

A review of aphid parasitoids (Hymenoptera: Braconidae) of Uttar Pradesh and Uttarakhand, India

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Abstract

A review of aphidiine parasitoids (Hymenoptera: Braconidae) associated with various aphids species occurring in Uttar Pradesh and Uttarakhand, India was compiled. The fauna of Uttar Pradesh and Uttarakhand is represented by 40 species under 13 genera. This information is further reinforced with host names.

Keywords: Aphid; Aphidiinae; distribution; Uttar Pradesh; Uttarakhand.

Introduction

Aphid pest problems are known worldwide. Most of the aphid parasitoids belong to the subfamily Aphidiinae which can be distinguished structurally by their medium body size usually about 1.5-3.5 mm long, females with short ovipositor, metasomal tergum weakly sclerotized (Achterberg, 1997). Approximately 400 species placed under 60 genera have been described (Dolphine and Quicke, 2001), of them 123 species under 23 genera, which is around 31% of the world fauna found in India (Dey and Akhtar, 2007). This subfamily was represented by four tribes viz., Ephederini, Praini, Aphidiini and Trioxini. While analyzing the existing information, we concluded that it was absolutely necessary to bring together, summarize, check and compile all the existing information in a compact presentation. Therefore, an attempt was made to compile an inventory of Aphidiinae parasitoids associated with aphids from Uttar Pradesh and Uttarakhand.

Materials and Methods

Host data for Uttar Pradesh and Uttarakhand records were compiled for each species. The information were collected from many primary and secondary sources of information material, both electronic and non-electronic viz., Review of Applied Entomology, CAB Pest CD, Zoological Records, Thompson Catalogue, Hymenopterorum Catalogus and various other related books, journals, bulletins, newsletters, etc. were accessed.

Results and Discussion

The fauna of Uttar Pradesh and Uttarakhand is represented by 40 species under 13 genera (Table 1). Analysis of data reveals that *Aphidius* [12 species viz., *A. absinthii* Marshall, *A. cingulatus* Ruthe, *A. colemani* Viereck, *A.*

eglanteriae Haliday, *A. matricariae* Haliday, *A. polycostulari* Das and Chakrabarti, *A. qadrii* (Shuja-Uddin), *A. rosae* Haliday, *A. smithi* Sharma and Subba Rao, *A. staryi* Das and Chakrabarti, *A. urticae* Haliday, *A. uzbekistanicus* Luzhetskii] having the highest number of species followed by *Binodoxys* [8 species viz., *B. centaureae* (Haliday), *B. indicus* (Subba Rao and Sharma), *B. joshimathensis* (Das and Chakrabarti), *B. mackaueri* (Das and Chakrabarti), *B. oregama* (Agarwala, Saha and Mahapatra), *B. rubicola* (Shuja-Uddin), *B. sinensis* (Mackauer), *B. tomentosae* (Das and Chakrabarti)]. Analysis made on the host indicated that the genus *Aphis* is parasitized by 7 species [*Binodoxys sinensis* (Mackauer), *Binodoxys indicus* (Subba Rao and Sharma), *Lipolexis oregmae* (Gahan), *Ephedrus plagiator* (Nees), *Binodoxys rubicola* (Shuja-Uddin), *Aphidius colemani* Viereck, *Cristicaudus indicus* Das and Chakrabarti] followed by genus *Macrosiphum* [*Binodoxys joshimathensis* (Das and Chakrabarti), *Ephedrus lacertosus* (Haliday), *Aphidius rosae* Haliday, *Praon volucre* (Haliday), *Aphidius polycostulari* Das and Chakrabarti, *Aphidius uzbekistanicus* Luzhetskii] and genus *Myzus* with 5 species [*Aphidius staryi* Das and Chakrabarti, *Diaeretiella rapae* (M'Intosh), *Lipolexis oregmae* (Gahan), *Aphidius eglanteriae* Haliday, *Binodoxys tomentosae* (Das and Chakrabarti)].

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Table 1. A list of Aphid Parasitoids (Hymenoptera: Aphidiinae) of Uttar Pradesh and Uttarakhand.

