

## Subfamilies Coccinellinae and Coccidullinae (Coccinellidae: Coleoptera) with New Records from AJK, Pakistan

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### ABSTRACT

The fauna of subfamilies Coccidullinae and Coccinellinae (Coccinellidae: Coleoptera) of Azad Jammu and Kashmir were explored and studied. This study reveals that 2 species in 2 genera of subfamily Coccidullinae, whereas 30 species under 18 genera in subfamily Coccinellinae were reported from the study area. Among these species *Illeis indica*, *Illeis shensiensis*, *Phrynocoria perrotteti*, *Propylea luteopustulata*, were reported for the first time from Pakistan. Seven genera and 8 species were new records to the Azad Jammu and Kashmir fauna. A description of each species was given with synonymus, past record, present record, distribution and remarks. Description of genitalia was provided for each species; color plates of adult specimens and genitalia were also provided.

**KEY WORDS:** Coccinellidae, Coccidullinae, Coccinellinae, Genitalia, Distribution, New records.

### INTRODUCTION

Coccinellids (Coccinellidae: Coleoptera) commonly known as ladybird beetles are considered as beneficial predatory insects. Family Coccinellidae has six subfamilies Coccidullinae, Coccinellinae, Scymninae, Chilocorinae, Sticholotidinae and Epilachninae beetles. Of these only one Epilachninae is phytophagous rest are predatory in nature. About 490 genera and 6,000 species of coccinellids are known from the world (Slipinski, 2007). They play important role in regulating insect pests of soft bodied insects like aphids, jassids, psyllids, whiteflies, scale insects, mealy bugs, phytophagous mites, which are injurious to agricultural crops and forest plantation (Dixon, 2000).

Keeping in view the importance of these taxa, exploration was initiated from seventies. The initial work on predatory coccinellids of Pakistan was done by (Ahmad and Ghani, 1966a), Ahmad (1968, 1970, 1973), and (CIBC, 1982). Furthermore, Irshad (2001a, 2001b, 2003) Irshad and Khan (2005) documented the coccinellid beetles of Pakistan. Later on, some workers explored the coccinellids from Chitral (Khan *et al.*, 2007), from Azad jammu and Kashmir (Hayat, 2013) and from Gilgit Baltistan (Ashafaq, 2015).

Farooq *et al.* (1999) and Khan *et al.* (1999b) for the first time documented coccinellid beetles from AJK. Other workers are Inayatullah *et al.* (2005) with 16 species; Rafi *et al.* (2005) with 30 species, Khan *et al.* (2008) with 47 species and Hayat *et al.* (2013) reported 9 species (Chilocorinae) from Azad Jammu and Kashmir. So, the main aim was to explore the fauna of Ladybird beetles of subfamily Coccinellinae and Coccidullinae from Azad Jammu Kashmir and proper taxonomic study is needed to develop biological control program for insect pest management.

### MATERIAL AND METHODS

#### Study Area

The total area of Azad Kashmir is 5134 square miles (13297 sq km) Azad Kashmir lies between longitude of 73°-75° and latitude of 33°-36°. Topography of Azad Kashmir is hilly and mountainous with valleys and stretches of plains. The average rainfall ranging from 1000 mm to 2000 mm. Elevation from the sea level ranges from 360 meters in south to 6325 meters in north. More than 42% of the area comprises of forest. Major crops include maize, rice, wheat and minor crops include vegetables, pulses and oil seeds. Total cultivated area is 166,432 hectares (Anonymous, 2013). It is divided into nine districts Bagh, Bhimber, Kotli, Mirpur, Muzaffarabad, Neelum, Hattian, Poonch and Sudhnoti (As shown in Figure 1).

#### Collection

The specimens of Coccinellid species were collected from April to October during 2009-2011 on monthly basis from all districts of Azad Jammu and Kashmir depending upon the accessibility of the area. All sorts of localities were selected such as grassy fields, bushes, field crops, orchards, residential areas, lawns of houses,

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forests, valleys, mountain peaks and alpine free zones. Ladybird beetles specimens were collected with the help of aerial nets, searching and hand picking methods. At each locality net sweeping was done 10 times while keeping hand stroke at shoulder level throughout. Collection was done between 10 am to 3 pm. Collected specimens were brought to the laboratory for mounting /pinning and identification.

#### Identification

The specimens were identified with the help of available literature and by comparison with already identified species in reference collection. Final identification was done on the basis of genitalia study. Stereoscope (Zsm-04 Labomed) was used for specimen study during identification.

#### Genitalia extraction and examination

The method of Majerus and Kearns (1989) with some modification was followed for genitalia extraction. The specimens were softened by putting them into hot water for 1 to 2 min. With the help of two entomological needles, the abdomen was detached from the body and boiled in 10% potassium hydroxide solution for 30 minutes to dissolve excess tissue. The abdomen was cleaned in hot water and transferred to pure glacial acetic acid for 5 min. To dehydrate the abdomen, it was first immersed in 80% ethanol and then in absolute alcohol for 5 min. Finally, the abdomen was moved to clove oil. The processes abdomen was put on a cavity slide with a drop of glycerin and the genitalia were extracted with the help of two entomological needles under a stereoscope. Male genitalia were mounted onto a plastic strip adhesive with hydrosoluble glue and the female genitalia onto a strip of transparent plastic with Euparal.

#### Description

The species were identified and described following the literature of Kapur (1958) Canepari and Milanese (1997) and Shunxiang (2009).

## RESULTS

During this study, different localities in 9 districts of Azad Jammu and Kashmir were surveyed during 2009-2011 for the collection of ladybird beetles. The result of present study revealed that there are 2 species in 2 genera of subfamily Coccidullinae and 30 species in 18 genera of subfamily Coccinellinae in study area.

#### Subfamily: Coccinellinae Latreille, 180

#### Diagnosis

Body medium to large, dorsal surface glabrous. Antenna 11 segmented with well-developed club; slightly shorter than head width; emarginated between mandibular bases and eyes. Mandibles with basal tooth, apex bidenticulate. Apical segment of maxillary palpi securiform or elongated, expanded towards apex and obliquely truncate. Mentum somewhat narrow to moderately joining submentum. Pronotum not closely joining elytral bases. Scutellum small, triangular, prosternum T-shaped, elytral epipleura usually broad, reaching apex without foveae. Legs rather long, tibiae without spurs. Tarsi always cryptotetramerous.

#### Genus *Adalia* Mulsant, 1846

Type species: *Coccinella bipunctata* Linnaeus.

#### 1. *Adalia tetraspilota* (Hope, 1831)

#### Synonymy

*Coccinella tetraspilota* Hope, 1831: 31. Booth and Pope, 1989: 366.

*Adalia hopii* Mulsant, 1850: 57. Booth and Pope, 1989: 356.

*Adalia tetraspilota*: Crotch, 1874:101. Korschefsky, 1932: 434. Nagarkatti and Ghani, 1972: 85.

*Adalia (Adalia) tetraspilota*: Lablokoff- Khnzorian, 1982.

#### Diagnostic characters

Body shape oval. Pronotum black with a white band on each side. Elytra yellowish red with variable numbers of black spots, spots sometimes merged into bands. Male genitalia with parameres shorter than median lobe. Siphon with capsule large and tube narrow before distal end as shown in Figure 2.

