

A Study of Mites Associated With Insect Orders (Lepidoptera, Coleoptera, Hemiptera, Odonata) from Kolkata and its Neighbourhood



Zoology

KEYWORDS : Insect associated mites, West bengal, Coleoptera, Lepidoptera, Hemiptera, Odonata.

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ABSTRACT

The present paper reports the occurrence of 27 species of mites belonging to 19 genera, 12 families under 3 orders collected from 21 species of insects under as many genera, 14 families and 4 orders, viz Coleoptera, Lepidoptera, Hemiptera, Odonata from Kolkata and its neighbourhood. All the mite species are listed given collection localities, period of occurrence, abundance, status and nature of association. This also includes 4 species hitherto unknown to occur on respective insects.

1) Introduction:-

Many of the insects and specially those which are of agricultural importance are infested with different species of mites. The insect associated mites are of great biological importance as it includes phoretic (temporary/passive transport), commensalisms (passive/temporary association) or as parasites (living at the expense of host insect) or for predation (feeding on the haemolymph of the host insect). It was also reported that insect mite association ranges from opportunistic, possibly accidental, parasitic and predatory (Hunter and Rosario, 1988). Although a good amount of work has been done on insect associated mites in abroad, but in India whatever little has been done, is from southern India and little from Haryana, practically very little has been done from eastern India in general and West Bengal in particular. Therefore, the present study has been taken up to explore the mite fauna of insects (Orders:-Lepidoptera, Coleoptera, Hemiptera and Odonata) and the results thereof are presented in this communication.

2) Material and Methods:-

Host insects were collected from survey areas which included the agri-horticultural field of R. K. Mission, Narendrapur and some adjoining areas during October 2015 to March 2016. Most of the insects were collected by sweeping (in case of Hemiptera, Coleoptera) and aerial netting (in case of Odonata, Lepidoptera). Host insects were also collected directly with the help of forceps and brush. Insects collection made through light trap was also used for examination of mites. The collected insects were put under stereo-binocular microscope for examination of mites. Base of proboscis and the region of adjoining appendages were checked in case of Lepidoptera. Elytra base, leg, antennae and ventral surface were observed in case of Coleoptera while base of wings, antennae, legs and region between thorax and abdomen in case of Hemiptera. Mites were collected with the help of a brush. The collected mite specimens were temporarily mounted in lactic acid for microscopic observation. Host insects were set free in nature. Permanent slides were prepared in Hoyer's medium. The slide mounted specimens were examined under a research microscope. The collection data given name of host locality, data of collection, and name of collector were given. The host insects wherever possible, were identified upto species level with the help of ZSI personnel, otherwise identification was done only upto Genus levels. The entire collection of mites was identified by the junior author (SKG).

3) Results and Discussion:-

The present study reveals the occurrence of mites associated with insects collected from R.K. Mission Ashrama, Narendrapur during October 2015 to March 2016. Altogether 27 species of mites belonging to 19 genera and 12 families under 3 orders were collected from 21 species of insects belonging to 21 genera and 14 families under 4 orders (Table 1). This also included 4 species which appear to be undescribed as those did not tally with the other known species for which literature were available. Those will be studied further at later stage to confirm their novelties. Among the mites members of the order Mesostigmata were the dominant represented by 18 species under 11 genera and 7 families. The Astigmatic mites were represented by 6 species under 5 genera and 2 families while the Prostigmatic mites were represented by 3 species under 3 genera and 3 families. The species *Alliphis necrophilus*, *Pseudolaelaps sp.* and *Tyrophagus longior* were most abundant and could be encountered frequently on the insect belonging to order viz. Lepidoptera, Hemiptera and Coleoptera. On the contrary *Tarsonemus granarius*, *Pergamasus sp.*, *Urobovella sp.* were least abundant. Among the mites collected 3 were parasitic, 6 were predatory, 17 were phoretic and 1 was of unknown association. The undetermined species like *Alliphis sp.* (near *melotti*), *Alliphis sp.* (near *intermedius*), *Hypoaspis sp.* (near *isotricha*) and *Hypoaspis sp.* (near *astronomica*) appear to be undescribed as those do not tally with any of the known species the literature of which are so far available. The mite species marked with asterisks denote that those were hitherto unknown to occur on the expected species listed against each respective orders from India.

Some of the published works done from West Bengal are Sarangi et al. 2010, 2012, 2012a, 2014 but they did not report the species collected from the habitat mentioned in this paper and also did not include most of the species listed herein.

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Table-1: List of mites collected from different orders of insects (Lepidoptera, Coleoptera, Hemiptera, Odonata) from Kolkata and its neighbourhood during October '15 to March '16.

