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SOME PARASITES AND PREDATORS OF APHIDS FROM NORTHEAST INDIA AND BHUTAN

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This paper reports 4 species of hymenopteran parasites, 18 species of insects and 5 species of spiders as predators of aphids from northeast India and Bhutan. Some of these parasites are reported newly from some hitherto unreported aphid host. Seven insects and all spider species are newly reported as predators of some aphids. Besides, eight insect species have been found to predate on seven hitherto unreported aphid host species.

(Key words : Parasites and predators of aphids)

During the course of recent surveys for aphids in Northeast India and Bhutan, some aphid parasites and predators were collected. Ten of the predators were found to be coleopteran, seven dipteran, one hemipteran and five belonging to order Araneida under the class Arachnida and all the four parasites were found to be hymenopteran insects. A few of the parasites and predators could not be determined upto species level at the moment. One (*) mark has been used to those, which are found to be new record from India and two (**) marks indicate new host for the respective parasites and predators. It is interesting to point out that for the first time different spider species are reported here as predators. In this connection, it may be mentioned that previous reports concerning aphid parasites and predators from this part of the country are found in C.I.B.C. Final Technical Report, U. S. PL 480 Project (1964-1969), in works of Nath and Sen (1976) and Sary and Ghosh (1975). Aphid parasites and predators along with necessary data are listed below. Examples of the parasites and the predators are in the collection of Entomology Laboratory, Department of Zoology, University of Calcutta.

APHID PARASITES

1. *Aphelinus* sp.

Host: ***Macrosiphum rosae* (L.) from *Rosa cania*, 12.v.1976, Kalimpong, West Bengal; ***Macrosiphum (Sitobion) rosaeiformis* Das from *Rosa* sp. 25.v.1976, Moirang, Manipur.

So far, 8 species have been reported under the genus from India by Ramaseshiah and Dharmadhikari (1969).

2. *Ephedrus plagiator* (Nees)

Host: ***Macrosiphum rosae* (L.) from *Rosa cania*, 12.v.1976, Kalimpong, West Bengal.

This species is known to parasitize a number of aphids in Northeast India.

3. *Pauesia indica* Sary

Host: *Lachnus tropicalis* (v.d. Goot) from *Litsea sebifera*, 22.vi.1976, Chura-chandpur, Manipur.

4. *Trioxys indicus* Subba Rao and Sharma

Host: *Aphis craccivora* Koch from *Vicia faba*, 10.v.1976, Moirang, Manipur; *Aphis gossypii* Glover from *Colocasia* sp., 16.v.1976; from *Psidium*

guava, 20. v. 1976, Moirang, Manipur.

This species has been reported by Narayanan, Subba Rao and Sharma (1958) and Shuja Uddin (1973) from North India.

APHID PREDATORS

Order : Coleoptera.

Family : Coccinellidae.

1. **Ballia* sp.

Host: *Tuberolachnus salignus* (Gmelin) from *Salix* sp., 14.xi.1976, Thimpu, Bhutan. Predatory stage: Both grub and adult.

2. *Coccinella septempunctata* L.

Host: ***Taoia indica* (Ghosh and Raychaudhuri) from *Alnus nepalensis*, 26.v.1976, Kalimpong, West Bengal.

Predatory stage: Both grub and adult.

This species has previously been reported by Aziz, Hyder and Ali (1969) from South India: Saxena, Sirkar and Phokela (1970) and Rao (1969) from North India.

3. *Coelophora sexareata* Muls.

Host: ***Taoia indica* (Ghosh and Raychaudhuri) from *Alnus nepalensis*, 26.v.1976, Kalimpong, West Bengal.

Predatory stage: Both grub and adult.

This species has been reported to feed on aphids on *Artemisia vulgaris* from Gauhati, Assam by Rao (1969).

4. **Cryptogonus quadriguttatus* (Ws)

Host: *Melanaphis sacchari* (Zehntner) from *Zea mays*, 7.vii.1976, Kalimpong, West Bengal.

Predatory stage: Both grub and adult.