#### Remarks

Several varieties with additional or reduced number of elytral spots have been reported in literature (Mader, 1929). First described from Nepal (vide *Korschefsky*, 1932: 434). Kapur (1963) collected this species from Baluchistan and Indian Kashmir while Rafi *et al.* (2005) reported it from Pakistan.

#### Host Plant

Walnut, Fig, Akk plant, Mulbery, wheat, maize

#### Past Record

It has been collected from Bagh Azad Kashmir (Khan, 2008).

### Present Record

During present research work it is collected from throughout AJK.

### Distribution

Afghanistan, Baluchistan (Pakistan), Central Asia, China, India, Iran, Nepal, Sikkim, Tibet, W. Turkestan (Kapur, 1963; Poorani, 2004).

### Genus *Aiolocaria* Crotch, 1871

Type species: *Coccinella hexaspilota* Hope, 183.

### 2. *Aiolocaria hexaspilota* (Hope) 1831

#### Synonymy

*Coccinella hexaspilota* Hope, 1831; 31. Booth and Pope, 1989: 356.

*Caria sexspilota*: Crotch, 1874: 178.

*Aiolocaria hexaspilota*: Crotch, 1874: 178.

*Aiolocaria hexaspilota* Barovsky, 1928: 232.

*Aiolocaria hexaspilota*: Korschefsky, 1932; 277. Mader, 1934: 303.

*Leis mirabilis* Motschulsky, 1860: 246. lablokoff- Khnzorina, 1972: 165.- Solsky, 1872: 272.

*Aiolocaria mirabilis*: Korschefsky, 1932: 277.- Sasaji, 1971: 297.

### Description

Body slightly longer than width, weakly convex. Pronotum black with broad apple yellow spots at sides deep excavation at anterior margins, angles rounded. Elytra orange red with black bands or black with red or orange spots at sides. Elytral punctuation very fine, heterogeneous, epipleura very broad as shown in Figure 3.

### Male genitalia

Trab of Phalobase short, curved, thin at base, distally broad. Siphonal capsule asymmetrical, outer arm vertical, highly thick, inner arm short and curved in hook like structure. Siphonal tube very thick, abruptly curved at base, swollen beyond middle, apex terminated in needle like structure surrounded by membrane as shown in Figure 3.

### Remarks

The species has already been recorded from Kashmir (Kapur, 1958). In Russia, this beetle play important role in controlling *Gastrolina depressa* which is important pest of coniferous broad leaved forests tree *Juglans manshurica* (Kuznetsov, 1997).

Canepari (1997) also confirmed this species from Nepal Himalaya. Recently Rafi *et al.* (2005) reported this species from the Himalayan region of Pakistan including Kashmir whereas Shunxiang *et al.* (2009) reported this species from China.

### Host Plant

Walnut, apple trees

### Past record

Alam *et al.* (1969); Khan *et al.* (1999). Rafi *et al.* (2005) recorded this species from AJK.

### Present record

During present study, it was recorded from Chinari, Dhani, Lemnian, (District Hattian); Pattan Sher khan (District Sudhnoti).

### Seasonal occurrence

This species was found in month of July.

### Distribution

Russia, China, Japan, Korea, India, Taiwan, Burma, Nepal (Poorani, 2004) and Pakistan (Rafi *et al.*, 2005)

### Genus *Anegleis* lablokoff- Khnzorian, 1982

Type species: *Verania cardoni* Weise, 1892, by original designation.

### 3. *Anegleis (Verania) cardoni* Weise, 1892

#### Synonymy

*Verania cardoni* Weise, 1892: 19; 1895a: 153.

*Coelophora cardoni*: Gorham, 1894a 202; 1894b: 209.

*Micraspis cardoni*: Timberlake, 1943: 27.

*Anegleis cardoni*: lablokoff- Khnzorian, 1982: 295.

### Description

Body medium sized shiny brown. Pronotum brown with 2 black spots as shown in the Figure as shown in Figure 4. Elytra bright pinkish yellow, each elytron with one black median stripe at the junction of elytra and two

linear markings on each elytron; the anterior end is curved inward and outward curved posteriorly. One small rounded black spot towards the posterior end of each elytron.

**Male genitalia**

Trab of Phalobase short, distally thick. Basal piece long rectangular. Median lobe distally expanded, tip deeply excavated. Siphonal capsule large, outer arm long inner arm small hook like. Siphonal tube bent, long, thick at base, then straight, gradually narrowing towards apex as shown in Figure 4.

**Remarks**

*Anegleis cardoni* is similar to *Phrynocaria periotteti* in general appearance. However, it can be differentiated by its small size. *A. cardoni* has two middorsal pronotal spots while the former has single large pronotal spots while the former has single large middorsal pronotal spot. The shape of two elytral lines is also different.

**Host Plant**

Wheat, Maize, Bersem, walnut, Potato and Mulbery, Spinach

**Past Record**

This species was previously reported from Bhimber AJK by Khan *et al.* (2008).

**Present Record**

Specimens of *Anegleis cardoni* were collected from Bagh, Poonch, Sudhnoti, Hattian, Muzafrabad , Neelum, Mirpur, Bhimber and Kotli districts.

**Seasonal occurrence**

This species was collected during months of April to October.

**Distribution**

India, Pakistan, Sri Lanka, Goa (Poorani, 2004)

**Genus *Calvia* Mulsant, 1850**

**Type species:** *Coccinella decemguttata* Linnaeus, 1758: 367.

**4. *Calvia punctata* (Mulsant), 1853**

**Synonymy**

*Hormonia punctata* Mulsant, 1853a: 143; 1866: 69.

*Anisocalvia punctata*: Crotch, 1874: 144. Gordon, 1987: 17.

*Calvia punctata* : Korschefsky, 1932 : 524. Bielawski, 1963b: 17-18. Booth, 1977: 928.

*Propylea obversepunctata* Mulsant, 1853a: 156; 1853b: 28; 1866: 151. Crotch, 1874: 144 (as *Anisocalvia*). – Bielawski, 1963a: 17, Gordon, 1987: 17

**Description**

Body broadly oval, moderately convex, variable in colour as shown in Figures 5, 6, 7. Pronotum with weakly excavated anterior margin. Elytral base as wide as pronotum. Pronotum, black or yellow with two black spots. Elytra yellow or yellow brown with six black spots, sometimes completely black or dark brown with one brown spot on each elytron.

**Male genitalia**

Trab of Phalobase long, distally broad, gradually tapering towards base. Median lobe short, narrow distally wide. Siphonal tube abruptly bent at base, semicircular, cylindrical, and thick, with a bulging structure on inner side at middle. Apical portion provided with constrictions longitudinally as shown in Figure 5.

**Remarks**

The species is purely Palearctic. The species is only restricted to the northern hilly areas of the Khyber Pakhtunkhwa and Kashmir (Rafi *et al.*, 2005). The species is highly variable in colour and spot pattern. The exact identification can only be made through genitalia study.

**Host Plant**

Okra, walnut, wild plant Akk, wheat, Cabbage

**Past record**

Khan *et al.* (1999) reported this species from Bagh, Azad Jammu Kashmir as new record.

**Present record**

During present course of work, it was recorded from all districts of AJK.

**Seasonal occurrence**

During present study, it was collected from April to October.

