



CHECKLIST OF LEAF BEETLES (COLEOPTERA: CHRYSOMELIDAE) OF DISTRICT HARIPUR, KHYBER PAKHTUNKHWA, PAKISTAN

Saira Bibi^{1*}, Muhammad Fiaz khan¹, Aqsa Rehman² and Muzafar Shah³

¹Department of Zoology, Hazara University, Mansehra, KPK, Pakistan

²Department of Zoology, Women University Swabi Pakistan

³Department of Zoology, University of Swat, KP, Pakistan

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*Corresponding Author:

Saira Bibi

E-mail: sairabibi333@hu.edu.pk

ABSTRACT

This study was conducted in order to find out the checklist of leaf beetle from the district Haripur. Haripur District lies in the plains of Khyber Pakhtunkhwa it is mountainous region and it contains too much biodiversity and variety of insect fauna. Chrysomelidae Leaf beetles are one of the largest insect families, with including more than 37,000 to 40,000 described species. This study is conducted as a type of survey during the year 2018. Here we reported that 4 subfamilies of leaf beetles 51 species highest number of species were of the family *altacinea*. It is concluded that Understanding with host plants speciation and coevolution of chrysomelids. The family Chrysomelidae (Coleoptera), or leaf beetles, is a natural subject for studying plant-insects.

Keywords: Leaf Beetles, District Haripur

INTRODUCTION

Chrysomelidae Leaf beetles are one of the largest insect families, with including more than 37,000 to 40,000 described species (Jolivet and Verma, 2002). The subfamily Criocerinae Latreille, 1804 (Coleoptera: Polyphaga: Chrysomelidae) is one of the possible basal branches of the mega diverse herbivorous family Chrysomelidae (Gómez-Zurita et al., 2008). For a historical review of with show that with the lots of diversity, these beetles are placed under 19 subfamilies. The biodiversity of leaf beetles is a direct indicator of diversity in ambient flora. Being phytophagous, the group includes many established and potential agricultural pests. In leaf beetle in some cases seasonal changes fauna point to forthcoming weather changes (Kalaichelvan, 2000). Most Leaf beetles adults (Chrysomelidae) feed on leaves, while their larvae consume mostly leaves, roots, detritus or plant sap. Feeding on flowers (anthophagy) is regarded a rare phenomenon for leaf beetles (Bieńkowski, 2010). The published reports of leaf beetles feeding on Association of chrysomelids during the past a few decades importance of host plant in visualizing origin and evolution of leaf beetles has been studied (Kalaichelvan et al., 2005). Understanding with host plants speciation and coevolution of chrysomelids. The family Chrysomelidae (Coleoptera), or leaf beetles, is a

natural subject for studying plant-insect and inter-herbivore interactions (Strauss, 1988). Of the estimated 37,000 species, worldwide, in this family, almost all, as far as we know, are herbivores or seed predators. Though, for about 70% of the described species, we do not have records of host plants. Most of the known host plant records (Jolivet, 1988). For Neotropical Chrysomelidae other than Bruchinae, the most specific information treats economically important species (Flowers and Janzen, 1997). Little or no work is done of these beetles in Pakistan so this study is being conducted on one of the largest insect families, leaf beetles (Family Chrysomelidae), a preliminary study on the leaf beetle fauna in province Khyber Pakhtunkhwa, Pakistan.

MATERIAL AND METHODS

Study area

The Districts in Khyber Pakhtunkhwa are administrative divisions of the province in which their boundaries are drawn. The province of Khyber Pakhtunkhwa is divided into 35 districts. Peshawar is the provincial capital and largest city of Khyber Pakhtunkhwa. The northern districts of Khyber Pakhtunkhwa (Malakand Division and Hazara Division) are situated in hilly areas. As one moves further away from the foothills of the Hindu Kush, Himalayas, and Karakoram

ranges, the climate changes from the humid subtropical climate of the foothills to the typically arid climate of the plains of South Asia (fig.1).

Various field trips were conducted in order to collect leaf beetle specimens were carried out in January to December 2018. In the field during each trip, five days were spent collecting specimens, by using Strong butterfly nets, Sweeping along the designated trails in the area. Leaf beetle specimens collected were pinned, labelled and kept in the Insect collection at the Department of Zoology, Hazara University Mansehra. The beetles were identified with the taxonomical Keyes keys and descriptions from with species for faced respective literature.

Results and discussion

During the study 4 subfamilies were recorded with the 51 species from different areas of KP. The highest number of these beetles were of the subfamily Alticinae as enlisted in table 1. From the Indian subcontinent the number of species were recorded of these beetles were 2500 from oriental region — (Furth, 1988). from Pakistan the other species of Coleoptera were recorded that is of the ground beetles and others from Faisalabad Pakistan and Kashmir (Rahim *et al.*, 2013). From Pakistan the list of these beetles were not recorded only these beetles were studied separately .so this will lead to a new record.



