

Addition To The Mite Fauna in Human Habitation From South Bengal



Zoology

KEYWORDS : Human habitation, Prostigmata, Mesostigmata, Astigmata, South Bengal

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ABSTRACT

The present paper reports the occurrence of 111 species of mites belonging to 69 genera, 27 families under 3 orders collected from a total of 40 samples representing 5 different habitats viz. stored products, house dust, bird nests, cattle sheds and roof gardens from 5 districts of South Bengal. Among the 5 habitats, cattle shed provided richest diversity both in respect of species and genera followed by stored product habitat and the minimum was bird nest which represented only 11 species. The family level diversity was also highest in case of cattle sheds followed by stored products and the minimum was in roof garden. There was not a single species which could be collected from all the 5 habitats though; of course, there was 1 species which represented 4 out of 5 habitats. Therefore, cattle sheds proved to be habitat showing highest diversity. The order Prostigmata represented highest number of species followed by Astigmata.

1. Introduction:-

Mites inhabiting human dwellings have importance from different aspects as some are allergy causing dust mites (Pyroglyphidae, Glycyphagidae), some are blood suckers (Macronyssidae, Laelapidae), some are associated with causing different pathogenic diseases (Trombiculidae) severe itching, inflammation and inconvenience dermatitis etc. (Glycyphagus domesticus, Glycyphagidae, Pyemotidae, Acaridae) biting (Cheyletiellidae, Bryobiinae), plant damaging (Tetranychidae, Tarsonemidae, Tenuipalpidae) scabies (Sarcoptidae) and various others associated with different types of disease manifestations. In view of this, the mites associated with human habitations though so far were ignored are now receiving gradual importance and attention being made to explore those mites and find out their nature of association with the human habitations. The present work was undertaken with that objective and the results thereof are presented in this paper.

2. Material and Methods:-

The methodologies adopted for collection of mites from different habitats associated with human dwellings are as below:

Dust Mites: Dust mites were collected both from floor and bed dust, using vacuum cleaner and collected dust samples were processed following the technique of Oshima (1967) and Modak et al. (1987) for isolation of mites. These dust samples were collected at monthly interval from different districts like – East Medinipur, North 24paraganas, South 24paragana and Kolkata. and the houses from where the dust samples were collected had both dust allergic patients as well as normal persons.

Cattle Sheds: The samples from cattle shed mostly included debris which consolidated straw, cattle feed, dry dung associated with fungus. Samples were collected from two places namely Dairy farm of Ramkrishna Mission Narendrapur and private cattle sheds at Tamluk, District East Medinipur. About 100 gm of debris was collected in each time with the help of shovel and the samples were subjected to heat desiccation method in Tullgren apparatus. The extracted mite specimens were

collected in receiver fitted with the stem of funnel and later the mite specimens were sorted out for identification.

Stored Product Mites: The domestic stored products like stored cereals, pulses, dry foods, dry fish, bakery products, puffed and pressed rice, spices, etc. were regularly collected from targeted districts and those were directed examined under stereo binocular microscope for collection of mites. These collections were also made at monthly intervals.

Nest Mites: Some nests made by house sparrows in the dwelling house of one of the authors (Ananya Das) were subjected to heat desiccation method in Tullgren apparatus and a few mites along with other arthropods were collected in the receiver and those were sorted out for identification.

Roof Garden Mites: Some of the ornamental and floriculture plants maintained in roof gardens were examined directly under 20X hand lens and phytophagous and predatory mites occurring on those plants were collected directly with the help of fine brush maintained with alcohol.

Other Mites causing Different Human diseases, blood sucking etc.:

Many of the mites known to occur in human habitation either biting the human beings sucking blood causing irritation, inflammation, hair fall, blood suckers, scabies, etc. were also collected whenever symptoms of such diseases / occurrence were reported by the house dwellers. Some mites like Bryobia (possible entry in house through infested leaves from adjacent plants), and 32 were also collected by taking skin scrapings.