**Distribution**

India, Nepal, Afghanistan (Poorani, 2004).Pakistan(Rafi *et al.*, 2005)

**Genus *Coccinella* Linnaeus, 1758**

**Type species:** *Coccinella septempunctata* Linnaeus, 1758.

## 5. *Coccinella septempunctata* Linnaeus, 1758

### Synonymy

*Coccinella septempunctata* Linnaeus, 1758: 365

*Coccinella septempunctata* Korschefsky, 1932 : 486. Schaefer and Semyanov, 199: 125-134.

*Coccinella divaricata* Olivier, 1808 : 1001. Korschefsky, 1932: 457. Mader, 1936: 375. Sudha Rao, 1962: 1341. Gordon, 198

*Coccinella confusa* Wiedemann, 1823: 72. - Mulsant, 1850: 112

Sudha Rao, 1962: 1341.

*Coccinella bruckii* Mulsant, 1866: 90. - Crotch, 1874: 46.

*Coccinella septempunctata brucki*: Korschefsky, 1932: 491.

### Description

Body oval, nearly hemispherical and densely punctate as shown in Figure 8. Pronotum twice as broad as long, finely punctate, black with small yellow spots at anterior angles. Elytra glabrous, with 7 black spots, one common post scutellar, one on each elytron at middle near suture, 2 near lateral margins.

### Male genitalia

Trab of Phalobase short and uniformly thick. Median lobe short, very broad at base tapering towards apex, tip rounded. Siphonal capsule asymmetrical somewhat T shape thick, outer arm straight and thick, inner arm thin. Siphonal tube thick, cylindrical, abruptly bent at base then somewhat straight. Distal portion appears to be distorted at three points, apex flattened as shown in Figure 8.

### Remarks

The elytral spots of this species are considerably variable in size and may be much enlarged or sometimes connected with each other or confluent. This variation is classified into four morphs. This Palearctic species extends widely beyond the Palearctic region.

### Past record

Previously Chaudhry *et al.* (1966), Khan *et al.* (1999), Khan *et al.* (1999) Inayatullah *et al.* (2005), Rafi *et al.* (2005) and Khan *et al.* (2008) reported this species from AJK.

### Host Plants

Collected from all sort of vegetation including field crops, trees, grasses

### Present record

It was collected from all localities of Azad Jammu Kashmir.

### Seasonal occurrence

Available data shows that this species is active throughout the year.

### Distribution

Pakistan (Chaudhry *et al.*, 1966), Bhutan, India, Nepal, North America; Palearctic region; Sri Lanka, (Poorani, 2004).

## 6. *Coccinella transversalis* (Fabricius, 1781)

### Synonymy

*Coccinella transversalis* Fabricius, 1781. Spec. Ins.: 97.

*Coccinella transversalis* Fabricius, 1943: Timberlake, Bull. Hawaiian Sug. Plrs. Ass E xp.Stn.1943. Nov.22: 14.

*Coccinella transversalis* Fabricius, 1962: Kapur, Proc. Ist All- India Congr. Zool: 479.

*Coccinella transversalis* Fabricius, 1966: Kapur, Proc. Nat. Inst. Sci. India, 32B (3 & 4): 178.

### Description

Body slightly elongate, pronotum with antero-lateral orange spots as shown in Figure 9. Elytra dull orange and yellowish brown, with black variably arranged spots. On each elytron, the first irregular patch small; the second patch across elytra large; the third only rounded spots across the elytra, longitudinal black band along the inner junction of elytra.

### Male genitalia

Trab of Phalobase long and thick. Basal piece quadrate. Median lobes broad, apically narrow. Siphonal capsule unique, outer arm long straight and thick, inner arm short hooked. Siphonal tube circularly forming a loop, then straight up to three-fourth of its length. A transparent bubble like structure on dorsal side on subdistal portion. Tip forming hook. Male genitalia of *Coccinella transversalis* as shown in Figure 9.

### Remarks

The species is originally described from South India; however, the species extends to other parts of Palearctic region, upto Japan in north and to Australia in south. It is also variable in colouration especially in the elytral pattern.

**Host Plants**

Brassica, wheat, Rose, cucumber

**Past record**

Khan *et al.* (1999) record this species from Pattan Sher Khan (Sudhnuti), while Inayatullah *et al.* (2005) reported from Rawalakot, Hajera (Poonch). Khan *et al.* (2008) reported it from Rawalakot, Hajera Pattan Sher Khan while compiling the Insect Fauna of Azad Jammu and Kashmir.

**Present record**

During present research work specimens of this species were collected from all selected localities of AJK.

**Seasonal occurrence**

This species was collected from April to October.

**Distribution**

Australia, Bangladesh, China, India, Indochina, Indonesia, Japan, Nepal, New Zealand, Sri Lanka (Poorani, 2004) and Pakistan(Khan *et al.* 2008).

**7. *Coccinella undecimpunctata* Linnaeus, 1758**

**Synonymy**

*Coccinella undecimpunctata* Linnaeus, 1758: 366. Mulsant, 1846: 71; 1866: 85. lablokoff- Khnzorian, 1979 : 66; 1982; 351.- Pope, 1989: 651.

*Coccinella (Dobzhanskia) undecimpunctata*: lablokoff- Khnzorian, 1982: 71.

**Description**

Body elongate, oval, convex, densely punctate. Pronotum black, yellow spots at each anterior angle, spots often elongated along lateral margin. Elytra yellow to red possessing five black spots on either one as shown in Figure 10. A big scutellar black spot present in addition to the common spot on both elytra.

**Male genitalia**

Trab of phalobase long, and thick, basal piece somewhat triangular. Paramers cylindrical, curved at middle provided with apical thorns. Median lobe thick and broad. Siphon; head capsule normal, siphonal tube broadly turn upto maximum of its length, subapical portion narrow up to apex as shown in Figure 10.

**Remarks**

Superficially similar to *C. septempunctata* but smaller in size. Therefore, sometime it is confused with *C. septempunctata*. The two can be separated by spotted pattern. In the case of *Coccinella undecimpunctata*, elytra red with 11 black spots of nearly equal size. This species can easily distinguish from *C. aini* by male genitalia (Kuznetsov, 1997).

**Host Plants**

Wheat and Bersem

**Past record**

Khan *et al.* (1999), Inayatullah *et al.* (2005) and Rafi *et al.* (2005) reported this species from AJK. It was recorded from Hajera and Pattan Sher Khan by Khan *et al.* (2008).

**Present record**

During this study, it is collected from Maglora (District Bhimber); Hattian, Dhani (District Hattian), Chockian (District Mirpur), Rawalakot (District Poonch), Baloch (District Sudhnuti).

**Seasonal occurrence**

Specimens of this species were collected from May to June.

**Distribution**

Pakistan (Khan *et al.*, 1999), Central Asia, China, Europe, Kazakhstan, Mongolia, North Africa, North America, Russia, Siberia (Rafi *et al.*, 2005).

**Genus *Harmonia* Mulsant, 1853**

**Type species:** *Coccinella marginepunctata* Schaller, 178.

**8. *Harmonia dimidiata* (Fabricius, 1781)**

**Synonymy**

*Coccinella dimidiata* Fabricius, 1781: 94.

*Coccinella dimidiata* Hope, 1831: 30. Booth and Pope, 1989: 352.