5. **Epilachna vigintioctopunctata* (F.)

Host: *Aphis spiraecola* Patch from *Solanum nigrum*, 29.iv.1976, Dimapur, Nagaland.

Predatory stage: Only grub.

6. *Menochilus sexmaculatus* (F.)

Host: ***Brachycaudus helichrysi* (Kotb.) from *Eupatorium odoratum*, 29.iv.1976, Dimapur, Nagaland.

Predatory stage: Only grub.

7. *Oenopia sauzeti* Mls.

Host: ***Macrosiphoniella pseudoartemisiae* Shinji from *Chrysanthemum coronarium*, 10.vii.1976, Kalimpong, West Bengal.

Predatory Stage: Both grub and adult.

8. **Oenopia luteopustulata* Mls.

Host: *Macrosiphum (Sitobion) rosaeiformis* Das from *Rosa cania*, 25.x.1976, Kalimpong, West Bengal.

Predatory stage: Both grub and adult.

9. *Pullus pyrochellus* (Muls)

Host: *Aphis gossypii* Glover from *Psidium guava*, 20. v. 1976, Moirang, Manipur; ***Macrosiphum (Sitobion) rosaeiformis* Das from an unidentified plant, 22.vi.1976, Churachandpur, Manipur.

Predatory stage: Both grub and adult.

This predator has been reported from south and eastern India by Rao (1969).

10. *Synonymyha grandis* (Th.)

Host: *Paraoregma alexandri* (Takahashi) from *Bambusa* sp., 9.vii.1976, Kalimpong, West Bengal.

Predatory stage: Both grub and adult.

Order: Diptera

Family: Calliphoridae

11. **Calliphora paltoni* Aub.

Host: *Paraoregma alexandri* (Takahashi) from *Bambusa* sp., 7.vii.1976, Kalimpong, West Bengal.

Family: Syrphidae

12. *Ischiodon scutalaris* F.

Host: ***Aphis spiraecola* Patch from *Artemisia vulgaris*, 19.vi.1976, Loktak, Manipur.

This species has earlier been reported by Saxena, Sirkar and Phokela (1970) from North India.

13. **Paragus indicus* Brun.

Host: *Aphis spiraecola* Patch from *Bidens pilosa*, 26.vi.1976, Kalimpong, West Bengal.

14. *Paragus serratus* F.

Host: *Aphis craccivora* Koch from *Vicia faba*, 10.v.1976, Moirang, Manipur.

This species has previously been reported by Vadivelu, Mohanasundaram and Subba Rao (1975) from South India and by Rao (1969) from north and eastern India besides South India.

15. *Sphaerophoria javana* Wied.

Host: *Macrosiphum (Sitobion) rosaeiformis* Das from *Rosa* sp., 4.v.1976, Moirang, Manipur.

16. *Syrphus balteatus* de Geer

Host: ***Melanaphis sacchari* (Zehntner) from *Zea mays*, 6.vii.1976, Kalimpong, West Bengal; *Macrosiphum (Sitobion) rosaeiformis* Das from *Rosa* sp., 4. v. 1976, Moirang, Manipur.

17. *Syrphus serareus* Wied

Host: ***Macrosiphum rosae* (L.) from *Rosa cania*, 28.iv.1976, Kalimpong, West Bengal.

In all cases of dipteran predators only larvae were found to feed on aphids.

Order: Hemiptera

Family: Anthocoridae

18. **Bilia* sp.

Host: *Greenidea (Trichosiphum) formosana heeri* Raychaudhuri, Ghosh, Banerjee and Ghosh (Ms. name) from *Psidium guava*, 8.i.1976, Kalimpong, West Bengal.

Predatory stage: Adult bug.

Order: Araneida

Family: Araneidae

19. **Araneus* sp.

Host: *Aphis gossypii* Glover from *Capsicum frutescence*, 26.xii.1976, Mangang, Sikkim; *Macrosiphum rosae* (L.) from *Rosa* sp., 28.xii.1976, Gangtok, Sikkim, from *Rosa* sp., 8.i.1977, Kalimpong, West Bengal; *Macrosiphum (Sitobion) rosaeiformis* Das from *Rosa* sp., 28.xii.1976, Gangtok, Sikkim.