Astigmata					
Saproglyphidae					
<i>*Suidasia nesbitti</i> Hughes	<i>Leptocorisa acuta</i>	Salt lake	March '16	2	Phoretic association.
<i>Calvolia lordi</i> Nesbitt	<i>Aspidomorpha sp.</i>	Narendrapur	October '15	3	Phoretic association.
Acaridae					
<i>Caloglyphus berlesei</i> Berlese	<i>Catopsilla sp.</i> <i>Leptocorisa acuta</i>	Salt lake Narendrapur	February '16 January '16	2 3	Phoretic association.
<i>*Acarus gracilis</i> Hughes	<i>Chrysochoris stollii</i>	Narendrapur	February '16	3	Phoretic association.
<i>Tyrophagus longior</i> Gervais	<i>Chrysochoris stollii</i>	Narendrapur	February '16	2	Phoretic association.
<i>Acarus siro</i> Linnaeus	<i>Agrotis sp.</i>	B.Garden	February '16	3	Phoretic association.
Prostigmata					
Arrenuridae					
<i>Arrenurus congener</i> Daday	<i>Crocothemis sp.</i>	Haripal	November '15	1	Parasitic association.
Tarsonemidae					
<i>*Tarsonemus granarius</i> Lindquist	<i>Eurema sp.</i>	Salt lake Narendrapur	October '15	3	Phoretic association.
Cheyletidae					
<i>Cheyletus eruditus</i> Shrank	<i>Pachliopta hector</i>	Narendrapur	March '16	2	Predatory mite.
Mesostigmata					
Eviphididae					
<i>Alliphis trichiensis</i> Ramaraju	<i>Junonia sp</i>	Narendrapur	January '16 February '16	1	Phoretic mite.
<i>*Alliphis sp.</i> near mellotti Shoemake	<i>Tirumala sp</i>	Narendrapur Salt lake	December '15	1	Phoretic association Appears to be undescribed
<i>Alliphis necrophilus</i> Christie	<i>Syntomis passalis</i> <i>Apogonia sp</i>	Haripal ,Salt lake	November '15	2 2	Phoretic association
<i>Alliphis evansi</i> Ryke and Meyer	<i>Eurema sp.</i>	Salt lake, Narendrapur	October '15	1	Phoretic mite.
<i>Alliphis sp.</i> Near <i>intermedius</i> Shoemake	<i>Pieris rapae</i>	Salt lake	November '15	2	Phoretic association. Appears to be undescribed
<i>Eviphis sp.</i> near <i>ostrinus</i> Koch	<i>Eurema sp.</i>	Salt lake Narendrapur	October '15	2	Phoretic mite.
<i>Eviphis sp.</i> near <i>hastetellus</i> Berlese	<i>Anisolemnia sp.</i>	Haripal	October '15	2	Phoretic association.
Otopheidomenidae					
<i>Hemipteroseius indicus</i> Krantz & Khot	<i>Dysdercus koenigii</i>	Narendrapur	October '15	1	Parasitic association.
Parasitidae					
<i>Pergamasus sp.</i>	<i>Pentodon sp.</i>	Dhapa	December '15	2	Phoretic association.
<i>Poecilochircus coleophorae</i> Ramaraju	<i>Oryctes rhinoceros</i> <i>Podontia 14punctata</i>	Saltlake Narendrapur	February '16	2	Parasitic association.
Diplogynidae					
<i>Schizodiplogynium indicum</i> Bhattacharyya	<i>Pentodon sp.</i>	Dhapa	December '15	3	Unknown association.

Laelapidae					
<i>Pseudolaelaps</i> sp.	<i>Altica</i> sp.	Haripal	January '16	3	Parasitic association.
<i>Hypoaspis</i> sp. near <i>isotricha</i> Kolenti	<i>Agrotis</i> sp.	B.Garden	February '16	2	Predatory association. Appears to be undescribed
<i>Hypoaspis</i> sp. near <i>astronomica</i> Koch	<i>Asota producta</i>	Haripal	January'16	3	Predatory association. Appears to be undescribed
Ascidae					
<i>Proctolaelaps</i> sp. near <i>robustus</i> Evans	<i>Pachliopta hector</i>	Narendrapur	March '16	3	Predatory association.
<i>Lasioseius</i> sp. near <i>flechneri</i> Chant	<i>Euploea core</i>	Narendrapur Dhapa	February '16 March '16	3	Predatory association.
<i>Proctolaelaps</i> sp. near <i>peregrinus</i> Chant	<i>Tirumala</i> sp.	Salt lake	December '15	2	Predatory association.
Uropodidae					
<i>Urobovella</i> sp.	<i>Apogonia</i> sp.	Dhapa	November'15	1	Phoretic association.

Species marked with asterics (*) indicate that those were hitherto unknown to occur on the respective order from India.

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