*Leis dimidiata* Mulsant, 1850: 242.- Crotch, 1874 : 119.- Korschefsky,1932 :273. Mader, 1934: 307-308.

*Coccinella quindecimmaculata* Hope, 1831: 30. Synonymised by Sicard, 1913. Booth and Pope, 1989: 361.

*Coccinella bicolor* Hope, 1831: 31. Synonymised by Crotch, 1874: 32, 119. - Booth and Pope, 1989: 348.

*Harmonia dimidiata*: Miyatake, 1965: 62. - Sasaji, 1971: 281.; 1977: 12 Singh and Phaloura, 1990: 89. Gordon, 1985: 834.

### **Description**

Body strongly oval and convex, variable in colour as shown in Figures 11, 12. Pronotum variable, sometime straw yellow with 5 black spots or lateral spots joined to form 2 curved lines, M- shaped mark present. Pronotum in some specimens brownish with 2 black rounded spots in centre. Elytral colour pale yellow with or without black spots or one third of anterior portion of elytra brownish yellow, the remaining elytra black.

### **Male genitalia**

Trab of phalobase long, thin, curved provided with membrane distally. Basal piece large, oblong. Median lobe basally thick, then gradually tapering towards apex, subapically constricted, apex rounded curved.

### **Remarks**

More than three polymorphic forms exist in AJK alone. This species is extremely variable in colour pattern, there being some 15 aberrations already recorded (Kapur, 1963). Rafi *et al.* (2005) recorded it from Pakistan. They also mentioned that in Rawalakot this species exists in two polymorphic forms. Shunxiang *et al.* (2009) also reported three polymorphic forms of this species from China.

### **Host Plant**

Akk plant, custard plant, walnut, wheat and lettuce

### **Past record**

Khan *et al.* (1999) reported it from AJK. Inayatullah *et al.* (2005) recorded this species from Rawalakot and Abbaspur (Poonch).

### **Present record**

During this study it was collected from district Poonch, Bagh, Sudhnoti, Mirpur, Kotli, Bhimber, Hattian, Muzafarabad and Neelum.

### **Seasonal occurrence**

During present investigation, this species was collected from April to October.

### **Distribution**

Assam, Bhutan, China, Kashmir (India), Nepal, Taiwan. This species is widely distributed in northern India, especially in the Himalayas, and in China and Japan although its type locality remains "Coromandel" (Kapur, 1963) and Pakistan (Rafi *et al.*, 2005)

## **9. *Harmonia eucharis* (Mulsant, 1853)**

### **Synonymy**

*Ballia eucharis* Mulsant, 1853a: 167; 1866: 191; Crotch, 1874: 127; Weise, 1895b: 132; Ghani, 1962: 7; Nagarkatti and Ghani, 1972; Gordon, 1987: 15.

*Harmonia eucharis* lablokoff-Khnzorian, 1979: 71; 1982. Singh and Phaloura, 1990: 89.

*Ballia dianae* Mulsant, 1853a: 164; Crotch, 1874: 127; - Gordon, 1987: 15.

*Ballia dianae* var. *saundersii* Crotch, 1874: 127; Gordon, 1987: 15.

### **Description**

Body hemispherical, general colour creamy grey with yellow tinge as shown in Figure 13. Pronotum dirty yellowish grey, with pale brownish markings. Elytral spots variable, spots distinct or indistinct or fused into bands.

### **Male genitalia**

Trab of phalobase long thin, loope like, basal piece triangular. Parameres long thick, ridge on middorsal side, distal portion expanded. Siphon; asymmetrical, outer hook long and broad, inward short, siphonal tube forming loope constrictions at base, sub-apical portion very thin as shown in Figure 13.

### **Remarks**

Previously this species was known as *Ballia eucharis*. The species is highly variable in external morphology. Shunxiang *et al.* (2009) depicted 12 morph plates of this species from China. Sharma and Joshi (2010) recently reported this species from Uttarakhand, India with various morphs. During this study, it was rarely found.

### **Host Plant**

Coriander, wheat

### **Past record**

It was collected from Bagh Kashmir (Rafi *et al.*, 2005).

### **Present record**

It was collected from Bagh (District Bagh); Rawalakot (District Poonch).

### **Seasonal occurrence**

This species was found active during April, May, June and July.

**Distribution**

Burma, India, Myanmar, Nepal, Southern China (Poorani, 2004) and Kashmir (Pakistan) Rafi *et al.* (2005).

**Genus:** *Hippodamia (Adonia) Mulsant, 1847*

**Type species:** *Coccinella tredecimpunctata* Linnaeus, 1758.

**10. *Hippodamia variegata* (Goeze, 1777)**

**Synonymy**

*Coccinella variegata* Goeze, 1777: 246.

*Adonia variegata* Mulsant, 1846: 39; Korschefsky, 1932: 346; Kapur, 1942: 50-53, 1957: 269.

*Hippodamia variegata* Belicek, 1976: 338.

*Hippodamia (Adonia) variegata* Iablokoff- Khnzorian, 1982: 326.

**Description**

Body slightly elongate. Pronotum yellow white with brownish black area in the form of transverse brownish black brown band along the posterior margin and four finger like thick anterior projections. Elytra red or orange with 13 or only few black spots of variable shapes as shown in Figure 14. There are 6 spots along with one spot on the mid-dorsal line of junction of elytra near the scutellum.

**Male genitalia**

Trab of phalobase short, broad, apex wide and deeply concave. Basal piece quadrate, equal in length to median lobe. Median lobe equal in size to parameres. Siphonal capsule simple, tube forming loop, wide at middle, when seen from below two arms like structures protrudes then abruptly tapering up to apex as shown in Figure 14.

**Remarks**

The species has elytral (Kapur, 1958) and colour variation. The white lines that converge behind the head are common in the individuals (Kapur, 1958). Kapur (1963) also stated that the body size of this species varies according to altitude of the habitat. The species belongs to Palaearctic region but also found in the neighbouring parts of the Ethiopian and the Oriental regions. Shunxiang *et al.* (2009) also recorded it from the China.

Sharma and Joshi (2010) found its adults feeding on *M. persicae* and *A. craccivora* in Uttar Pradesh, India.

**Host Plant**

Apple, walnut, mulberry, fig trees, wheat, cabbage, brassica, wild plants

**Past record**

Previously Khan *et al.* (1999), Khan *et al.* (1999), Inayatullah *et al.* (2005), Rafi *et al.* (2005) and Khan *et al.* (2008) reported this species from AJK.

**Present record**

During present study, it was collected from Bagh, Bhimber, Kotli, Mirpur and Poonch districts of AJK.

**Seasonal occurrence**

Adults of this species were active during April, May and June, however found throughout the year.

**Distribution**

It is cosmopolitan in distribution like Afghanistan, China, India, Mangolia, Nepal, Northern and Eastern Africa, Pakistan, Palaearctic, Tibet (Poorani, 2004).

**Genus *Illeis* Mulsant, 1847**

**Type species:** *Coccinella cincta* Fabricius, 1798: 77.

**11. *Illeis confusa* Timberlake, 1943**

**Synonymy**

*Illeus confusa* Timberlake, 1943:61; Bielawski, 1961a: 361.

**Description**

Body medium sized, elongate oval, weakly convex. Pronotum creamy with 2 black spots in centre as shown in Figure 15. Elytra creamy in colour and without spots.