20. **Cyclosa* sp.

Host: *Macrosiphum (Sitobion) rosaeiformis* Das from *Rosa* sp., 30.xii.1976, Singtam, Sikkim; from *Rosa* sp., 8.i.1977, Kalimpong, West Bengal.

Family: Linyphiidae

21. **Linyphia* sp.

Host: *Hyalopterus pruni* (Geoffroy) from *Phragmites karka*, 28. iv. 1977, Churachandpur, Manipur.

Family: Salticidae

22. **Rhene khandalaensis* Tikader

Host: *Macrosiphum rosae* (L.) from *Rosa* sp., 20.v.1977, Kalimpong, West Bengal.

Family: Theridiidae

23. **Theridion* sp.

Host: *Cinara thujaefilina* (del Guercio) from *Cupressus* sp. 14.v.1977, Gangtok, Sikkim; 20. v. 1977, Kalimpong, West Bengal.

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NEW AND LITTLE KNOWN APHIDS (HOMOPTERA : APHIDIDAE) FROM KUMAON HIMALAYA, INDIA

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Four new species, viz., *Greenidea* (*Trichosiphum*) *kumaoni*, *Jacksonia* *campanulata*, *Mollitrichosiphum* (*Metatrichosiphum*) *alnifoliae*, *Uroleucon* *fuscaudatus* and five other species are reported from the Kumaon Himalaya (Uttar Pradesh), India. Systematic position of the new species is discussed.

(Key words : aphid taxonomy, morphology, new species, India)

Aphids occurring in the Kumaon Himalaya (Uttar Pradesh) are known through the works of Banerjee *et al.* (1969), Bhanotar and Ghosh (1969), Chakrabarti (1976a, b) Chakrabarti and Ghosh (1970), Chakrabarti *et al.* (1971a, 1972a, Chakrabarti and Raychaudhuri (1974, 1975), Chakrabarti and Verma (1975), David (1975), David *et al.* (1969, 1970, 1971), Ghosh, L.K. (1969, 1970), Quednau and Chakrabarti (1976) and Raychaudhuri and Banerjee (1975). As a result 121 species are so far known from this subhimalayan area.

In this paper, 9 more species are added to the previous list and thus the total number of species from the area stands at present 130. Out of these 9 species, 4 species, viz., *Greenidea* (*Trichosiphum*) *kumaoni*, *Jacksonia* *campanulata*, *Mollitrichosiphum* (*Metatrichosiphum*) *alnifoliae* and *Uroleucon* *fuscaudatus* are new to science.

1. *Chromaphis* *hersutustibis* Kumar and Lavigne

Specimen examined : Many alate viviparous females and nymphs, INDIA, UTTAR

PRADESH, Bhowali, 24. v. 1969 : 5. iv. 1970 : 6. iv. 1970, Almora, 8. iv. 1970, Chaubattia 13. iv. 1970 from *Aleuroites moluccana*; 2 alate viviparous females, Kousani, 12. v. 1970 from *Alnus nepalensis* (vagrant); 8 alate viviparous females, Nainital, 23. v. 1969, Almora, 25. v. 1969, Kousani, 26. v. 1969 from Yellow Pan Water Trap; 2 apterous oviparous females, Bhowali, 24. v. 1969 from *Aleuroites moluccana* (Coll. S. Chakrabarti).

2. *Greenidea* (*Trichosiphum*) *bucktonis* Ghosh, Ghosh and Raychaudhuri

Specimen examined : 2 apterous viviparous females, INDIA, UTTAR PRADESH, Kanikhet, 12. iv. 1969 from an unidentified plant (Coll. S. Chakrabarti).

3. *Greenidea* (*Trichosiphum*) *kumaoni*, sp. nov.

Apterous viviparous female : Body 1.92 mm long and 1.17 mm as maximum width. Head pale brown, smooth; dorsal hairs long with acute and furcated apices, longest hair