Fig.1
Map of KP region(Google source)

Table.1 Checklist of leaf beetles of KP region.

Sl.No. Subfamily/Species	Host collection detail	Remarks
Subfamily Chrysomelinae		
<i>Chrysomela exanthematica</i>	<i>Medicago sativa</i>	Active in March and rainy season
2. <i>Chrysolina</i> sp1.		Active in March and rainy season
3. <i>Chrysolina</i> sp2.		Active in March and rainy season.
<i>Monolepta bifasciata</i> Hornstedt	<i>Medicago sativa</i>	Active in March
Subfamily Eumolpinae		
1. <i>Abirus</i> sp.		
2. <i>Basilepta latefaciata</i> Jacoby		
3. <i>Colasposoma auripenne</i> Motschulsky	<i>Ipomoea aquatica</i> , <i>I. batatas</i> , <i>I. fistulosa</i> , <i>I. hispida</i> , <i>I. indica</i> , <i>I. palmata</i> , <i>I. pestigridis</i>	Active in rainy season and summer; diapause in severe winter
	Collected at light at night also	
4. <i>Pachnephorus impressus</i> Rosenh	<i>Alysicarpus monilifer</i> . Collected at light at night also	Active in rainy season; diapause in severe winter and continues into summer
5. <i>Pagria signata</i> Motschulsky	Collected at light at night	Active in rainy season; diapause in severe winter and tinues int
6. <i>Platycorynus peregrinus</i> Fuessly	<i>Calotropis procera</i> and <i>C. gigantea</i>	Active in only rainy season. Seems to be in diapause in winter to summer. First instar larva with two ocelli on each side of head; in culture the larva scratched epidermis of leaves, and died without further development

Subfamily Hispinae

1 <i>Choeridina picea</i> Baly	<i>Commelina bengalensis</i> and <i>C. nudiflora</i>	Active in rainy season
2 <i>Dactylispa pusilal</i> Weise	<i>Sporobolus diander</i> and <i>S. indica</i>	Active in rainy season
3 <i>Oncocephala quadrilobata</i> Guerin	<i>Ipomoea batatas</i> , <i>I. fistulosa</i> , <i>I. palmata</i> and <i>I. violacea</i>	Active in rainy season
4 <i>Platypria andrewesi</i> Weise	<i>Zizyphus mauritiana</i>	Active in rainy season

Subfamily Alticinae

1. <i>Aphthona hugely</i> Weise	<i>Euphorbia hirta</i> <i>Medicago sativa</i>	
2. <i>Aphthona kanaraensis</i> Jacoby	<i>Euphorbia hirta</i>	
3. <i>Aphthona nigrilabris</i> Duvivier	<i>Brassica compestris</i>	
4. <i>Chaetocnema basalis</i> Baly	Collected at light at night	
5. <i>Chaetocnema bretinghami</i> Baly	<i>Alternanthera sessilis</i> and <i>Vigna trilobata</i>	
6. <i>Chaetocnema concinnipennis</i> Bal	<i>Ipomoea aquatica</i> , <i>I. batatas</i> , <i>I. fistulosa</i> , <i>I. palmata</i> , and <i>I. violacea</i> . Collected at light	
7. <i>Chaetocnema confines</i> Crotch	<i>Brassica compestris</i> . Collected at light at night	
8. <i>Chaetocnema harita</i> Maulik	Collected at light at night	
9. <i>Crepidodera minuta</i> Jacoby	<i>Ludwigia parviflora</i>	
10. <i>Crepidodera nigripennis</i> Motschulsky	Collected at light at night	
11. <i>Haltica cyanea</i> Weber	Collected at light at night	
12. <i>Hermacophaga ruficollis</i> Lucas	<i>Euphorbia hirta</i>	
13. <i>Hyphasis</i> sp.	<i>Euphorbia hirta</i> . Collected at light at night also	
14. <i>Longitarsus lohita</i> Maulik	<i>Commelina bengalensis</i> and <i>C. nudiflora</i>	
15. <i>Longitarsus pandura</i> Maulik	<i>Calotropis gigantica</i> , <i>C. procera</i> , and <i>Daemia extensa</i> .	
16. <i>Longitarsus recticollis</i> Maulik		
17. <i>Philopona signata</i> Duvivier	Collected at light at night also	
18. <i>Phygasia hookeri</i> Baly		Active in rainy season. Adults are seen in groups. <i>Phygasia hookeri</i> and <i>P. unicolor</i> are found in a same locality
19. <i>Phygasia unicolor</i> Olivier	<i>Calotropis gigantica</i> , <i>C. procera</i> , and <i>Daemia extensa</i> .	
20. <i>Phygasia violaceipennis</i> Jacoby	Collected at light at night also	
21. <i>Phyllotreta birmanica</i> Harold	<i>Calotropis gigantica</i> , <i>C. procera</i> , and <i>Daemia extensa</i> .	Active in rainy season
22. <i>Phyllotreta chotanica</i> Duvivier	Collected at light at night	Active in rainy season
23. <i>Podagrica nigripennis</i> Jacoby	<i>Brassica campestris</i>	Active in rainy season and in March – April
Subfamily Galerucinae		
1. <i>Aulacophora foveicollis</i> Lucas	<i>Cucumis melo</i> , and other Cucurbitaceae.	Active all the year round, except in severe winter
2. <i>Aulacophora intermedia</i> Jacoby	Collected at light at night also	Same as for <i>A. foveicollis</i>
3. <i>Oides bipunctata</i> Fabricius	Same as for <i>A. foveicollis</i>	Active in rainy season. Diapause in winter, and continues into summer
4. <i>Madurasia obscurella</i> Jacoby	<i>Vitis trifolia</i>	
5. <i>Medythia suturalis</i> Motschulsky	<i>Phaseolus sublobatus</i>	Active in rainy season and early summer
6. <i>Monolepta bifasciata</i> Hornstedt	Collected at light at night	Active in rainy season
7. <i>Monolepta brunnea</i> Maulik	<i>Mangifera indica</i> . Collected at light at night	Active in early summer
8. <i>Monolepta conformis</i> Weise	<i>Polygonum pulcherium</i>	Active in early summer
9. <i>Monolepta lineata</i> Weise	Collected at light at night	Active in rainy season
	<i>Commelina bengalensis</i> and <i>C. nudiflora</i>	Active period: rainy season, summer; diapause in severe winter