**Male genitalia**

Trab of phalobase transparent and thin. Median lobe long, broad at base. Parameres moderately bent at base in circular form, straight up to apex. Apex dilated, slightly turned with small notch. Siphon: head capsule transparent, bent from half, tapering towards tip as shown in Figure 15.

**Remarks**

The four species of the genus *Illeus* (*I. confusa*, *I. indica*, *I. timberlakei*, *I. shensiensis*) collected during this study were highly confusing each other both in external appearance as well as in male genital structure. Bielawski (1961) separated these species on the basis of differences in their siphonal tip. Ansar (2002) reported this species from Lahore, Pakistan.

**Host Plant**

Shisham trees

**Past record**

Khan *et al.* (1999) and Rafi *et al.* (2005) reported it from Azad Kashmir.

**Present Record**

It was collected from Bagh Sudhan Gali, (District Bagh); Azad Pattan , Gorah (District Sudhnuti) Jatlan (District Mirpur); Abasspur, Gameer, Hajera, Khaigala, Mandhol, Mang, Rawalakot (District Poonch).

**Seasonal occurrence**

Present collection data show that this species was active during August, September and October.

**Distribution**

China, Hong Kong, India, Nepal, Thailand (Poorani, 2004) Pakistan (Khan *et al.*, 1999 and Rafi *et al.*, 2005)

**12. *Illeis timberlakei* Bielawski, 1961**

**Synonymy**

*Illeis timberlakei* Bielawski, 1961.

**Description**

Body oval, shiny cream or light brown in colour. Pronotum transparent, creamy mouthparts, antenna and elytra creamy in colour. Scutellum small. Elytra creamy without spot as shown in Figure 16.

**Male genitalia**

Trab of phalobase long, narrow at base, distally expanded. Median lobe long, tubular broad at base. Apex curved gradually and pointed without hairs. Siphon, capsule asymmetrical, outer arm long and broad, inner very short and curved. Tube with curve at base, straight, distally expanded, spoon like as shown in Figure 16.

**Remarks**

As discussed under *I. confusa*.

**Host Plant**

Shisham trees

**Past record**

Khan *et al.* (1999) recorded this species from Mang (Sudhnuti) Azad Jammu & Kashmir.

**Present record**

Presently it is collected from Abasspur, Hajera, Rawalakot, Topa (District Poonch).

**Seasonal occurrence**

Specimens of this species were found during September - October.

**Distribution**

Pakistan (Khan *et al.*, 1990), China, Nepal, Thailand (Shunxiang *et al.*, 2009).

**13. *Illeis indica* Timberlake 1943**

**Synonymy**

*Illeus indica* Timberlake, 1943: 61; Bielawski, 61a: 364; lablokoff- Khnzorian, 1982: 294.

**Description**

Body medium sized. Pronotum large, anterior margin slightly concave, outer margin circular, cavities before outer margin, transparent whitish yellow, two hazy black spots on anterior margin, two black spots on posterior margin as shown in Figure 17. Elytra pale brown, glabrous.

**Male genitalia**

Trab of phalobase moderate in size distally expanded. Basal piece comparatively thin, dorsal side highly pointed. Median lobes thick, broad at base up to middle, tip highly curved. Siphonal capsule triangular, siphonal tube bent slightly before middle then straight, sub distal portion distally bent, tip pointed as shown in Figure 17.

**Remarks**

Kapur (1965) stated that this species can be recognized from other closely resembling species by the distinctly bifurcate apex of the siphon (male genitalia). The species was first described from Lahore, but has since been recorded from New Dehli and Calcutta by Bielawski (1961). Shunxiang *et al.* (2009) reported from China.

**Host Plant**

Shisham tree

**Past record**

New record from Pakistan

**Present record**

It was collected only from Chechian (District Mirpur).

**Seasonal occurrence**

Collection data suggest that this species was found during April and May.

**Distribution**

India, Pakistan, Thailand (Poorani, 2004).

**14. *Illeis shensiensis* Timberlake, 1943**

**Synonymy**

*Illeis shensiensis* Timberlake, 1943.

**Description**

Body brown semicircular. Pronotum transparent, anterior margin slightly depress, outer margin rounded. Posterior margins completely joining elytra. Two black circular spots on posterior margin on equal distance as shown in Figure 18. A line somewhat “V” shapes between two spots. Scutellum visible. Elytra anterior margin straight, ground colour brown with slight dark shades. Epipleura, anterior elytral margin, mid dorsal line pale.

**Male genitalia**

Trab long, thin at base distally expanded. Parameres long, curved at base, slightly expanded. Median lobe long, tubular, forming ridge at base on inner side then gradually tapering towards apex. Siphonal capsule thick, outer arm thick long, inner arm rudimentary, tube straight, siphonal tip expanded in the form of spoon like structure as shown in Figure 18.

**Remarks**

As discussed under *I. confusa*. Shunxiang *et al.* (2009) recorded it with male genital illustrations from China.

**Host Plant**

Shisham tree

**Past Record**

Previously not reported.

**Present record**

During present course of work this species was collected from Bhimber (District Bhimber).

**Seasonal occurrence**

This species was found only in month of May.

**Distribution**

America, China, Vitenam (Shunxiang *et al.*, 2009).

**Genus *Coelophora* Mulsant, 1850**

**Type species:** *Lemnia fraudulenta* Mulsant.

**15. *Coelophora bissellata* Mulsant 1850**

**Synonymy**

*Coelophora bissellata* Mulsant, 1850: 400; Booth and Pope, 1989: 348; Rhamhalinghan, 1989: 114-117.

*Spilocaria bissellata*: Timberlake, 1943: 58.

*Lemnia (Spilocaria) bissellata*: Iablokoff- Khnzorian, 1979:62.

*Lemnia bissellata* Hoang, 1983: 74; Iablokoff- Khnzorian, 1982: 218.

*Caria gracilicornis* Weise, 1902: 505.

**Description**

Body rounded, weakly convex. Pronotum brownish with black colour in the center. Scutellum black. Pronotal or elytral spots sometimes reduced in size or number. Elytra dull orange with 4 black round spots on each elytron and one on the mid dorsal line along junction of elytra near the scutellum as shown in Figure 19.

**Male genitalia**

Trab of phalobase short and thick except middle. Basal piece broad, dorsally deep and concave. Median lobe thick broad except apex. Apical portion abruptly thin and curved. Siphonal capsule Y shape. Tube broadly curved, semicircular, broaden beyond middle then narrow up to apex. Apex slightly widen and transparent as shown in Figure 19.

**Remarks**

The species somewhat resembles with *L. duvauceli* (Mulsant) in ground colour and elytral spot pattern. However, they can be separated by the spot pattern of pronotum. *C. bisselata* has two additional small lateral black spot while *L. duvaceli* lack these spots. Similarly, *C. bisselata* has two additional spots on anal portion of elytra. For exact differentiation between the two species, male genitalia may be studied.

**Host Plant**

Custard plant, walnut, wheat

**Past record**

Previously it was collected from Rawalakot (Poonch) (Inayatullah, *et al.*, 2005).

#### **Present record**

During this study, it was recorded from Districts Bhimber, Muzafarbad District Neelum and Poonch.

#### **Seasonal occurrence**

This species was found active from April to October.

