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An Initial Survey on Insect Associated Mites of South Bengal

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Abstract : *A preliminary study related to mites associated in the insects is given in this article. Ten species of mites under nine families collected from six orders of insects from South Bengal are reported here giving collection data and biological information.*

Keywords - *Coleoptera, Diptera, Hemiptera, Hymenoptera,* Insects, *Lepidoptera,* Mites, *Odonata,* South Bengal

I. INTRODUCTION

Members of various orders of insects are often found infested by mites of different groups and the association between them may be of temporary nature for passive transport or may be commensalistic, parasitic or may be of predatory nature (Hunter and Rossario, 1988).The parasitic /predatory behaviour of mites, may be exploited in biological control of insect pests and hence, insect associated mites have received importance and studies have been initiated to explore the mites associated with insects, especially of agricultural importance in order to find out the nature of association between them. However, most of the published works available from India are from South India. Therefore, the present study was undertaken to procure some preliminary idea on the insect associated mites of West Bengal.

II. MATERIALS AND METHODS

Insects were collected from different agricultural and horticultural fields located in South 24 Paraganas, district of West Bengal with the help of a collecting net and light trap. The insect specimens thus collected were thoroughly examined under a stereo-binocular microscope for collecting the mites associated with them. The insect groups collected and examined for mites were members of the orders Lepidoptera, Hemiptera, Diptera, Coleoptera, Hymenoptera and Odonata. Different parts of the insect body like the underside of proboscis and elytra, wing base, legs, area between head and thorax, antennae, etc. were examined for collection of mites. The collected mite specimens were temporarily mounted in lactic acid for microscopic observation. Permanent slides were prepared in Hoyer's medium. The slide mounted specimens were examined and identified under a research microscope, following appropriate identification keys and literature. The identification of host insects was made mostly by the experts of the Zoological Survey of India, Kolkata.

III. RESULTS AND DISCUSSIONS

The examination of the collected specimens of mites revealed the occurrence of 10 species under 10 genera, 9 families and 3 orders from members of 6 orders of insects Table-1.

Sl. No.	Order / Family	Species	Host	Location	Remarks
1	**ORDER I MESOSTIGMATA** Family 1: Eviphidae	*Alliphis* sp. *Alliphis* sp. *Alliphis* sp.	Lepidoptera (*Junonia* sp.) Lepidoptera (*Papilio demoleus)* Linn. Lepidoptera (*Agrotis* sp.)	Baruipur Narendrapur Science City Area	all under proboscis, below wing base, leg
2	Family 2: Phytoseiidae	*Amblyseius largoensis(*Muma)	Hemiptera *Leptocorisa acuta*(Thunb.)	Chinsura	between head and thorax, below elytra
3	Family 3: Otopheido-menidae	*Hemipteroseius indicus* (Krantz & Khot)	Hemiptera *Dysdercus koenigii* Fabr.	Narendrapur Kalikapur	*ventrally* on thorax
4	Family4: Macrochelidae	*Macrocheles muscaedomesticae* (Scopoli) "	Diptera *Musca domestica* Linn. "	Baruipur Baruipur	below antennae, wing base

5	Family 5: Ascidae	*Blattisocius keegani* (Fox)	Lepidoptera (*Danais* sp.)	Kalikapur	under proboscis, below wing base, leg
6	Family 6: Eviphidae	*Eviphis* sp.	Coleoptera (*Henosepilachna vigintioctopunctata)* Fabr.	Science City area	below elytra
7	**ORDER II ASTIGMATA** Family 1: Acaridae	*Rhizoglyphus echinopus* (F. and R) ”	Coleoptera (*Aspidomorpha* sp.)	Baruipur Narendrapur	on ventral surface, area between head & thorax
8	Family 2: Anoetidae	*Sennertia* sp. ”	Hymenoptera *Xylocopa* sp.	Narendrapur Baruipur	on ventral surface
9	Family 3: Acaridae	*Caloglyphus berlesei* (Michael)	Coleoptera *Coccinella* sp.	Narendrapur	on ventral surface, area between head & thorax
10	**ORDER III PROSTIGMATA** Family: Arrenuridae	*Arrenurus* sp.	Odonata	Science City area	below antennae, area between head & thorax

Table-1: Details of species collected from insects of South Bengal

As presented in Table-1, the mesostigmatid mites collected during the study were *Alliphis* sp., *Amblyseius largoensis* (Muma), *Hemipteroseius indicus,* Krantz & Khot *Macrocheles muscaedomesticae,*(Scopoli), *Blattisocius keegani,* Fox and *Eviphis* sp. of these, *Alliphis* sp. and *Blattisocius keeagni* collected from Lepidoptera, *Hemipteroseius indicus* from red cotton bug and *Macrocheles muscaedomisticae* from house fly – were the most common species. Similar findings were reported by Ramaraju (2009) also from Tamil Nadu. However, the *Alliphis* sp. collected during the present study appears to be different from *Alliphis trichiensis* Ramaraju and Mohanasundaram and also from all the other known species. This clearly indicates that the present species of *Alliphis* may probably represent a new taxon. Ramaraju (2009) reported 17 species under 17 genera and the present study reports only 6 species. The recovery of *A.largoensis* during the present study appears to be a case of accidental occurrence as it is a leaf inhabiting predatory mite. The association of other mesostigmatid mites was phoretic.

The present report includes 3 species of astigmatid mites, of which *Sennertia* sp. appears to be a new one. The other 2 species of this order were truly phoretic. Ramaraju *et al.* Ramaraju (2009), and Ramaraju & Mohanasundaram (1998, 1999) reported 7 species of this order from Tamil Nadu, associated with insects.

In the present study, only one species of Protsigmata i.e. *Arrenurus* sp. could be collected while Ramaraju (2009) reported 9 species of Prostigmata under 9 genera. The present work though represents a preliminary study; it enabled to understand the rich diversity of mites associated with insects. More in-depth studies are warranted to disclose the faunal diversity of insect associated mites of North India.

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