Subfamily Clytrinae

1. <i>Gynandrophthalma longicornis</i> Jacoby	<i>Zizyphus mauritiana</i>	Active in rainy season
2. <i>Gynandrophthalma divisa</i> Jacoby	<i>Zizyphus mauritiana</i>	Active in rainy season
3. <i>Gynandrophthalma duvivieri</i> Jacoby	<i>Zizyphus mauritiana</i>	Active in rainy season
4. <i>Aetheomorpha maduraensis</i> Jacoby		Active in rainy season
5. <i>Aetheomorpha fallax</i> Lacordaire	<i>Zizyphus mauritiana</i> and <i>Ipomoea fistulosa</i> .	Active in rainy season
6. <i>Aspidolopha</i> sp		Active in rainy season

CONCLUSION

It is concluded that Understanding with host plants speciation and coevolution of chrysomelids. The family Chrysomelidae (Coleoptera), or leaf beetles, is a natural subject for studying plant-insects.

REFERENCES

- Bieńkowski, A. (2010) Anthophagy in the leaf beetles (Coleoptera, Chrysomelidae). *Entomological Review*, 90(4): 423-432.
- Flowers, R. W. and Janzen, D. H. (1997) Feeding records of Costa Rican leaf beetles (Coleoptera: Chrysomelidae). *Florida Entomologist*: 334-366.
- Furth, D. G. (1988) The jumping apparatus of flea beetles (Alticinae) The metafemoral spring. *Biology of Chrysomelidae*. Springer.
- Gómez-Zurita, J., Hunt, T. and Vogler, A. P. (2008) Multilocus ribosomal RNA phylogeny of the leaf beetles (Chrysomelidae). *Cladistics*, 24(1): 34-50.
- Jolivet, P. (1988) Food habits and food selection of Chrysomelidae. *Bionomic and evolutionary perspectives. Biology of Chrysomelidae*. Springer.
- Jolivet, P. and Verma, K. K. (2002) *Biology of leaf beetles*, Intercept Limited.
- Kalaichelvan, R. (2000) *Function spaces and a problem of banach*. University of Cape Town.
- Kalaichelvan, T., Verma, K. and Sharma, B. (2005) Checklist of leaf beetles (Coleoptera: Chrysomelidae) of Bhilai-Durg. *Zoos Print Journal*, 20(4): 1838-1842.
- Rahim, J., Khan, M. R. and Nazir, N. (2013) Systematic and abundance of ground beetles (Carabidae: Coleoptera) from district Poonch Azad Kashmir, Pakistan. *Journal of Agriculture and Veterinary Science*, 6(2): 24-29.
- Strauss, A. (1988) The articulation of project work: An organizational process. *Sociological Quarterly*, 29(2): 163-178.