#### **Distribution**

Bangladesh, China, India, Nepal, New Guinea, Sumatra, Thailand, Vitenam (Poorani, 2004) and Rawalakot (Pakistan) Inayatullah *et al.* (2005).

#### **Genus *Cheilomenes* Dejean, 1836**

**Type species:** *Coccinella lunata* Fabricius, by subsequent designation of (Crotch, 1874.)

#### **16. *Cheilomenes sexmaculatus* (Fabricius) 1781**

##### **Synonymy**

*Coccinella sexmaculata* Fabricius, 1781: 96.

*Cheilomenes quadriplagiata*: Dejean, 1837: 435; Mulsant, 1850: 447; 1866: 290;

Crotch, 1871: 8; 1874: 181 (as Chilomenes).

*Cheilomenes sexmaculata* var. *flavofasciata* Mulsant, 1850: 446; Mader, 1935: 352.

*Orcus mollipes* Olliff, 1895: 30. Synonymised by Pope, 1989: 646.

*Chilomenes hiugaensis* Takizawa, 1917: 221. - Sasaji, 1971: 285.

*Micraspis inops*: Chuniram and Sasaji, 1980: 488; lablokoff- Khnzorian, 1982.

##### **Description**

Body nearly rounded, glabrous with variable colour pattern as shown in Figures 20, 21. Pronotum yellowish brown with a transverse black brownish band in middle near the posterior margin and another smaller black transverse band anterior to first one and connected to each other in center. Elytra generally brownish yellow, spots black in the form of transverse zig zag patches. On each elytra, the first patch small, inverted V- shaped, the second complete W- shaped and the third rounded. A narrow longitudinal brownish black band is present along the line of elytra junction.

##### **Male genitalia**

Trab long and broad distally. Median lobe short than parameres, outer side straight, inner side convex slightly constricted apically, tip pointed. Siphonal tube deeply curved at base then become straight up to three-fourth of its length as shown in Figure 20.

##### **Remarks**

The various colour morphs of this species are frequently misidentified as *Micraspis discolor* and *Chilocorus nigrita*. The following variations are frequently seen: (a) Elytra yellowish / pink/ orange without any markings except for a black sutural stipe, (b) elytra and pronotum partially black leaving only the margins (c) more or less completely black, and (d) the elytral markings coalesce and form broader bands. The pronotal marking is always constant and can be faintly seen even in completely black forms.

Poorani (2004), Slipinski (2007) has used the name *Menochilus sexmaculatus* for this species. Sharma and Joshi (2010) named this species as *Cheilomenes sexmaculata*. The generic placement of this species has not been conclusively resolved.

##### **Host Plant**

Walnut, wheat, maize, brassica, fig, apple, mulberry, cabbage, potato, tomato

##### **Past Record**

It is widely distributed in the AJK.

##### **Present Record**

It was collected from Neelum, Hattian, Muzafarbad, Mirpur, Kotli, Bhimber, Sudhnoti, Bagh, Poonch.

##### **Seasonal occurrence**

Active almost throughout the year in several parts of AJK. Individuals of this species were found in large numbers from May to August.

##### **Distribution**

Afghanistan, Bangladesh, Bhutan, China, India, Indonesia, Iran, Japan, Japan, Malaysia, Myanmar, Nepal. New Guinea, Oriental region; Philippines, Sri Lanka, Taiwan, Vietnam (Poorani, 2004) and Pakistan (Khan *et al.*, 1999 and Rafi *et al.*, 2005)

#### **Genus *Micraspis* Chevrolat in Dejean, 1836**

**Type species:** *Coccinella striata* Fabricius, 1792.

#### **17. *Micraspis allardi* (Mulsant) 1982**

##### **Synonymy**

*Lemnia allardi* Mulsant, 1866 : 249.

*Verania allardi* Crotch, 1874 : 177; Korschefsky, 1932: 307; Gordon, 1987: 22.

*Verania malaccensis* Crotch, 1874: 177.

*Verania allardi* var. *malaccensis*: Weise, 1912; 115; Korschefsky, 1932: 307.

*Micraspis allardi* lablokoff- Khnzorian, 1982; Hoang, 1983: 59.

#### **Description**

Body round, deeply convex. Head deeply inserted not visible from above. Elytra yellow. Two black spots on the metathorax on either side of the mid-dorsal line near elytral base. Two large black spots on each elytron as shown in Figure 22.

#### **Male genitalia**

Trab of phalobase long and distally expanded. Median lobe broad at base gradually tapering towards apex, tip slightly pointed. Siphon, capsule asymmetrical; oblique, inner arm short, outer arm long, siphonal tube narrowly bent at base. Another bent at three-fourth of its length, constrictions on apical portion as shown in Figure 22.

#### **Remarks**

Ansar (2002) during his course of study reported this species from Lahore, Pakistan. This species was reported from various regions of Pakistan by Rafi *et al.* (2005). Shunxiang *et al.* (2009) also reported this species from China with colour pictures of male genitalia.

#### **Host Plant**

Walnut, Custard plant, Bersem, cucumber

#### **Past record**

Previously it was collected from Bhimber AJK (Rafi *et al.*, 2005).

#### **Present record**

During present course of work it was collected from District Bagh, Bhimber, Hattian, Mirpur, Muzafarabad, Poonch and Sudhnoti.

#### **Seasonal Occurrence**

This species was collected from April to October.

#### **Distribution**

India, Indonesia, Myanmar, Nepal, Pakistan (Poorani, 2004).

### **18. *Micraspis vincta* (Gorham)**

#### **Synonymy**

*Verania vincta* Gorham, 1895: 686 (BMNH).

*Verania inops* f. *vincta*: Bielawiski and Chujo, 1961: 334.

*Micraspis vincta*: Sasaji, 1968b:132; Chunram and Sasaji, 1980: 488.

#### **Description**

Body semi-circular, highly convex. Pronotum mostly black, anterior and outer margin black. Elytra glabrous, deep brown, with three long stripes, one along suture, two on equal distance from suture as shown in Figure 23. Epiplura visible, deep black in colour.

#### **Male genitalia**

Trab of phalobase short. Basal piece quadrate. Parameres long, cylindrical, uniformly thick, sparse hairs on subdistal and apical portion. Median lobe moderately thick tubular, gradually tapering towards apex, tip pointed. Siphonal capsule with subequal arms, siphonal tube narrowly bent at base, with constrictions on apical portion, slightly curved as shown in Figure 23.

#### **Remarks**

Canepari and Milanese (1997) reported this species from Nepal Himalayas. Rafi *et al.* (2005) named this species as *M. inops* and reported it from Islamabad as new record from Pakistan. Poorani (2004) mentioned this species in Coccinellids of the Indian Region. Sharma and Joshi (2010) also reported this species from District Dehradun, India.

#### **Host Plant**

Custard plant

#### **Past record**

This is new record for AJK.

#### **Present record**

During present work only one specimen is collected from Bhimber (District Bhimber).

#### **Seasonal occurrence**

This species was only collected in the month of April.

#### **Distribution**

Burma, India, Indonesia. Nepal, Thailand (Canepari and Milanese, 1997) and Pakistan (Rafi *et al.*, 2005).