S. No.	Parasitoids	Hosts
1.	<i>Aphidius absinthii</i> Marshall	<i>Macrosiphoniella yomogifoliae</i> on <i>Artemisia</i> sp.; <i>M. kikungshana</i> on <i>Artemisia</i> sp.; <i>M. pseudoartemisiae</i> on <i>Artemisia vulgaris</i> ; <i>M. sanborni</i> on <i>Chrysanthemum</i> sp.; <i>Macrosiphoniella</i> sp. on <i>Chrysanthemum</i> sp.
2.	<i>Aphidius cingulatus</i> Ruthe	<i>Pterocomma</i> sp. on <i>Populus citiata</i> , <i>Salix tetrasperma</i>
3.	<i>Aphidius colemani</i> Viereck	<i>Aphis</i> sp. on <i>Rumex</i> sp.; <i>Hyalopterus pruni</i> on <i>Prunus persicae</i>
4.	<i>Aphidius eglanteriae</i> Haliday	<i>Myzus sorbi</i> on <i>Sorbaria tomentosa</i> ; <i>Macrosiphoniella pseudoartemisiae</i> on <i>Artemisia vulgaris</i> ; <i>Capitophorus formosartemisiae</i> on <i>Artemisia</i> sp.
5.	<i>Aphidius matricariae</i> Haliday	<i>Brachycaudus helichrysi</i> on <i>Prunus persicae</i>
6.	<i>Aphidius polycostulari</i> Das and Chakrabarti	<i>Macrosiphum (Sitobion)</i> sp. on <i>Rosa</i> sp.
7.	<i>Aphidius qadrii</i> (Shuja-Uddin)	<i>Brachycaudus helichrysi</i> on <i>Anaphalis</i> sp.; <i>Brachycaudus</i> sp. on <i>Gnaphalium</i> sp.; <i>Capitophorus</i> sp. on <i>Anaphalis cinnamomea</i> ; Unidentified aphid on <i>Artocarpus heterophyllus</i>
8.	<i>Aphidius rosae</i> Haliday	<i>Macrosiphum (Sitobion) rosaeformis</i> on <i>Rosa</i> sp.; <i>Macrosiphum (Sitobion) rosae</i> on <i>Rosa</i> sp.
9.	<i>Aphidius smithi</i> Sharma and Subba Rao	<i>Acyrthosiphon pisum</i> on <i>Pisum sativum</i> , <i>Medicago sativa</i> , <i>Vicia faba</i>
10.	<i>Aphidius staryi</i> Das and Chakrabarti	<i>Myzus cornutus</i> on <i>Prunus cornuta</i>
11.	<i>Aphidius urticae</i> Haliday	<i>Acyrthosiphon</i> sp. on <i>Euphorbia pilosa</i>
12.	<i>Aphidius uzbekistanicus</i> Luzhetskii	<i>Acyrthosiphon</i> sp. on <i>Bothriochloa</i> sp.; <i>Macrosiphum miscanthi</i> on <i>Hordeum vulgare</i> ; <i>Schzaphis</i> sp. on Grass, <i>Macrosiphum (Sitobion) miscanthi</i> ; <i>Macrosiphum (Sitobion)</i> sp. on <i>Avena sativa</i> , Grass, <i>Penisetum falccidum</i>
13.	<i>Archaphidus greenideae</i> Stary and Schlinger	<i>Greenidea ficicola</i> on <i>Psidium guajava</i> ; <i>G. formosana heeri</i> on <i>Syzygium guajava</i>

14. *Betuloxys intermedius* (Shuja-Uddin) *Capitophorus formosartemisiae* on *Artemisia vulgaris*, *Artemisia* sp
15. *Binodoxys centaureae* (Haliday) *Senecio* sp.
16. *Binodoxys indicus* (Subba Rao and Sharma) *Aphis craccivora* on *Solanum nigrum*; *A. gossypii* on *Bidens pilosa*, *Capsicum* sp., *Cestrum nocturnum*, *Chrysanthemum* sp., *Coccinia cardifolia*, *Cucumis melo*, *Cuscuta reflexa*, *Durant* sp., *Gossypium herbaceum*, *G. hirsutum*, *Gynura angutosa*, *Hibiscus rosasinensis*, *Psidium guajava*, *Solanum melongena*, *Tinospora* sp.; *A. nerii* on *Calotropis procera*; *Aphis* sp. on *Solanum* sp.; *Brachycaudus helichrysi* on *Pyrus* sp.
17. *Binodoxys joshimathensis* (Das and Chakrabarti) *Macrosiphum (Sitobion) miscanthi* on *Bothriochloa* sp.
18. *Binodoxys mackaueri* (Das and Chakrabarti) *Melanaphis meghalayensis meghalayensis* on Bamboo
19. *Binodoxys oregama* (Agarwala, Saha and Mahapatra) *Ceratovacuna* sp.? *perglandulosa* on Grass
20. *Binodoxys rubicola* (Shuja-Uddin) *Aphis ruborum longisetosus* on *Rubus ellipticus*
21. *Binodoxys sinensis* (Mackauer) *Aphis citricola* and *A. gossypii* on *Cestrum nocturnum*
22. *Binodoxys tomentosae* (Das and Chakrabarti) *Myzus sorbi* on *Sorbaria tomentosa*
23. *Cristicaudus garhwalensis*, Das and Chakrabarti *Capitophorus formosartemisiae* on *Artemisia vestita*
24. *Cristicaudus indicus* Das and Chakrabarti *Aphis* sp. on *Glochoin*
25. *Diaeretiella rapae* (M'Intosh) *Brachycaudus helichrysi* on *Prunus amygdalus*; *Brevicoryne brassicae* on *Raphanus sativus*; *Hayhurstia atriplicis* on *Chenopodium album*; *Lipaphis erysimi* on *Brassica campestris* var. *cauliflower*, Mustard; *Metopolophium (Metopolophium) dirhodum*; *Myzus persicae*
26. *Ephedrus lacertus* (Haliday) *Macrosiphum (Sitobion) miscanthi*; *Takecallis himalayensis* on Bamboo
27. *Ephedrus laevicollis* (Thomson) *Cavariella aegopodii* on *Salix hastate*
28. *Ephedrus nacheri* Quilis *Hayhurstia atriplicis* on *Chenopodium album*; *Melanaphis arundinariae* on *Pyrus pashia*
29. *Ephedrus plagiator* (Nees) *Aphis fabae* on *Tagetes erecta*
30. *Ephedrus srinagarensis* Stary and Bhagat *Prociphilus* sp. on *Lonicera quinquelocularis*; Unidentified aphids on *Cotoneaster* sp.

31. *Kashmiria aphidis* Prociphilus sp. on *Lonicera quinquelocularis*
Sary and Bhagat
 32. *Lipolexis oregmae* *Aphis craccivora* on *Benincasa hispida*, *Cassia fistula*; *A. gossypii* on *Rumex* sp.; *A. nasturtii* on *Luffa cylindrical*, *Tectona grandis*; *Myzus persicae* on *Capsicum frutescens*, *Solanum melongena*
(Gahan)
 33. *Lysiphlebia mirzai* *Hyalopterus pruni* on *Phragmites kerke*; *Longiungus sacchari* on Sugarcane; *Melanaphis sacchari* on *Pennisetum glaucum*, *Saccharum officinarum*, *Sorghum bicolor*, *Zea mayz*, *Rhopalosiphum maidis* on *Pennisetum glaucum*, *Triticum aestivum*, *Zea mays*; *Schizaphis graminum* on *Pennisetum glaucum*, *Zea mays*
Shuja-Uddin
 34. *Lysiphlebus delhiensis* (Subba *Melanaphis* sp. on Grass; *Rhopalosiphum maidis* on *Pennisetum glaucum*, *Triticum aestivum*, *Zea mays*; *Schizaphis graminum* on *Pennisetum glaucum*, *Zea mays*
Rao and Sharma)
 35. *Pauesia lachniella* *Lachnus tropicalis* on *Quercus dealbata*
Das and Chakrabarti
 36. *Pauesia orientalis* *Cinara maculipes* on *Pinus excelsa*
Das and Chakrabarti
 37. *Praon himalayensis* *Callaphis juglandis* on *Juglans regia*
Das and Chakrabarti
 38. *Praon orientale* *Uroleucon* sp. on *Sanchus aevensis* and *Sanchus* sp.
Sary and Schlinger
 39. *Praon pubescens* *Nasonovia* sp. on *Sitoblanthes* sp.
Sary
 40. *Praon volucre* *Macrosiphum (Sitobion)* sp. on *Rosa* sp.
(Haliday)
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