Mounting: The mounting of specimens were done in modified Hoyer's medium.

3. Results and Discussions:-

A perusal to Table 1 & 2 reveals the occurrence of 111 species of mites belong into 69 Genera and 27 families under 3 orders were recorded from 5 habitats viz. stored products, cattle shed, bird nest and dust. Among the 5

habitats, the maximum number of both species and specimens could be collected from Cattle sheds representing 67 and 604 respectively. This was followed by house dust mites recording 546 specimens belong into 30 species, 424 specimens representing 34 species from Stored products, 109 specimens representing 16 species from roof garden and the minimum was 12 specimens belonging to 11 species from bird nest.

So far as family wise diversity in 5 habitats is concerned, the maximum diversity was seen in case of cattle sheds followed by house dust mites. The family wise diversity in other 3 habitats was in descending order as stored products > roof garden > bird nest.

So far as generic diversity is concerned, the maximum diversity was seen in habitat like cattle shed as was found in case of family level diversity. The generic diversity in other 4 habitats was in the same descending order as was mentioned in case of family wise diversity.

Among the 5 habitats there was not a single species which could be collected from all the 5 habitats. However, there was only 1 species (15) which represented 4 out of 5 habitats namely (stored, dust, cattle, bird). Among the four habitats, the species (15) was most dominant followed by cattle shed species number 1,2,4,6,50,51,52,56,68 could be collected from three out of 5 habitats (stored, cattle, dust) of which the maximum number was from stored product from where 64 specimens could be collected.

There were 32 species which could be collected from two out of five habitats which were listed under serial no. 3, 22, 29, 31, 34, 35, 40, 42, 44, 49, 55, 59, 60, 61, 71, 76, 77, 83, 84, 85, 89, 90, 91, 92, 93, 94, 95, 97, 99,100,108,111.

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LIST OF MITES COLLECTED FROM DIFFERENT HABITATS

Order 1

Astigmata

Family 1

Sl. No.	Acaridae	S	No. of Sp.	Cat-egory	H	No. of Sp.	Cat-egory	B	No. of Sp.	Cat-egory	C	No. of Sp.	Cat-egory	R	No. of Sp.	Cat-egory	Re-marks
1	<i>Acarus farris</i>	+	42	B	+	21	D				+	18	E				
2	<i>Acarus sp.</i>	+	40	B	+	8	E										
3	<i>Acarus gracilis</i>	+	12	E	+	22	D				+	43	B				
4	<i>Acarus immobiis</i>	+	10	E							+	20	D				
5	<i>Acarus siro</i>	+	64	A+	+	51	A				+	32	C				
6	<i>Aleuroglyphus ovatus</i>										+	5	E				
7	<i>Caloglyphus berlesei</i>	+	58	A	+	27	D				+	32	C				
8	<i>Caloglyphus mycophagus</i>	+	5	E													
9	<i>Caloglyphus oudemansi</i>										+	8	E				
10	<i>Caloglyphus rhizoglyphoides</i>	+	3	E													
11	<i>Caloglyphus sp. *</i>				+	2	E										
12	<i>Rhizoglyphus robini</i>										+	2	E				
13	<i>Rhizoglyphus sp.*</i>	+	1	E													
14	<i>Tyrophagus brevicri-natus</i>										+	2	E				

No. of species recorded in all 5 habitats	No. of species recorded in 4 habitats	No. of species recorded in 3 habitats	No. of species recorded in 2 habitats	No. of species recorded in 1 habitats
NIL	1	9	32	53

The overall data indicated that cattle shed was the best habitat with highest diversity of species followed by house dust and stored products and the minimum was in bird nest.