**Genus *Oenopia* Mulsant, 1850**

**Type species:** *Oenopia cinctella* Mulsant.

**19. *Oenopia conglobata* Linnaeus, 1758**

**Synonymy**

*Coccinella conglobata* Linnaeus, 1758: 366.

*Synharmonia conglobata*: Ganglbauer, 1899: 994; - Mader, 1931: 200.

*Propylea conglobata*: Crotch, 1874: 158.

*Harmonia conglobata* Dauguet, 1949: 34.

*Oenopia conglobata*: lablokoff – Khnzorian, 1982.

**Description**

Body oblong oval, slightly convex, coarsely punctate variable in colour as shown in Figures 24, 25. Pronotum yellow, usually with 7 black spots, 4 of which form a semicircle, one located at middle of the base and one at each lateral part. Scutellum small and black.

**Male genitalia**

Trab of phalobase moderate in size, cylindrical, distally broad. Median lobe short, thick, subapical portion constricted, tip concave. Siphonal capsule with outer arm straight, inner arm curved. Tube thick, broadly curved at base then straight. Subapex abruptly narrow making needle like structure as shown in Figure 24.

**Remarks**

Kuznetsov (1997) reported this species from Russia. Rafi *et al.* (2005) reported this species from Chitral and Rawalakot as new record for Pakistan. Shunxiang *et al.* (2009) reported this species from China with male genitalia illustrations.

**Host Plant**

Brassica, wheat, walnut, cabbage, fig

**Past record**

From AJ K, it was collected from Rawalakot (Rafi *et al.*, 2005).

**Present record**

From all selected localities Hajera, Abasspur, Rawalakot (District Poonch), Chinari, Lemnia (District Hattian) Muzafrabad, brarkot, Jatlan, islamghar

**Seasonal occurrence**

This species remains active from April to October.

**Distribution**

Central Asia, Mongolia, North Africa, North America, Northern China, Russia, Siberia, Ukraine, Western Europe (Kuznetsov, 1997) and Pakistan (Rafi *et al.*, 2005)

**20. *Oenopia mimica* Weise, 1902**

**Synonymy**

*Oenopia mimica* Weise, 1902: 505; Korschefsky, 1932: 288 (cat.);- lablokoff. – Khnzorian, 1979: 70.

*Oenopia sauzeti sensu* Kapur, 1958: 331.

*Gyrocaria mimica*: Miyatake, 1985: 16.

**Description**

Body round, strongly convex. Pronotum black anterio-laterally with yellowish spots as shown in Figure as shown in Figure 26. Elytra dark yellowish white with black spots, spots quite large and round. There are 6 spots, 2 complete on each elytron and 2 on middorsal line of elytral junction of elytra. Two central spots connected by band of same colour to one another.

**Male genitalia**

Trab of phalobase short and distally expanded. Siphonal capsule with inner arm short, hook like, outer arm long and straight. Tube thick through, slightly curved up to distal portion. A membranous layer on inner side in the middle portion, tip slightly constricted as shown in Figure 26.

**Remarks**

Rafi *et al.* (2005) reported this species as new recorded from Pakistan. During this study, we studied the collection of Rafi *et al.* (2005) and found that they had confused *O. mimica* and *O. sauzeti* with each other. But *O. sauzeti* is small in size. Both species also closely related to each other in male genital structure as well as in the color pattern, and has been synonymized with *sauzeti* by labrokoff- Khnzorian (1979).

**Host Plant**

Wheat, walnut, Bersem, tomato, custard plant, fig, shisham trees, berseem, brassica

**Past record:**

Previously it was collected from Rawalakot and Hajera by Inayatullah *et al.* (2005).

**Present record**

During present course of work, it was collected from District Bhimber, Bagh, Hattian, Kotli, Mirpur, Muzafarabad, Poonch and Sudhnoti.

**Seasonal occurrence**

This species was collected from April to October.

**Distribution**

India, Nepal, Pakistan (Poorani, 2004).

**21. *Oenopia sauzeti* Mulsant, 1866 Bielawski,**

**Synonymy**

*Oenopia sauzeti* Mulsant, 1866: 281; 1870: 55. Crotch, 1874: 158; Korschefsky, 1932: 288; Kapur, 1958: 331; 1963b: 27.-1972: 302; 1979: 117; Gordon, 1987: 19.

*Gyrocaria sauzeti*: Miyatake, 1967: 76; 1985: 15.

**Description**

Body round, strongly convex. Pronotum black with yellowish spots, loosely attached with the body. Elytra light yellowish- white with brownish black spots. Spots are quite large and round as shown in Figure 27. Six spots on elytra; 2 complete on each elytron and 2 on mid-dorsal line of junction of the elytra. The 2 central spots connected by band of the same colour to one another.

**Male genitalia**

Trab of phalobase long and slightly curved inward. Median lobe; thick, short, subapical portion broad curved inward at middle. Siphonal capsule asymmetrical, triangular in shape, outer arm long while inner arm short, tube deeply curved at base, terminated in transparent structure as shown in Figure 27.

**Remarks**

Rafi *et al.* (2005) recorded it from Northern Pakistan and Azad Jammu Kashmir. According to the Zoological survey of India this species was reported from Murree and Dalhousie Hills (Punjab), Kumaun Hills (U. P) Sikkim and Darjeeling District (N. Bengal). In this species colour pattern does not appear to be very variable (Kapur 1958). Miyatake (1985) named this species *Gyrocaria sauzeti*.

**Host Plant**

Okra, cabbage, brassica, walnut, fig, wheat

**Past record**

Previously, Chaudhry *et al.*, 1970, Khan *et al.*, 1999 and Inayatullah *et al.* (2005) reported this species from Azad Jammu Kashmir.

**Present record**

It was reported from districts Bagh, Bhimber, Hattian, Kotli, Mirpur Muzafarabad, Neelum, Poonch, Sudhnoti

**Seasonal occurrence**

Available data show that this species is found active from April to October however it was found abundantly during May, June and August.

**Distribution**

Bhutan, Himalayas, India, Myamar, Nepal, Sikkim, Southern China, Thailand (Poorani, 2004) and Inayatullah *et al.*, 2005)

**Genus *Palaeoneda* Crotch, 1874**

**Type species:** *Coccinella miniata* Hope, 1831: 30.

**22. *Palaeoneda auriculata* (Mulsant) 1871**

**Synonymy**

*Neda auriculata* Mulsant, 1866: 195. Gordon, 1987: 22.

*Paleoneda auriculata* Crotch, 1871: 5; 1874: 32; Booth and Pope, 1989: 359.

*Paleoneda miniata ab. auriculata* Crotch, 1874: 178; Korschefsky, 1932: 279.

*Coccinella miniata* Hope, 1831: 30; Crotch, 1871: 5; 1874: 32; Booth and Pope, 1989: 359.

*Neda miniata*: Mulsant, 1850: 276; 1866: 196.

*Paleoneda miniata*: Crotch, 1874: 178; Korschefsky, 1932: 279.

**Description**

Body nearly round, slightly longer than wide, large, surface shiny, weakly convex. Pronotum black with broad white or creamy spots at both sides. Elytra orange in colour, without any spot, epipleura very broad as shown in Figure 28.

**Male genitalia**

Trab of phalobase long, uniformly thick, distally curved. Parameres; thick, cylindrical, slightly constricted at middle. Median lobe; broad, distal portion slightly narrow, apex without hairs. Siphonal capsule; thick outer arm

straight, inner arm hooked. Capsule very thick, abruptly curved at base. Sub apex abruptly narrow, apex again swollen as shown in Figure 28.

**Remarks**

Biogeographically this is Palearctic species and was previously reported from Nepal (Kapur, 1958); Azad Jammu and Kashmir (Rafi *et al.*, 2005) and China (Shunxiang *et al.*, 2009).

**Host Plant**

Walnut, Bersem

**Past record**

Previously it was collected from Mang (Khan *et al.*, 1999).

**Present record**

During present work it was collected from Mongbajri (District Bagh), Dudial (District Mirpur), Hajera (District Poonch) Pattan Sher Khan (District Sudhnoti).

**Seasonal occurrence**

This species was collected from May to June

**Distribution**

India, Nepal (Poorani, 2004) and Pakistan(Khan *et al.*1999).

**Genus *Propylea* Mulsant, 1850**

**Type species:** *Coccinella quatuordecimpunctata* Linneaus, 1758.

**23. *Propylea dissecta* (Mulsant, 1850)**

**Synonymy**

*Lemnia (Vola) dissecta* Mulsant, 1850: 37.

*Lemnia mystacea* Mulsant, 1853: 50-51.

*Lemnia dissecta* Mulsant, 1866: 249.

*Harmonia feliciae* Mulsant, 1866: 57.

*Propylea dissecta*: Crotch, 1874: 158.

*Propylaea fallax* Yablokov - Khnzorian, 1977: 66; lablokoff- Khnz, Orian, 1982:171; -Canepari, 1986: 28.

*Propylea japonica ab. dissecta*: Korschefsky, 1932: 531.

**Description**

Body oval, moderately convex and variable in colour as shown in Figure 29, 30. Pronotum black or half black and half pale yellow. Body brownish with 4 black spots, 2 on each elytron, one anteriorly and one posteriorly. Mid dorsal line of elytra black. Each elytron with black parasutural stripe. Epipleura pale yellow.

**Male genitalia**

Trab of phalobase moderately long, slender, curved. Basal piece oblong. Parameres slightly curved, cylindrical, tip rounded. Median lobe; uniformly thick, tubular, length equal to parameres. Siphonal capsule normal, arm sub-equal in size, tube abruptly bent at base, then straight up to apex, tip constricted and convoluted in the form of hair like structure as shown in Figure 29.

**Remarks**

Mulsant described this species three times from India, but Crotch (1874) declared as these forms merely of one species. Weise (1892) treated the forms *dissecta* and *feliciae* as aberrations of *Halysia (Propylea) Japonica* (Thunberg, 1781) and his opinion has been adopted by many authors (Korschefsky, 1932, etc.). However, Miyatake (1985) stated that *P. japonica* and *P. dissecta* have some difference despite the strong similarity in male and female genitalia and included these two to the filicae type of *P. dissecta*. Rafi *et al.* (2005) reported this species from Pakistan.

**Host Plant**

Akk plant, custard plant, wheat, okra, walnut, brassica

**Past record**

Previuosly Khan *et al.* (1999) and Inayatullah *et al.* (2005) reported this species from AJK.

**Present record**

Recorded from district Poonch, Bagh, Sudhnoti, Mirpur, Bhimber, Kotli, Hattian, Muzafrabad, Neelum.

**Seasonal occurrence**

This species was found throughout the year from April to October.

**Distribution**

Bangladesh, India, Nepal (Poorani, 2004) and Pakistan (Khan *et al.*, 1999 and Inayatullah *et al.*, 2005)

**24. *Propylea luteopustulata* (Mulsant, 1850)**

**Synonymy**

*Oenopia (Pania) luteopustulata* Mulsant, 1850: 421.

*Pania luteopustulata* lablokoff – Khnzorian, 1979: 58; Sasaji, 1982: 4; lablok Off- Khnzorian, 1982: 132.

*Coelophora luteopustulata*: Crotch, 1874:156; Sicard, 1913: 500.  
*Oenopia hauseri* Mader, 1926 (1935): 342; lablokoff- Khnzorian, 1979: 58132.  
*Pania insularis*: lablokoff- Khnzorian, 1979: 58; Sasaji, 1982: 2.  
*Oenopia luteopustulata* var. *thibetina*: Kapur, 1958: 329.  
*Pania thoracica*: lablokoff- Khnzorian, 1979: 58.

#### **Description**

Body medium sized. Pronotum anteriorly pale, posteriorly black. Scutellum small and black. Elytral anterior margin straight and glabrous, pale yellow, each with five black spots as shown in Figure 31.

#### **Male genitalia**

Trab of phalobase moderate in size, thin at base, expanded distally. Basal piece triangular. Parameres moderately long, broad at base, deeply bent at middle, apex rounded. Siphonal capsule normal, asymmetrical, tube thick from base to middle slightly emarginated, broadly curved at base, straight up to sub-distal portion, distally slender forming loop, terminating narrowly as shown in Figure 31.

#### **Remarks**

Iablokoff- Khnzorian (1982) treated this species under the genus *Pania*. Later on, Vandenberg & Gordon (1991) synonymised it with genus *Propylea*. Rafi *et al.* (2005) misidentified the species under the name *Propylea luteopustulata* during the present study species was identified properly. Shunxiang *et al.* (2009) reported this species with adult and male genital plates.

#### **Host Plant**

Walnut trees

#### **Present record**

During present research work it was collected from Khori (District Muzafarabad).

#### **Past record**

New record from Pakistan

#### **Seasonal occurrence**

Present research data show that this species was found in April.

#### **Distribution**

Bhutan, India, Myanmar, Nepal, Sri Lanka, Tibet, Vietnam (Canepari, 1997), AJK (Pakistan) Khan *et al.*, 1999.

### **25. *Propylea quatuordecimpunctata* (Linnaeus)**

#### **Synonymy**

*Coccinella 14-punctata* Linnaeus, 1758: 366.  
*Propylea quatuordecimpunctata*: Mulsant, 1846: 152.  
*Propylea quatuordecimpunctata* Mader, 1933: 253- 262; Sasaji, 1971: 264; Sasaji *et al.*, 1975:13- 34.

#### **Description**

Body finely punctuate and comparatively small. Pronotum with deep excavation for eyes. Maximum width of pronotum near the base. Scutellum small, black or light yellow, almost equilateral. Elytra yellow with 7 black large spots on each elytron with a black strip; spots confluent and mostly rectangular often linked to a black net or forming anchor- like figure sometimes spots obsolete as shown in Figure 32.

#### **Male genitalia**

Trab of phalobase long and distally expanded. Parameres cylindrical medially curved and distally rounded. Median lobe swollen at middle, distally narrow. Siphonal tube abruptly curved circularly at base, provided with a membrane dorsally, subapical portion curved and terminated in a needle like structure as shown in Figure 32.

#### **Remarks**

Rafi *et al.* (2005) reported this species as new record for Pakistan from Juglot (Northern areas).

#### **Host Plant**

Custard plant

#### **Past Record**

Previously not reported from AJK.

#### **Present Record**

During present study, this species was collected from Palak (District Bhimber).

#### **Seasonal occurrence**

This species was active from August and September.

#### **Distribution**

Bangladesh, China, Europe, India, Japan, North America, