sneezing, appearance of urticaria, etc. (Mitchell *et al.* 1969; Wharton 1970). The mites belonging to *Dermatophagoides*, *Euroglyphus*, *Blomia*, *Tyrophagus*, *Glycyphagus* are the major allergy causing mites while *Cheyletus* are the major predatory mites feeding upon allergenic mites. It has been reported that 40% of allergic manifestations are because of dust mites.

Due to the importance of these mites in public health, they have drawn attention of large number of scientists who investigated the diversity of the mites, allergic manifestations in their immunological responses, etc. Leeuwenhoke (1694) was the first to associate dust mites with allergic manifestations. Some other researchers like Voorhorst *et al.* (1964), Spieksma and Spieksma-Boezeman (1967), Maunsell

et al. (1968), Voorhorst and Spieksma (1973), van Bronswijk *et al.* (1973), Wharton (1970), Arlian *et al.* (1983), Channa Basavanna *et al.* (1986) etc. were from outside India, while Tandon *et al.* (1968), Gupta and Datta Roy (1975), Dar and Gupta (1979), Krishna Rao *et al.* (1979), Tripathi and Parikh (1983), Modak *et al.* (1995), Podder *et al.* (2005, 2020), Podder (2008), etc. contributed from India.

In the recent time, complaints of dust mite allergic manifestations have been reported from different parts of West Bengal including Paschim Bardhhaman, wherefrom no investigation about occurrence of dust mites have been reported so far. In view of that, the present investigation was taken up to study the occurrence of dust mites, their relative abundance at species, genus, and family levels following Shannon-Wiener, Evenness, Simpson's, and Margalef's diversity indices, pie charts, etc.

The entire collection of mites reported in this paper was done by the senior author (Setwasri Kundu).

MATERIAL AND METHODS

General diversity and taxonomic studies

Study sites – The dust samples were collected from floors as well as beds from domestic habitats alongside hospitals, mud houses inhabited by healthy person as well as respiratory allergic patients. The GPS data in respect of collection localities are: Kalyangram-1 (23.6547° N, 86.9073° E), CRJ Railway Quarters (23.8423° N, 86.9034° E), K.G. Hospital, CLW (23.8494° N, 86.8958° E), Jorbari, HCL town (23.8086° N, 86.9543° E), Asansol SD Hospital (23.6845° N, 86.9878° E).

Method of extraction and isolation – For extraction of mites from dust samples, the floatation method by Spieksma and Spieksma-Boezeman (1967) was used.

Sorting and identification – The collected mites were mounted on slides initially in a drop of lactic acid (70%), warmed on a hot plate (35–40 °C) and examined under a Stereobinocular microscope for separation of different orders/families. Later, all mites were mounted in permanent mounting media (Hoyer's medium) and identified under a Research microscope (Leica, Model DM 1000– LED– (11888842). Distributional information of the recorded species was compiled from Hughes (1976), Gupta (2003, 2010, 2012), Krantz and Walter (2009).

Study on different indices of dust mites

Isolation of dust mites – Isolation of dust mites was done following the methodology of Spieksma and Spieksma-Boezeman (1967) by using different meshes to sieve the dust samples by boiling the sieved samples with 90% lactic acid, centrifuging the solution and collecting the supernatant on a filter paper. Saturated solution of aqueous sodium chloride was used in the residue and then centrifuged and filtered. Finally, the mites were collected on filter paper under the Stereobinocular microscope.

Sampling method and sampling volume – The dust samples which were collected from five habitats (concrete house floor dust, mud house floor dust, hospital floor dust, bed dust and carpet dust). From each type of dust sample, one gram of dust was taken and mixed thoroughly to make a total of five grams of sample. This was subjected to extraction of mites by floatation method using dichloromethane (Sp. Gr 1.324–1.327) and then centrifuged. Supernatant was filtered and the residue contained the mites, following Spieksma and Spieksma-Boezeman (1967).

Sampling periodicity – Once in a month.

Calculation of different Indices

Shannon-Wiener Diversity Index, Evenness Index, Simpson's Diversity Index, Margalef's Diversity Index were calculated as below:

$$Relative\ Abundance\ (R.A)\ \% = (n_i/N) \times 100 = p_i \times 100$$

where n_i = Total number of i^{th} species in an area, N = Total sum of population of all species in that area.

Shannon-Wiener Diversity Index (Shannon 1948): This index was calculated using the formula

$$H = -\Sigma^{s}_{i=1}\, p_i\, ln(p_i)$$

where p_i = Proportion of total sample belonging to i^{th} species, *ln* = natural logarithm and *s* = species richness.

Evenness Index (Pielou 1966): This index was calculated using the formula

$$H' = H/H_{max}$$

where H = Observed index of species diversity, H_{max} = Maximum possible index of diversity.

Simpson's Diversity Index (Simpson 1949): This index was calculated using the formula

$$D = 1-\Sigma^{s}_{i=1}\, (pi)^2$$

where p_i = Proportion of total sample belonging to i^{th} species.

Margalef's Diversity Index (Margalef 1958): This index was calculated using the formula

$$D_{Mg} = S-1/ln(N)$$

where *S* = Species richness, *ln* = natural logarithm and *N* = Total no. of individuals.

RESULTS

The results of the taxonomic study indicate the occurrence of 38 species under 31 genera, 19 families, and three orders as below:

Taxonomy
Order I - Oribatida

Hyporder Astigmata

Family I – Pyroglyphidae

1 *Dermatophagoides pteronyssinus* (Trouessart)

Collection data – 17♀, India: West Bengal, Dist. Paschim Bardhhaman, from bed dust, 03.05.2024: 22♀ and 4♂, from concrete house floor dust, 07.06.2024: 21♀ and 4♂, from mud house floor dust, 10.07.2024: 24♀ from bed bust, 07.08.2024: 28♀ from bed dust, 11.09.2024: 19♀ and 5♂ from carpet dust, 16.01.2024: 20♀, from bed dust, 17.01.2025: 19♀, from bed dust, 28.03.2025: 26♀and 4♂, from K.G hospital floor dust, 18.04.2025: 25♀ from concrete house floor dust, 05.05.2025: 26♀ and 5♂, from bed dust, 18.06.2025: 29♀, from mud house floor dust, 04.07.2025.

Distribution – Cosmopolitan, more in tropical humid climate.

Remarks – This was the most dominant dust mite collected in the present study and was more abundant in bed dust samples compared to floor dust samples. Further, it was more prevalent in two houses of allergic patients. No noticeable preference was found from samples collected from concrete house and mud house. This is the mite causing allergic manifestations.

2 *Dermatophagoides farinae* (Hughes)

Collection data – 10♀, India: West Bengal, Dist. Paschim Bardhhaman, from K.G hospital floor dust, 21.06.2024: 13♀ and 2♂, from carpet dust, 10.07.2024: 16♀, from concrete house floor dust, 27.09.2024: 8♀ and 1♂, from bed dust, 24.01.2025: 11♀ from bed dust, 18.04.2025: 9♀, from carpet dust, 26.05.2025: 7♀ from SD hospital floor dust, 18.06.2025.

Distribution – Cosmopolitan.

Remarks – This was the second abundantly available dust mite species.

3 *Euroglyphus maynei* (Cooreman)

Collection data – 12♀, India: West Bengal, Dist. Paschim Bardhhaman, from carpet dust, 15.09.2024: 7♀and 3♂, from concrete floor dust, 27.10.2024: 4♀ and 4♂, from mud house floor dust, 20.01.2024: 9♀, from bed dust, 18.04.2025: 8♀, from SD hospital floor dust, 06.05.2025: 11♀, from bed dust, 19.05.2025, 8♀, from concrete house floor dust, 18.06.2025.

Distribution: England, United States, India.

Remarks: It is another important respiratory allergy causing mite but not frequently occurred in dust samples.

4 *Hirstia domicola* Fain *et al.*

Collection data – 2♀, India: West Bengal, Dist. Paschim Bardhhaman, from concrete house floor dust, 26.07.2024: 4♀, from bed dust, 23.08.2024: 6♀, from carpet dust, 11.09.2024, 11♀ and 1♂, from SD hospital floor dust, 13.06,2025: 8♀, from bed dust, 04.07.2025.

Distribution – Europe and India.

Remarks – The occurrence of this mite was not that abundant as that of *Dermatophagoides* group. It occurred both in floor and bed dust samples but was relatively less in number than the later samples.

5 *Pyroglyphus* sp.

Collection data – 1♀, India: West Bengal, Dist. Paschim Bardhhaman, from hospital floor dust, 27.04.2025.

Distribution – It could not be identified up to species level. Hence, distribution data cannot be given.

Remarks – Its only collection was found from SD hospital floor dust but its occurrence could not be recorded from draining house dust.

Family II – Chortoglyphidae

6 *Chortoglyphus arcuatus* Troupeau

Collection data – 2♀, India: West Bengal, Dist. Paschim Bardhhaman, from SD hospital floor dust, 07.06.2024: 4♀, from carpet dust, 23.08.2024: 1♀ and 1♂, from mud house floor dust, 16.10.2024: 3♀, from bed dust, 18.04.2025: 2♀, from bed dust, 05.05.2025: 3♀, from concrete floor dust, 18.06.2025.

Distribution – Belgium, Italy, Germany, Netherland, Polland, England, France, Russia, U.A.R., India.

Remarks U.A.R The collection of this mite could be made from carpet dust but its occurrence was rather not abundant.

Family III – Glycyphagidae

7 *Glycyphagus domesticus* (De. Geer)

Collection data – 8♀, India: West Bengal, Dist. Paschim Bardhhaman, from carpet dust, 22.05.2024: 19♀ and 4♂, from bed dust, 10.07.2024: 23♀ and 2♂, 11.09.2024: 10♀, from bed dust, 07.11.2024: 17♀, from K.G hospital floor dust, 28.03.2025: 15♀, from K.G hospital floor dust, 08.04.2025: 13♀ and 3♂, from mud house floor dust, 19.05.2025: 19♀, from concrete house floor dust, 18.06.2025: 12♀, from carpet dust, 11.07.2025.

Distribution – Cosmopolitan.

Remarks – Its occurrence is normally more in stored products but has also been reported to occur in house dust samples causing respiratory allergy.

8 *Blomia tropicalis* van Bronswijk *et al.*

Collection data – 6♀, India: West Bengal, Dist. Paschim Bardhhaman, from K.G hospital floor dust, 07.08.2024: 5♀, from floor dust, 11.09.2024: 8♀, from carpet dust, 05.05.2025: 4♀, from bed dust, 06.05.2025.

Distribution – Tropical and Sub tropical geographic regions of United States and Europe, South America, Asia.

Remarks – The occurrence of this allergy causing mite is somewhat rare.

9 *Lepidoglyphus destructor* (Schrank)

Collection data – 9♀, India: West Bengal, Dist. Paschim Bardhhaman, from K.G hospital floor dust, 26.07.2024: 11♀, from bed dust, 07.08.2024: 10♀, from concrete house floor dust, 07.11.2024: 12♀, from concrete house floor dust, 08.04.2025: 13♀, from carpet dust, 19.05.2025.

Distribution – Europe, America, South America, India.

Remarks – This is mainly a stored product mite but also is known to occur in dust samples.

10 *Glycyphagus ornatus* Kramer

Collection data – 3♀, India: West Bengal, Dist. Paschim Bardhhaman, from bed dust, 23.08.2024: 2♀, from mud house floor dust, 07.11.2024: 12♀, from concrete house floor dust, 08.04.2025: 13♀, from carpet dust, 19.05.2025.

Distribution – India.

Remarks – Its occurrence on dust sample is rather interesting as it is more common in stored product habitat.

11 *Austroglycyphagus geniculatus* (Vitzthum)

Collection data – 4♀, India: West Bengal, Dist. Paschim Bardhhaman, from carpet dust, 03.05.2024: 2♀, from SD hospital floor dust, 10.07.2024: 6♀, from concrete house floor dust, 05.05.2025: 7♀, from carpet dust, 13.06.2025.

Distribution – India.

Remarks – Same as given for *G. ornatus*.

Family IV – Carpoglyphidae

12 *Carpoglyphus lactis* Linnaeus

Collection data – 1♀, India: West Bengal, Dist. Paschim Bardhhaman, from mud house floor dust, 16.10.2024: 3♀, from K.G hospital floor dust, 26.05.2025: 2♀, from carpet dust, 04.07.2025.

Distribution – Europe, North America, Argentina.

Remarks – It is a mite more common in dried milk sample and therefore its occurrence in dust is intriguing.

Family V – Suidasiidae

13 *Suidasia nesbitti* Hughes

Collection data – 11♀ and 1♂, India: West Bengal, Dist. Paschim Bardhhaman, from concrete house floor dust, 21.06.2024: 9♀, from concrete house floor dust, 07.08.2024: 15♀, from SD hospital floor dust, 07.11.2024: 16♀, from carpet dust, 08.04.2025: 18♀, from bed dust, 19.05.2025: 11♀, from

mud house floor dust, 18.06.2025: 17♀, from carpet dust, 04.07.2025.

Distribution – England, Portugal, Finland, Belgium, Italy, North America, North Africa, West Indies, India.

Remarks – Its occurrence in stored product samples is most common rather than in dust samples.

Family VI – Acaridae

14 *Acarus siro* Linnaeus

Collection data – 19♀ and 6♂, India: West Bengal, Dist. Paschim Bardhhaman, from mud house floor dust, 10.05.2024: 21♀, from carpet dust, 07.06.2024: 19♀, from bed dust, 07.08.2024: 16♀ and 6♂, from SD hospital floor dust, 15.09.2024: 22♀, from concrete house floor dust, 16.10.2024: 21♀, from carpet dust, 07.11.2024: 21♀, from mud house floor dust, 28.03.2025: 25♀ and 15♂, from K.G hospital floor dust, 08.04.2025: 23♀ and 7♂, from carpet dust, 26.05.2025: 21♀, from carpet dust, 18.06.2025: 20♀ and 8♂, from bed dust, 04.07.2025.

Distribution – Cosmopolitan.

Remarks – The occurrence of this mite has been reported from diverse habitats including dust samples. Its role in causing dust allergy is uncertain.

15 *Acarus gracilis* Hughes

Collection data – 4♀, India: West Bengal, Dist. Paschim Bardhhaman, from mud house floor dust, 07.06.2024: 5♀, from carpet dust, 23.08.2024: 6♀, from bed dust, 27.04.2025: 3♀ and 1♂, from bed dust, 06.05.2025.

Distribution – England, Argentina, India.

Remarks – Its occurrence in dust sample is interesting in the sense that its role in causing dust allergy is uncertain. It is more common in stored product samples.

16 *Caloglyphus oudemansi* Zachvatkin

Collection data – 8♀, India: West Bengal, Dist. Paschim Bardhhaman, from mud house floor dust, 21.06.2024: 6♀, from SD hospital floor dust, 07.08.2024: 4♀, from bed dust, 19.05.2025: 7♀, from bed dust, 13.06.2025.

Distribution – Cosmopolitan.

Remarks – It is a fungal feeding mite and its occurrence in dust has also been reported by Gupta (2010).

17 *Caloglyphus berlesei* (Michael)

Collection data – 4♀ and 1♂, India: West Bengal, Dist. Paschim Bardhhaman, from carpet dust, 10.07.2024: 7♀, from mud house floor dust, 11.09.2024: 2♀, from bed dust, 28.03.2025: 4♀, from K.G hospital floor dust, 19.05.2025.

Distribution – Cosmopolitan.

Remarks – Its occurrence in dust is already known from reports of number of workers (Gupta 2010) and to what extent it causes respiratory allergy is not definitely known. It may be a fungal feeding mite.

18 *Tyrophagus putrescentiae* (Schrank)

Collection data – 8♀, India: West Bengal, Dist. Paschim Bardhhaman, from concrete house floor

dust, 22.05.2024: 12♀ and 1♂, from carpet dust, 26.07.2024: 15♀, from bed dust, 11.09.2024: 11♀, from concrete house floor dust, 28.03.2025: 10♀, from K.G hospital floor dust, 08.04.2025: 7♀, from mud house floor dust, 19.05.2025.

Distribution: Cosmopolitan.

Remarks: This mite was frequently met within dust samples collected from different habitats. It is also very common in any stored grain samples as well in mushroom where they are known to cause damage.

19 *Tyrophagus longior* (Gervais)

Collection data – 5♀, India: West Bengal, Dist. Paschim Bardhhaman, from bed dust, 23.08.2024: 7♀, from carpet dust, 16.10.2024: 9♀ and 1♂, from concrete house floor dust, 26.05.2025: 6♀, from bed dust, 04.07.2025.

Distribution – Cosmopolitan.

Remarks – This allergy causing mite is also quietly common in storage ecosystem, bird nests, mushroom and has definite role in causing allergy in man.

Family VII – Histiostomatidae

20 *Histiostoma* sp.

Collection data – 1♀, India: West Bengal, Dist. Paschim Bardhhaman, from mud house floor dust, 10.07.2024: 1♀ and 1♂, 13.06.2025.

Distribution – It could not be identified up to species level. Hence, distribution data cannot be given.

Remarks – This mite was collected from floor dust but its role in allergy causing is not known. It might have occurred through insect by phoresy.

Hyporder Brachypylina

Family VIII – Oppiidae

21 *Oppia* sp.

Collection data – 10♀, India: West Bengal, Dist. Paschim Bardhhaman, from concrete house floor dust, 03.05.2024: 4♀, from K.G hospital floor dust, 08.04.2025: 11♀, from carpet dust, 19.05.2025.

Distribution – It could not be identified up to species level. Hence, distribution data cannot be given.

Remarks – This fungal feeding mite was also collected from floor dust.

Order II – Trombidiformes (Suborder Prostigmata)

Family IX – Tarsonemidae

22 *Tarsonemus granarius* Lindquist

Collection data – 3♀, India: West Bengal, Dist. Paschim Bardhhaman, from mud house floor dust, 11.08.2024: 4♀, from concrete house floor dust, 16.10.2024: 7♀, from carpet dust, 08.04.2025: 10♀, from concrete house floor dust, 04.07.2025.

Distribution – British Isles, Canada, Japan, India.

Remarks – It is known more as stored product mite than dust mite. It also occurs in mushrooms, bird nests, etc. (Gupta 2010).

Family X – Cheyletidae

23 *Cheyletus eruditus* (Schrank)

Collection data – 6♀, India: West Bengal, Dist. Paschim Bardhhaman, from concrete house floor dust, 07.06.2024: 8♀, from mud house floor dust, 07.08.2024: 8♀, from SD hospital floor dust, 09.10.2024: 7♀ and 2♂, from carpet dust, 27.04.2025: 4♀ and 1♂, from concrete house floor dust, 05.05.2025: 9♀, from bed dust, 13.06.2025.

Distribution – Cosmopolitan.

Remarks – This is a very efficient predatory mite known to occur in stored products and its preys include Acarid mites.

24 *Cheyletus malaccensis* Oudemans

Collection data – 4♀, India: West Bengal, Dist. Paschim Bardhhaman, from carpet dust, 03.05.2024: 5♀, from concrete house floor dust, 23.08.2024: 3♀, from concrete house floor dust, 27.04.2025: 4♀ and 1♂, from SD hospital floor dust, 05.05.2025: 2♀, from carpet dust, 13.06.2025.

Distribution – Cosmopolitan.

Remarks – It is an important predatory mite.

25 *Cheyletus fortis* Oudemans

Collection data – 3♀, India: West Bengal, Dist. Paschim Bardhhaman, from carpet dust, 26.07.2024: 5♀, from 11.09.2024: 1♀ and 4♂, from concrete house floor dust, 27.04.2025: 7♀ and 2♂, from bed dust, 06.05.2025: 4♀, from concrete house floor dust, 18.06.2025.

Distribution – India, New Guinea, Myanmar, Japan, Australia.

Remarks – It is also an important predatory mite.

26 *Grallacheles* sp.

Collection data – 1♀, India: West Bengal, Dist. Paschim Bardhhaman, from mud house floor dust, 21.06.2024: 2♀, from concrete house floor dust, 19.05.2025.

Distribution – India.

Remarks – This interesting predatory mite genus is known from India by only 2 species. But the species reported here does not conform with any one of those. The differences are in relative length and shape of dorsal body setae.

Family XI – Cunaxidae

27 *Cunaxa setirostris* Hermann

Collection data – 6♀, India: West Bengal, Dist. Paschim Bardhhaman, from carpet dust, 07.11.2024: 5♀, from concrete house floor dust, 12.02.2025, 7♀ and 2♂, from carpet dust, 08.04.2025: 5♀ and 1♂, from SD hospital floor dust, 13.06.2025.

Distribution – Cosmopolitan.

Remarks – It is very important predatory mite and is known from stored products, mushrooms, dust samples (Gupta 2003).

Family XII – Stigmaeidae

28 *Agistemus* sp.

Collection data – 1♀, India: West Bengal, Dist. Paschim Bardhhaman, from concrete house floor dust, 18.06.2025.

Remarks – The species is a predatory one, might be of Acarid or *Dermatophagoides* mite.

29 *Zetzellia* sp.

Collection data – 5♀, India: West Bengal, Dist. Paschim Bardhhaman, from concrete house floor dust, 04.12.2024: 4♀, from concrete house floor dust,18.06.2025: 7♀, from mud house floor dust, 11.07.2025.

Remarks – This is also another species belonging to predatory group.

Family XII – Iolinidae

30 *Pronematus mcgregori* Baker

Collection data – 7♀, India: West Bengal, Dist. Paschim Bardhhaman, from concrete house floor dust, 22.05.2024: 9♀, from hospital floor dust, 27.09.2024: 8♀, from concrete house floor dust, 19.05.2025: 8♀, from mud house floor dust, 13.06.2025.

Distribution – India (Delhi, West Bengal).

Remarks – It is known as egg feeder of acarid mite (Gupta 2003).

Order III – Mesostigmata

Family XIV – Ameroseiidae

31 *Kleemania plumigera* Oudemans

Collection data – 5♀, India: West Bengal, Dist. Paschim Bardhhaman, from concrete house floor dust, 07.08.2024: 3♀, from carpet dust, 04.12.2024: 4♀, from bed dust, 06.05.2025: 5♀, from concrete house floor dust, 04.07.2025.

Distribution – Austria, Brazil, China, Türkiye, India, Mexico, Germany, Peru, Philippines.

Remarks – This has been reported from stored products, mushroom samples (Gupta 2012).

Family XV – Ascidae

32 *Asca biswasi* Bhattacharya

Collection data – 7♀, India: West Bengal, Dist. Paschim Bardhhaman, from K.G hospital floor dust, 07.08.2024: 4♀, from carpet dust, 07.11.2024: 6♀, from bed dust, 28.03.2025: 8♀, from carpet dust, 27.04.2015.

Distribution – Cosmopolitan.

Remarks – Earlier report of this species was from soil as well as mushroom (Parveen and Gupta 2020).

33 *Lasioseius mcgregori* Chant

Collection data – 8♀, India: West Bengal, Dist. Paschim Bardhhaman, from concrete house floor

dust, 22.05.2024: 6♀, from carpet dust, 07.11.2024: 4♀, from carpet dust, 04.12.2024: 8♀ and 1♂, from K.G hospital floor dust, 08.04.2025.

Distribution – U.S.A, India.

Remarks – Apart from dust, it is known from soil, stored products etc.

Family XVI – Blattisociidae

34 *Blattisocius keegani* Fox

Collection data – 4♀, India: West Bengal, Dist. Paschim Bardhhaman, from concrete house floor dust, 15.09.2024: 6♀, from carpet dust, 17.01.2025: 5♀, from bed dust, 19.05.2025: 2♀, from concrete house floor dust, 11.07.2025.

Distribution – Canada, Poland, Russia, Argentina, India, New Zealand, Australia.

Family XVII – Macrochelidae

35 *Macrocheles glaber* J. Muller

Collection data – 3♀, India: West Bengal, Dist. Paschim Bardhhaman, from mud house floor dust, 10.07.2024: 7♀, from concrete house floor dust, 11.09.2024: 5♀ and 1♂, from mud house floor dust, 18.04.2025: 7♀ and 3♂, from bed dust, 04.07.2025.

Distribution – Europe, New Zealand, India.

Remarks – Earlier report of this species was from mushroom, stored products, etc.

Family XVIII – Laelapidae

36 *Hypoaspis claviger* (Berlese)

Collection data – 7♀, India: West Bengal, Dist. Paschim Bardhhaman, from concrete house floor dust, 07.08.2024: 8♀, from carpet dust, 16.10.2024: 9♀ and 3♂, from concrete house floor dust, 18.04.2025: 11♀ and 4♂, from concrete house floor dust, 22.05.2025.

Distribution – India, Europe.

Family XIX – Uropodidae

37 *Fuscuropoda marginata* (Koch)

Collection data – 8♀ and 2♂, India: West Bengal, Dist. Paschim Bardhhaman, from SD hospital floor dust, 07.06.2024: 10♀, from bed dust, 11.09.2024: 11♀ and 1♂, from concrete house floor dust, 09.10.2024: 9♀, from bed dust, 28.03.2025: 12♀, from concrete house floor dust, 19.05.2025: 9♀ and 5♂, from mud house floor dust, 11.07.2025.

Distribution – Cosmopolitan.

Remarks – Earlier report of this species was from stored products (Hughes 1976).

38 *Leiodinychus krameri* (G.R. Canestrini)

Collection data – 7♀, India: West Bengal, Dist. Paschim Bardhhaman, from SD hospital floor dust, 11.09.2024: 9♀, from concrete house floor dust, 07.11.2024: 6♀, from mud house floor dust, 05.05.2025: 7♀, from mud house floor dust, 18.06.2025.

Distribution – Cosmopolitan.

Remarks – Earlier report of this species was from stored products (Hughes,1976).

Diversity indices

The present investigation recorded 38 species of dust mites belonging to 31 genera and 19 families distributed under the orders/hyporders Astigmata, Prostigmata, Mesostigmata and Oribatida (Table 1). Among the recorded taxa, 14 species were recognized as allergenic mites, 16 as predatory mites, and eight as fungal-associated forms.

At the order level, (Fig. 1) Astigmata contributed 52.63% of the total collected individuals. Prostigmata accounted for 23.69%, Mesostigmata for 21.05% and Brachypylina for 2.63%. In terms of total individuals recorded, (Fig. 2) Astigmata comprised 1273 individuals, Mesostigmata 250 individuals, Prostigmata 192 individuals, and Brachypylina 25 individuals.

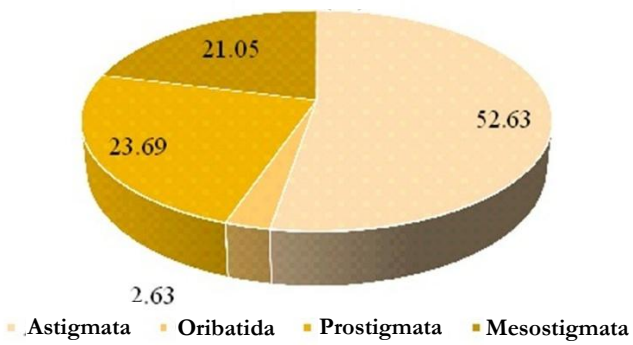


Figure 1. Pie chart representing relative abundance (%) of each order of dust mites.

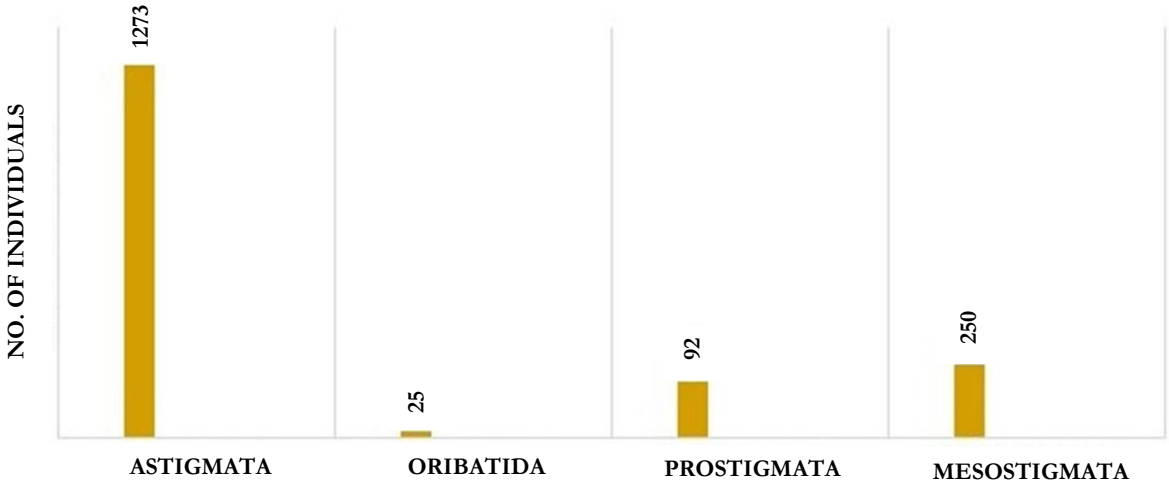


Figure 2. Total number of individuals in each order/suborder/hyporder.

The Shannon-Wiener diversity index (H) calculated at the order level yielded values of 1.60 for Mesostigmata, 1.39 for Prostigmata, 1.342 for Astigmata, and 0 for Brachypylina (Table 1). The Evenness index (H') recorded values of 0.89 for Mesostigmata, 0.86 for Prostigmata and 0.69 for Astigmata, while Brachypylina showed a value of 0. It is rather difficult to shed further light on this matter from the existing data. In view of that, no attempt has been made to make any statistical interpretation and only the respective values have been shown in this manner. Simpson's diversity index (D) was calculated as 0.76 for Mesostigmata, 0.705 for Astigmata and 0.696 for Prostigmata, with Brachypylina again recording 0. Margalef's diversity index (D_{Mg}), representing species richness, yielded values of 0.905 for Mesostigmata, 0.84 for Astigmata and 0.76 for Prostigmata, while Brachypylina recorded 0.

Within Astigmata, seven families were represented (Table 2, Fig. 3). Shannon-Wiener diversity index values were 1.196 for Glycyphagidae, 1.191, for Acaridae, and 1.052 for Pyroglyphidae, whereas Chortoglyphidae, Carpoglyphidae, Suidasiidae and Histiostomatidae recorded values of 0. The Evenness index showed values of 0.743 for Glycyphagidae, 0.665 for Acaridae and 0.65 for Pyroglyphidae, while

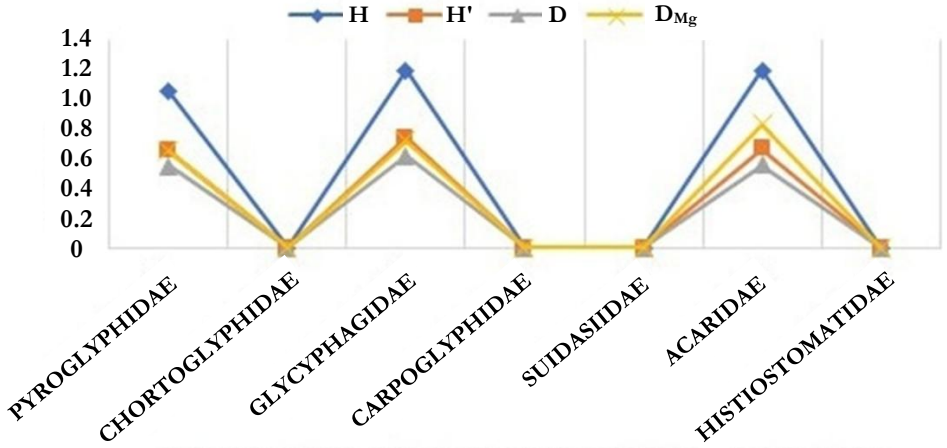
the remaining families recorded 0. Simpson's diversity index was 0.614 for Glycyphagidae, 0.556 for Acaridae and 0.55 for Pyroglyphidae. Margalef's index values were 0.83 for Acaridae, 0.72 for Glycyphagidae and 0.65 for Pyroglyphidae, whereas the other families recorded 0. Relative abundance values (Fig. 4) indicated that Pyroglyphidae constituted 37.1% of astigmatid individuals, followed by Acaridae (33.3%), Glycyphagidae (19.9%) and Suidasiidae (7.7%), while the remaining families contributed smaller proportions. Total individuals recorded (Fig. 5) were 473 individuals of Pyroglyphidae, 424 Acaridae, 253 Glycyphagidae, 98 individuals of Suidasiidae and the other families like Chortoglyphidae, Carpoglyphidae and Histiostomatidae were represented by 16, 6, and 3 individuals respectively.

Table 1. Diversity indices of mites western West Bengal, India in 2024–2025.

Order	Shannon-Wiener diversity index (H)	Evenness index (H')	Simpson's diversity index (D)	Margalef's diversity index (D_{Mg})
Astigmata	1.342	0.69	0.705	0.84
Oribatida	0	0	0	0
Prostigmata	1.39	0.86	0.696	0.76
Mesostigmata	1.60	0.89	0.76	0.905

Table 2. Diversity indices of astigmatic families.

Family	Shannon-Wiener diversity index (H)	Evenness index (H')	Simpson's diversity index (D)	Margalef's diversity index (D_{Mg})
Pyroglyphidae	1.052	0.65	0.55	0.65
Chortoglyphidae	0	0	0	0
Glycyphagidae	1.196	0.743	0.614	0.72
Carpoglyphidae	0	0	0	0
Suidasiidae	0	0	0	0
Acaridae	1.191	0.665	0.556	0.83
Histiostomatidae	0	0	0	0



H = SHANNON-WIENER DIVERSITY INDEX, H' = EVENNES INDEX, D = SIMPSON'S DIVERSITY INDEX, D_{MG} = MARGALEF'S DIVERSITY INDEX

Figure 3. Diversity indices of each family of Astigmata.

Prostigmata comprised five families (Table 3, Fig. 6). Shannon-Wiener diversity index values were 1.138 for Cheyletidae and 0.225 for Stigmaeidae, while Tarsonemidae, Cunaxidae and Iolinidae recorded 0. Evenness index values were 0.999 for Cheyletidae and 0.325 for Stigmaeidae. Simpson's diversity index values were 0.545 for Cheyletidae and 0.116 for Stigmaeidae. Margalef's index values were 0.662 for Cheyletidae and 0.353 for Stigmaeidae, while the remaining families recorded 0. From Figure 7, relative abundance analysis showed that Cheyletidae accounted for 48.4% of prostigmatid individuals, followed

by Iolinidae (16.6%), Cunaxidae (13.5%), Tarsonemidae (12.5%) and Stigmaeidae (9%). Total number of individuals in Figure 8 comprised Cheyletidae of 93, Iolinidae 32, Cunaxidae 26, Tarsonemidae 24, and Stigmaeidae 17 individuals, respectively.

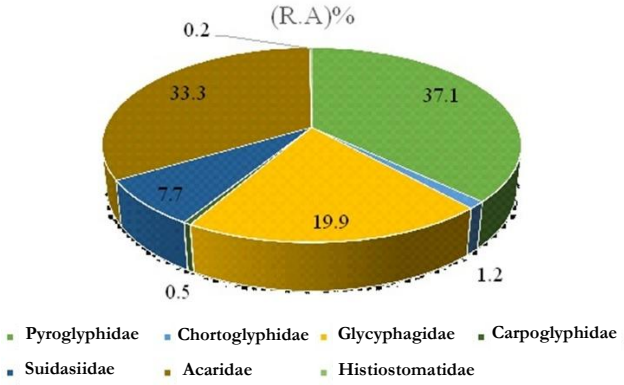


Figure 4. Pie chart representing relative abundance (%) of each family of Astigmata.

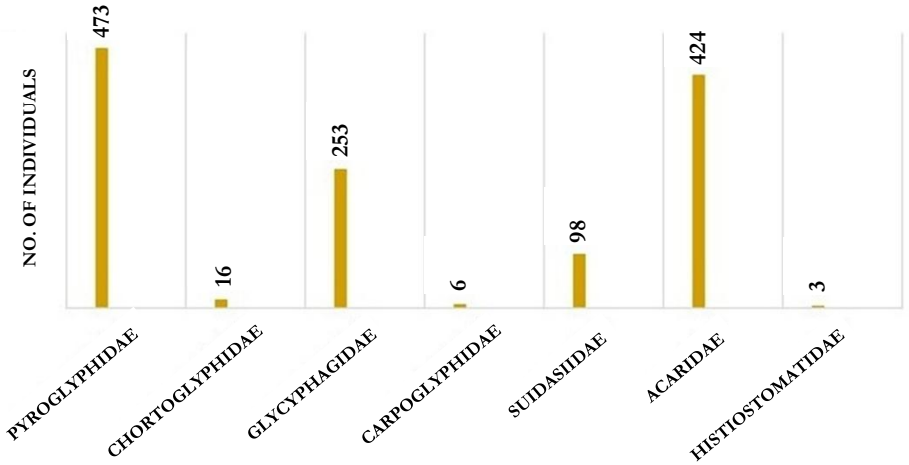
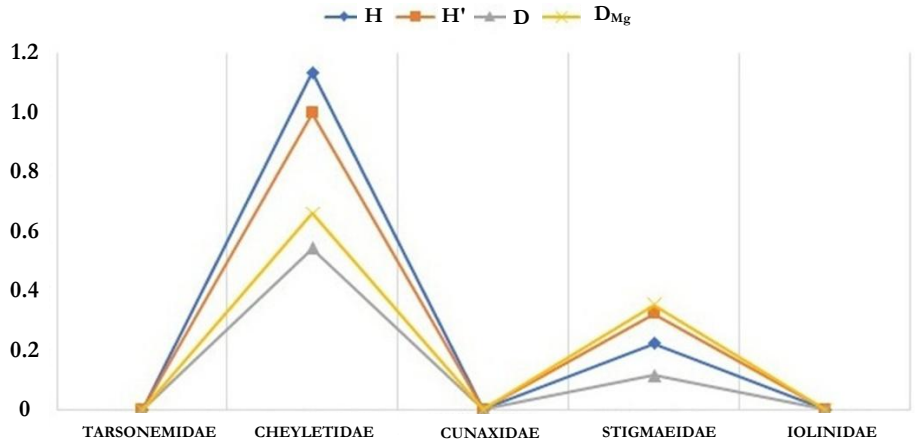


Figure 5. Total number of individuals in each family of Astigmata.

Mesostigmata included six families (Table 4, Fig. 9). Shannon-Wiener diversity index values were 0.688 for Ascidae and 0.612 for Uropodidae, while Ameroseiidae, Blattisociidae, Macrochelidae and Laelapidae recorded 0. Evenness index values were 0.993 for Ascidae and 0.883 for Uropodidae. Simpson's diversity index values were 0.5 for Ascidae and 0.422 for Uropodidae. Margalef's diversity index values were 0.253 for Ascidae and 0.219 for Uropodidae, whereas the remaining families recorded 0. Relative abundance calculations (Fig. 10) showed that Uropodidae represented 38.4% of mesostigmatid individuals, followed by Ascidae (20.8%), Laelapidae (16.8%), Macrochelidae (10.4%), and both Ameroseiidae and Blattisociidae (6.8% each). As regards mesostigmatid mites in Fig. 11, uropodid mites were represented by 96 individuals, Ascidae 52, Laelapidae 42, Macrochelidae 26, Ameroseiidae, and Blattisociidae (17 each) individuals, respectively.

Table 3. Diversity Indices of prostigmatid families.

Family	Shannon-Wiener diversity index (H)	Evenness index (H')	Simpson's diversity index (D)	Margalef's diversity index (D_{Mg})
Tarsonemidae	0	0	0	0
Cheyletidae	1.138	0.999	0.545	0.662
Cunaxidae	0	0	0	0
Stigmaeidae	0.225	0.325	0.116	0.353
Iolinidae	0	0	0	0



H = SHANNON-WIENER DIVERSITY INDEX, H' = EVENNES INDEX, D = SIMPSON'S DIVERSITY INDEX, D_{MG} = MARGALEF'S DIVERSITY INDEX

Figure 6. Diversity indices of each family of Prostigmata.

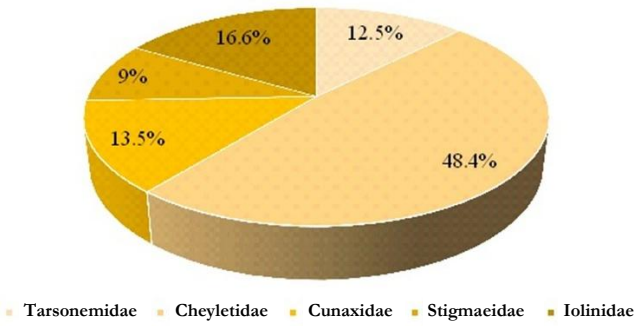


Figure 7. Pie chart representing relative abundance (%) of each family of Prostigmata.

Table 4. Diversity indices of mesostigmatid families.

Family	Shannon-Wiener diversity index (H)	Evenness index (H')	Simpson's diversity index (D)	Margalef's diversity index (D_{Mg})
Ameroseiidae	0	0	0	0
Ascidae	0.688	0.993	0.5	0.253
Blattisociidae	0	0	0	0
Macrochelidae	0	0	0	0
Uropodidae	0.612	0.883	0.422	0.219
Laelapidae	0	0	0	0

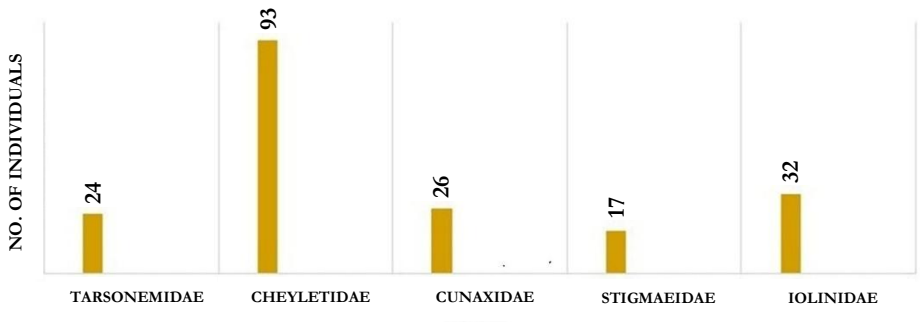


Figure 8. Total number of individuals in each family of Prostigmata.

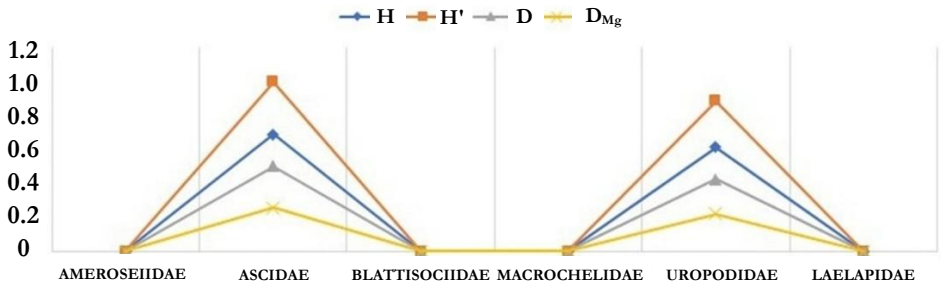


Figure 9. Diversity indices of each family of Mesostigmata.

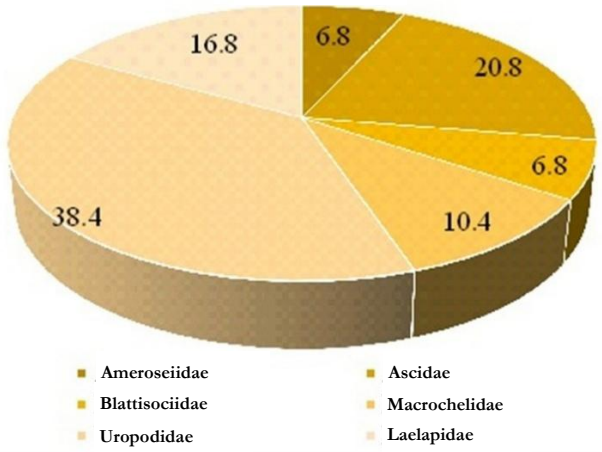


Figure 10. Pie chart representing relative abundance (%) of each family of Mesostigmata.

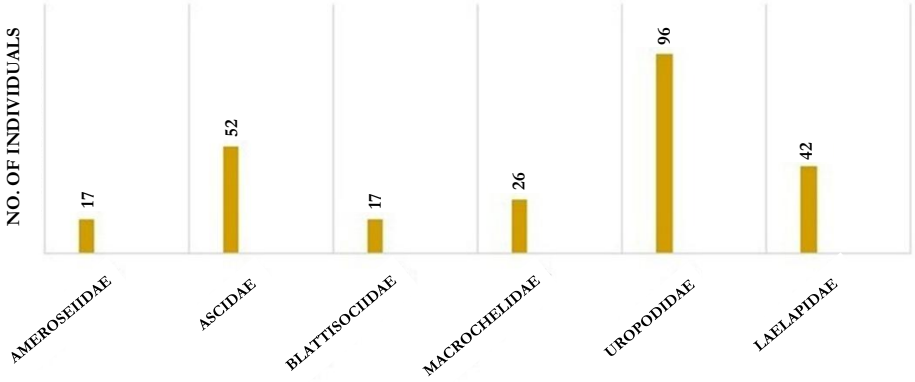


Figure 11. Total no. of individuals in each family of Mesostigmata.

The calculated diversity indices and relative abundance values describe the compositional attributes and distributional structure of dust mite assemblages recorded from the study area.

DISCUSSION

The present study represented the first systematic account of dust mites from Paschim Bardhhaman district of West Bengal, documenting 38 species under 31 genera, and 19 families. The recorded fauna portrayed a mixture of allergenic, predatory and fungal-associated taxa inhabiting indoor dust microhabitats. Comparable faunistic surveys from different parts of India have reported diverse dust mite communities associated with domestic environments (Gupta and Datta Roy 1975; Dar and Gupta 1979; Modak *et al.* 1995; Podder *et al.* 2005, 2020). The present findings therefore contribute important baseline data from a previously unexplored region of eastern India.

Astigmatid mites constituted a major component of the collected material with *Dermatophagoides pteronyssinus* and *D. farinae* being the most prevalent species, consistent with earlier studies in India and

abroad that highlight their strong association with human habitations and their role as major allergen producers (Voorhorst *et al.* 1964; Dar and Gupta 1979; Podder *et al.* 2020). These taxa are widely recognized as primary sources of house dust allergens and have been consistently reported from human dwellings worldwide (Voorhorst *et al.* 1964; Spieksma and Spieksma-Boezeman 1967; Hughes 1976; Arlian *et al.* 1983). Their strong association with beds, carpets and accumulated floor dust reflects their adaptation to environments enriched with human skin scales and organic debris (Wharton 1970). The occurrence of other allergenic species such as *Blomia tropicalis*, *Glycyphagus domesticus*, and *Lepidoglyphus destructor* further emphasizes the medical relevance of the indoor fauna recorded from the study area. Similar associations have been documented from Kolkata and other Indian metropolitan regions (Tandon *et al.* 1968; Podder 2008; Podder *et al.* 2020). Fungal-feeding species like *Caloglyphus* and *Oppia* further indicated that dust-associated fungi may contribute to sustaining mite populations.

The calculated diversity indices provided a descriptive overview of assemblage structure among different orders. Though astigmatid mites were numerically well represented, mesostigmatid mites exhibited comparatively greater heterogeneity and even distribution of individuals among species based on Shannon-Wiener, Simpson's and Evenness index values. Members of Ascidae and Uropodidae contributed notably to this pattern. Mesostigmatid mites are predominantly predatory and have been reported from soil, stored products and organic debris (Hughes 1976; Gupta 2003). Their presence within indoor dust environment suggested a structured trophic system where predatory taxa coexist with allergenic and saprophagous mites.

Prostigmata included several predatory families such as Cheyletidae and Cunaxidae, as well as Tarsonemidae and Iolinidae. The representation of Cheyletidae, particularly *Cheyletus* sp., was consistent with previous reports describing their predatory role on acarid and pyroglyphid mites (Hughes 1976). The diversity indices calculated for prostigmatid families reflect variation in species composition within this order, while some families were represented by single species.

Oribatida was represented by a single species in the present study. Oribatid mites are predominantly soil-dwelling organisms and are associated with litter and decomposing vegetation. Their limited occurrence in indoor dust is consistent with earlier observations that indoor habitats do not typically support stable oribatid populations (Hughes 1976). Their presence may reflect incidental introduction from surrounding soil or vegetation.

At the family level, within Astigmata, diversity index values indicated the contribution of Glycyphagidae, Acaridae and Pyroglyphidae to assemblage composition. Members of Acaridae and Glycyphagidae were frequently associated with stored food materials and organic debris (Hughes 1976; Gupta 2010). The coexistence of stored-product mites and allergenic species in indoor dust suggests overlapping ecological niches influenced by food availability, humidity and human activity.

From a public health perspective, the documentation of multiple allergenic taxa is significant. The prevalence of *Dermatophagoides* spp. and *Blomia tropicalis* warrants further allergen monitoring and management in both domestic and hospital environments of the region. Earlier investigations have demonstrated strong associations between dust mite prevalence and respiratory allergic manifestations in India (Tandon *et al.* 1968; Dar and Gupta 1979; Krishna Rao *et al.* 1973; Podder *et al.* 2020). The present study extends such observations to Paschim Bardhhaman, a semi-urban transitional zone between the Chotanagpur plateau and Gangetic alluvial plains. Given the growing reports of allergic complaints from this region, the baseline data provided here may serve as a reference for future clinical and epidemiological studies.

ACKNOWLEDGEMENTS

The authors are thankful to the Secretary of Ramakrishna Mission, Narendrapur for providing infrastructure facilities.

Author contributions: All authors contributed equally on all counts. All authors have read and agreed to the published

version of the manuscript.

Funding: NA.

Availability of data and materials: Data are available upon request from the authors.

Ethics approval and consent to participate: This study only included arthropod material, and all required ethical guidelines for the treatment and use of animals were strictly adhered to in accordance with international, national, and institutional regulations. No human participants were involved in any studies conducted by the authors for this article.

Consent for publication: NA.

Competing interests: The authors declare no conflict of interest.

Generative AI statement: The authors declare no use of Gen AI in the creation of this manuscript.

REFERENCES

Arlian, L.G., Woodford, P.J., Bernstein, I.L. & Gallagher, J.S. (1983) Seasonal population structure of house dust mites, *Dermatophagoides* spp. (Acari: Pyroglyphidae). *Journal of Medical Entomology*, 20(1): 99–102.

van Bronswijk, J., de Cock, A. & Oshima, S. (1973) The genus *Blomia* Oudemans (Acarina: Glycyphagidae). I. Description of *Blomia tropicalis* sp. n. from the dust in tropical and subtropical regions. *Acarologia*, 15(3): 477–489.

Channa Basavanna, G.P., Krishna Rao, N.S. & Ranganath, H.R. (1986) House dust mites from human and animal habitation in India. *Acarology*, 6(2): 1145–1153.

Dar, N. & Gupta, V.K. (1979) Studies on the house dust mites of India and their role in causation of bronchial asthma and allergic rhinitis. Part I. The Mites. *Oriental Insects*, 13(3–4): 261–298.

Gupta, S.K. (2003) *Acarology in India: A Review of Progress and Contributions*. Memoirs of the Zoological Survey of India, 20(2): 240 pp.

Gupta, S.K. (2010) *Medical, veterinary and public health important mites and ticks – A Handbook*. Nature Books India, New Delhi, India, 334 pp.

Gupta, S.K. (2012) *Injuries and beneficial mites infesting Agri-horticultural crops in India and their management*. Nature Books, India, New Delhi, 362 pp.

Gupta, S.K. & Datta Roy, R.K. (1975) Occurrence of house dust mites in West Bengal (India). *Newsletter-Zoological Survey of India*, 1(3): 48–50.

Hughes, A.M. (1976) *The mites of stored food and houses*. Ministry of Agriculture, Fisheries and Food London Technical Bulletins, No. 9, 400 pp.

Krantz, G.W. & Walter, D.E. (Eds.) (2009) *A manual of acarology*. 3rd Edition, Texas Tech University Press, Lubbock, Texas, 807 pp.

Krishna Rao, N.S., Khuddus, C. & Channa Basavanna, G.P. (1973) Mites causing allergic reactions in India. *Current Science*, 42: 33.

Leeuwenhoke, A. von. (1694) *Vierde vervoig der brieven Genchreven ann de Wijtvermaade Koninklijke Societeit in London*. Zeventiende missive, December, Delft, 591 pp.

Margalef, R. (1958) Information Theory in Ecology. *General Systems*, 3: 36–71.

Maunsell, K., Wraith, D.G. & Cunnington, A.M. (1968) Mites and house dust allergy in bronchial asthma. *Lancet*, 7555: 1267–1270.

Mitchell, W.F., Wharton, G.W., Larson, D.G. & Modic, R. (1969) House dust, mites, and insects. *Annals of Allergy*, 23: 93–99.

Modak, A., Saha, G.K., Gupta, S.K. & Tandon, N. (1995) Occurrence of some uncommon dust mites from houses of respiratory allergic patients in West Bengal. *Journal of Acarology*, 13(12): 29–34.

Parveen, R. & Gupta, S.K. (2020) Diversity of mites (Acari) on wild mushrooms from West Bengal. *International Journal of Agriculture and Plant Science*, 2(1): 1–7.

Pielou, E.C. (1966). The measurement of diversity in different types of biological collections. *Journal of*

Theoretical Biology, 13: 131–144. http://dx.doi.org/10.1016/0022-5193(66)90013-0

Podder, S. (2008) *Studies on the house dust mites of Kolkata in relation to nasobronchial allergic disorders*. Ph. D. thesis, Calcutta University, India, 139 pp.

Podder, S., Biswas, H. & Saha, G.K. (2020) A faunistic survey of house dust mites of Kolkata, West Bengal, India. *Acarological Studies*, 3(1): 22–31.

Podder, S., Saha, G.K. & Gupta, S.K. (2005) Some new species and new records of dust mites from Kolkata, India. *Records of Zoological Survey of India*, 104(3–4): 57–62.

Shannon, C.E. (1948) A mathematical theory of communication. *The Bell System Technical Journal*, 27: 379–423. https://doi.org/10.1002/j.1538-7305.1948.tb01338.x

Simpson, E.H. (1949) Measurement of Diversity. *Nature*, 163: 688. http://dx.doi.org/10.1038/163688a0

Spieksma, F.Th.M. & Spieksma-Boezeman, M.I.A. (1967) The mite fauna of house dust with particular reference to house dust mite *Dermatophagoides pteronyssinus* (Trousseart, 1897). *Acarologia*, 1: 226–241.

Tandon, N., Batabyal, S.K., Saha, G.K., Modak, A. & Moitra, S.B. (1968) Dust mites in relation to nasobronchial allergy in Calcutta – a preliminary report. *Indian Journal of Allergy and Applied Immunology*, 2(1): 11–14.

Tripathi, D.M. & Parikh, K.M. (1983) Mite fauna and other allergen present in house dust mite in Bombay. *Lung India*, 1: 147–151.

Voorhorst, R.D. & Spieksma, F.Th.M. (1973) House dust atopy and the house dust mite *Dermatophagoides*. *Allergologica et Immunopathologia*, 1(1): 13–24.

Voorhorst, R., Spieksma-Boezeman, M.A. & Spieksma, F.Th.M. (1964) Is a mite (*Dermatophagoides* sp.) – the producer of house dust allergen. *Allergy Asthma*, 10: 329–334.

Wharton, G.W. (1970) Mites and commercial extracts of house dust. *Science*, 167(3923): 1382–1383.

بررسی تنوع زیستی کنه‌های گرد و غبار (Acari) در غرب بنگال غربی، هند

ستوارسری کوندو[1] | ساگاتا موندال[2*] | سلیل کِی. گوپتا[1]

۱. مرکز تحقیقات و ترویج گیاهان دارویی، آر. کی. میسون، رکموری، نارندراپور، کلکته-۷۰۰۱۰۳، هند؛ رایانامه: setwasrikundu@gmail.com ،salil_zsidumdum@yahoo.com

۲. گروه تحصیلات تکمیلی جانورشناسی، کالج ویدیاسگار، کلکته-۷۰۰۰۹۱، هند؛ رایانامه: sagata.mondal@rediffmail.com

*نویسندهٔ مسئول
sagata.mondal@rediffmail.com

دریافت
۱۵ مرداد ۱۴۰۴
پذیرش
۶ اسفند ۱۴۰۴
انتشار
۲۴ تیر ۱۴۰۵
دبیر تخصصی
ع. صبوری

چکیده

منطقه پاشچیم باردهامان در بنگال غربی، هند، یک منطقهٔ انتقالی نیمه شهری است که در آن تجمع گرد و غبار در محیط داخلی، زیستگاه‌های مناسبی را برای جمعیت هرناها فراهم می‌کند. این مقاله، فون کنه‌های گرد و غبار را از پاشچیم باردهامان بر اساس مطالعه انجام شده در طول ماه مه ۲۰۲۴ تا ژوئیه ۲۰۲۵ گزارش می‌دهد. در مجموع ۳۸ گونه هرنای گرد و غبار متعلق به ۳۱ جنس، ۱۹ خانواده و ۴ راسته در اینجا مورد بررسی قرار گرفته‌اند. از این تعداد، بیشترین گونه‌ها از بی‌سُفتیان و پس از آن میان‌سُفتیان، پیش‌سُفتیان و Brachypylina بودند. از ۳۸ گونه، ۱۴ گونه هرناهای حساسیت‌زا، ۱۶ گونه هرناهای شکارگر و ۸ گونه هرناهای مرتبط با قارچ بودند. داده‌های جمع‌آوری، پراکندگی و ماهیت ارتباط با نمونه‌های گرد و غبار نیز مورد بحث قرار گرفته است. افزون بر این، شاخص‌های مختلفی مانند شاخص تنوع، شاخص غالبیت، شاخص تنوع سیمپسون و شانون-واینر نیز با استفاده از فرمول‌های استاندارد محاسبه شدند. مقادیر ثبت شده شاخص شانون در سطح رده ۱/۶۰ (میان‌سُفتیان)، ۱/۳۹ (پیش‌سُفتیان) و ۱/۳۴۲ (بی‌سُفتیان) بود، در حالی که Brachypylina با یک گونه نشان داده شد. مقادیر یکنواختی بین ۰ تا ۰/۸۹ متغیر بود که نشان دهندهٔ تنوع در الگوهای توزیع افراد در بین گونه‌ها است. شاخص‌های سیمپسون و مارگالف ساختار غالبیت و غنای گونه‌ای را در جمعیت کنه‌ها بیشتر توصیف کردند. در بین بی‌سُفتیان، غالب‌ترین گونه متعلق به جنس *Dermatophagoides* و پس از آن *Acarus* بود و نمایندهٔ کمترین مقدار از جنس *Pyroglyphus* بود. مطالعه حاضر، مستندات پایه‌ای آرایه‌شناسی و ارزیابی مبتنی بر شاخص تنوع از مجموعه‌های هرناهای گرد و غبار از منطقه‌ای از بنگال غربی را ارایه می‌دهد که از نظر کنه‌شناسی ناشناخته است که می‌تواند به عنوان مرجعی برای مطالعات بوم‌شناختی و بهداشت عمومی آینده باشد.

واژگان کلیدی: هرناهای گرد و غبار، پاشچیم باردهامان، فراوانی نسبی، شاخص شانون-واینر، شاخص تنوع سیمپسون، بنگال غربی

CITE: Kundu, S., Mondal, S. & Gupta, S.K. (2026) Biodiversity of dust mites (Acari) in western West Bengal, India. *Persian Journal of Acarology*, 15(3): 150304.
https://doi.org/10.22073/pja.150304