The study also could record 16 species probably as new to science as those belong to families Acaridae (2 sp.), Glycyphagidae(3 sp.), Pyroglyphidae (1 sp.), Saprogllyphidae (1 sp.), Tydeidae(2 sp.) Ameroseiidae (1sp.), Ascidae (1 sp.), Macrochelidae (1 sp.), which will be described and illustrated later elsewhere. Among the earlier workers in this field mentioned may be made of the publication done by Chaudhury et al. (2005) which investigated synanthropic mites from 5 different habitats like house dust, stored product, bird nest, cattle shed and roof garden in which the maximum occurrence of mite was in cattle shed as was found in present investigation. This was followed by dust mites, stored product mites, nest mites and roof garden mites. Among the orders, the Prostigmata was represented by the maximum number of species(39), contrary to present study which recorded the maximum number of species under order Astigmata followed by Prostigmata and Mesostigmata. Mites from roof garden was least in the present study as was observed by Chaudhury et al. (2005) in another study reported 124 species mites under 64 genera and 25 families from synanthropic habitats from Kolkata and adjoining areas. However that study mostly concerned, House dust mites collected from different types of houses as well as from different types of mattresses used by human beings.

15	<i>Tyrophagus castellanii</i>	+	1	E													
16	<i>Tyrophagus longior</i>	+	9	E	+	12	E	+	2	E	+	5	E				
17	<i>Tyrophagus putrescentiae</i>	+	3	E								+	11	E			

Family 2

Sl. No.	Anoetidae	S	No. of Sp.	Cat-egory	H	No. of Sp.	Cat-egory	B	No. of Sp.	Cat-egory	C	No. of Sp.	Cat-egory	R	No. of Sp.	Cat-egory	Re-marks
18	<i>Histiostoma feroniarum</i>	+	1	E													
19	<i>Histiostoma sp.</i>										+	2	E				

Family 3

Sl. No.	Choriopidae	S	No. of Sp.	Cat-egory	H	No. of Sp.	Cat-egory	B	No. of Sp.	Cat-egory	C	No. of Sp.	Cat-egory	R	No. of Sp.	Cat-egory	Re-marks
20	<i>Histiostoma feroniarum</i>										+	7	E				

Family 4

Sl. No.	Glycyphagidae	S	No. of Sp.	Cat-egory	H	No. of Sp.	Cat-egory	B	No. of Sp.	Cat-egory	C	No. of Sp.	Cat-egory	R	No. of Sp.	Cat-egory	Re-marks
21	<i>Aleuroglyphus robustus</i>																
22	<i>Austroglycyphagus geniculatus</i>										+	15	E				
23	<i>Blomia freeman</i>										+	11	E				
24	<i>Blomia tropicalis</i>				+	5	E				+	3	E				
25	<i>Coproglyphus stammeri</i>										+	3	E				
26	<i>Ctenoglyphus canestrinii</i>										+	1	E				
27	<i>Ctenoglyphus plumiger</i>										+	7	E				
28	<i>Gohieria fusca</i>										+	18	E				
29	<i>Gohieria sp.*</i>										+	3	E				
30	<i>Glycyphagus destructor</i>	+	32	B	+	21	C										
31	<i>Glycyphagus domesticus</i>				+	11	D										
32	<i>Glycyphagus ornatus</i>										+	1	E				
33	<i>Glycyphagus sp.*</i>										+	2	E				
34	<i>Hirstia domicola</i>	+	2	E							+	1	E				
35	<i>Lepidoglyphus destructor</i>				+	3	E				+	12	E				
36	<i>Lepidoglyphus michaeli</i>										+	2	E				
37	<i>Lepidoglyphus sp.*</i>										+	1	E				
38	<i>Malayoglyphus camelitus</i>				+	3	E										

Family 5

Sl. No.	Knemidocoptidae	S	No. of Sp.	Cat-egory	H	No. of Sp.	Cat-egory	B	No. of Sp.	Cat-egory	C	No. of Sp.	Cat-egory	R	No. of Sp.	Cat-egory	Re-marks
39	<i>Knemidocoptes mutans</i>										+	1	E				

Family 6

Sl. No.	Psoroptidae	S	No. of Sp.	Cat-egory	H	No. of Sp.	Cat-egory	B	No. of Sp.	Cat-egory	C	No. of Sp.	Cat-egory	R	No. of Sp.	Cat-egory	Re-marks
40	<i>Psoroptes equi</i>										+	1	E				

Family 7

Sl. No.	Pyroglyphidae	S	No. of Sp.	Cat-egory	H	No. of Sp.	Cat-egory	B	No. of Sp.	Cat-egory	C	No. of Sp.	Cat-egory	R	No. of Sp.	Cat-egory	Re-marks
41	<i>Dermatophagoides farinae</i>				+	5	E				+	3	E				
42	<i>Dermatophagoides neotropicalis</i>				+	2	E										
43	<i>Dermatophagoides pteronyssinus</i>	+	2	E	+	2	E										
44	<i>Dermatophagoides sp.*</i>	+	3	E													
45	<i>Euroglyphus maynei</i>				+	1	E				+	1	E				
46	<i>Pyroglyphus africanus</i>										+	5	E				

Family 8

Sl. No.	Saproglyphidae	S	No. of Sp.	Cat-egory	H	No. of Sp.	Cat-egory	B	No. of Sp.	Cat-egory	C	No. of Sp.	Cat-egory	R	No. of Sp.	Cat-egory	Re-marks
47	<i>Suidasia medanensis</i>		+ 5	E													
48	<i>Suidasia nesbitti</i>		+ 12	E													
49	<i>Suidasia sp.*</i>		+ 2	E													

Family 9

Sl. No.	Sarcoptidae	S	No. of Sp.	Cat-egory	H	No. of Sp.	Cat-egory	B	No. of Sp.	Cat-egory	C	No. of Sp.	Cat-egory	R	No. of Sp.	Cat-egory	Re-marks
50	<i>Sarcoptes bovis</i>										+ 3	E					
51	<i>Sarcoptes scabiei</i>				+ 15	D					+ 1	E					

Order 2

Prostigmata

Family 10

Sl. No.	Cheyletidae	S	No. of Sp.	Cat-egory	H	No. of Sp.	Cat-egory	B	No. of Sp.	Cat-egory	C	No. of Sp.	Cat-egory	R	No. of Sp.	Cat-egory	Re-marks
52	<i>Cheyletus eruditus</i>		+ 54	A	+ 32	C					+ 25	D					
53	<i>Cheyletus malaccensis</i>		+ 48	B	+ 40	B					+ 52	A					
54	<i>Cheyletus sp.</i>	54	54	54	54	54	54	54	54	54	54	54	54	54			
55	<i>Cheyletus sp.*</i>										+ 2	E					
56	<i>Cheletomorpha sp.*</i>										+ 2	E					

Family 11

Sl. No.	Cheyletiellidae	S	No. of Sp.	Cat-egory	H	No. of Sp.	Cat-egory	B	No. of Sp.	Cat-egory	C	No. of Sp.	Cat-egory	R	No. of Sp.	Cat-egory	Re-marks
57	<i>Cheyletiella blakei</i>		+ 8	E	+ 3	E					+ 11	E					

Family 12

Sl. No.	Cunaxidae	S	No. of Sp.	Cat-egory	H	No. of Sp.	Cat-egory	B	No. of Sp.	Cat-egory	C	No. of Sp.	Cat-egory	R	No. of Sp.	Cat-egory	Re-marks
58	<i>Cunaxa reticulatus</i>										+ 8	E					
59	<i>Neocunaxa sp.</i>										+ 1	E					

Family 13

Sl. No.	Demodicidae	S	No. of Sp.	Cat-egory	H	No. of Sp.	Cat-egory	B	No. of Sp.	Cat-egory	C	No. of Sp.	Cat-egory	R	No. of Sp.	Cat-egory	Re-marks
60	<i>Demodex brevis</i>				+ 1	E					+ 2	E					
61	<i>Demodex folliculorum</i>				+ 5	E					+ 2	E					

Family 14

Sl. No.	Pyemotidae	S	No. of Sp.	Cat-egory	H	No. of Sp.	Cat-egory	B	No. of Sp.	Cat-egory	C	No. of Sp.	Cat-egory	R	No. of Sp.	Cat-egory	Re-marks
62	<i>Pyemotes tritici</i>										+ 3	E					
63	<i>Pyemotes ventricosus</i>										+ 2	E					

Family 15

Sl. No.	Raphignathidae	S	No. of Sp.	Cat-egory	H	No. of Sp.	Cat-egory	B	No. of Sp.	Cat-egory	C	No. of Sp.	Cat-egory	R	No. of Sp.	Cat-egory	Re-marks
64	<i>Raphignathus sp.*</i>										+ 11	E					

Family 16

Sl. No.	Stigmoidae	S	No. of Sp.	Cat-egory	H	No. of Sp.	Cat-egory	B	No. of Sp.	Cat-egory	C	No. of Sp.	Cat-egory	R	No. of Sp.	Cat-egory	Re-marks
65	<i>Agistemus fleschneri</i>										+ 2	E					
66	<i>Stigmaeus sp.*</i>										+ 2	E					

Family 17

Sl. No.	Trombiculidae	S	No. of Sp.	Cat-egory	H	No. of Sp.	Cat-egory	B	No. of Sp.	Cat-egory	C	No. of Sp.	Cat-egory	R	No. of Sp.	Cat-egory	Re-marks
67	<i>Leptotrombidium deliense</i>		+ 1	E	+ 7	E					+ 2	E					
68	<i>Trombicula goldi</i>							+ 1	E		+ 1	E		+ 5	E		

Family 18

Sl. No.		S	No. of Sp.	Cat-egory	H	No. of Sp.	Cat-egory	B	No. of Sp.	Cat-egory	C	No. of Sp.	Cat-egory	R	No. of Sp.	Cat-egory	Re-marks
69	<i>Pronematus sp.*</i>				+	2	E				+	5	E				
70	<i>Pronematus elongates</i>										+	3	E				
71	<i>Pronematus fleschneri</i>							+	1	E							
72	<i>Tydeus sp.*</i>																

Family 19

Sl. No.		S	No. of Sp.	Cat-egory	H	No. of Sp.	Cat-egory	B	No. of Sp.	Cat-egory	C	No. of Sp.	Cat-egory	R	No. of Sp.	Cat-egory	Re-marks
73	<i>Polyphagotarsonenus latus</i>													+	3	E	
74	<i>Tarsonemus granarius</i>	+	6	E										+	2	E	

Family 20

Sl. No.		S	No. of Sp.	Cat-egory	H	No. of Sp.	Cat-egory	B	No. of Sp.	Cat-egory	C	No. of Sp.	Cat-egory	R	No. of Sp.	Cat-egory	Re-marks
75	<i>Bryobia praetiosa</i>	+	1	E							+	16	E	+	7	E	
76	<i>Tetranychus ludeni</i>													+	8	E	
77	<i>Tetranychus macfarlanei</i>													+	12	E	
78	<i>Tetranychus urticae</i>													+	15	E	

Order 3

Mesostigmata

Family 21

Ameroseiidae

Sl. No.		S	No. of Sp.	Cat-egory	H	No. of Sp.	Cat-egory	B	No. of Sp.	Cat-egory	C	No. of Sp.	Cat-egory	R	No. of Sp.	Cat-egory	Re-marks
79	<i>Kleemanina sp.*</i>										+	27	D				

Family 22

Ascidae

Sl. No.		S	No. of Sp.	Cat-egory	H	No. of Sp.	Cat-egory	B	No. of Sp.	Cat-egory	C	No. of Sp.	Cat-egory	R	No. of Sp.	Cat-egory	Re-marks
80	<i>Antennoseius sp.*</i>							+	2	E							
81	<i>Blattisocius tarsalis</i>	+	5	E				+	1	E							
82	<i>Lasioseius mcgregori</i>				+	2	E				+	1	E				
83	<i>Lasioseius sp.</i>	+	5	E				+	1	E							
84	<i>Melichares sp.</i>							+	1	E							
85	<i>Proctolaelaps curtilis</i>										+	1	E				

Family 23

Dermanyssidae

Sl. No.		S	No. of Sp.	Cat-egory	H	No. of Sp.	Cat-egory	B	No. of Sp.	Cat-egory	C	No. of Sp.	Cat-egory	R	No. of Sp.	Cat-egory	Re-marks
86	<i>Alodermanyssus sanguineus</i>	+	3	E	+	14	E										
87	<i>Hypoaspis milis</i>	+	4	E							+	12	E				
88	<i>Hypoaspis vacua</i>	+	3	E							+	21	D				

Family 24

Laelapidae

Sl. No.		S	No. of Sp.	Cat-egory	H	No. of Sp.	Cat-egory	B	No. of Sp.	Cat-egory	C	No. of Sp.	Cat-egory	R	No. of Sp.	Cat-egory	Re-marks
89	<i>Androlaelaps casalis</i>	+	2	E							+	21	D				
90	<i>Haemogamasus lyponysoides</i>				+	18	E				+	11	E				
91	<i>Haemogamasus pontiger</i>				+	15	E				+	6	E				
92	<i>Hirstionyssus issabellinus</i>										+	5	E				
93	<i>Laelaps aschidninus</i>										+	2	E	+	1	E	
94	<i>Proctolaelaps pygmaeus</i>										+	3	E				

Family 25

Macrochelidae

Sl. No.		S	No. of Sp.	Cat-egory	H	No. of Sp.	Cat-egory	B	No. of Sp.	Cat-egory	C	No. of Sp.	Cat-egory	R	No. of Sp.	Cat-egory	Re-remarks
95	<i>Macrocheles sp.*</i>							+	1	E	+	2	E				

Family 26

Macropyssidae

Sl. No.		S	No. of Sp.	Cat-egory	H	No. of Sp.	Cat-egory	B	No. of Sp.	Cat-egory	C	No. of Sp.	Cat-egory	R	No. of Sp.	Cat-egory	Re-remarks
96	<i>Ornithonyssus bursa</i>													+	15	D	
97	<i>Ornithonyssus sylvarium</i>													+	5	E	

Family 27

Macrochelidae

Sl. No.		S	No. of Sp.	Cat-egory	H	No. of Sp.	Cat-egory	B	No. of Sp.	Cat-egory	C	No. of Sp.	Cat-egory	R	No. of Sp.	Cat-egory	Re-remarks
98	<i>Amblyseius alstoniae</i>													+	8	E	
99	<i>Amblyseius coccineae</i>													+	6	E	
100	<i>Amblyseius channabasa-vanna</i>													+	1	E	
101	<i>Amblyseius herbicolus</i>													+	11	E	
102	<i>Euseius coccineae</i>													+	1	E	
103	<i>Amblyseius ovals</i>													+	4	E	
104	<i>Amblyseius rykei</i>																
105	<i>Amblyseius swirskii</i>																
106	<i>Phytoseius kapuri</i>													+	5	E	

Family 28

Uropodidae

Sl. No.		S	No. of Sp.	Cat-egory	H	No. of Sp.	Cat-egory	B	No. of Sp.	Cat-egory	C	No. of Sp.	Cat-egory	R	No. of Sp.	Cat-egory	Re-remarks
107	<i>Fuscuropoda marginata</i>							+	1	E	+	18	D				
108	<i>Trematura sp.</i>										+	1	E				
109	<i>Urobovella sp.</i>										+	2	E				
110	<i>Uropoda alata</i>				+	1											
111	<i>Uroseius sp.</i>							+	1	E	+	3	E				

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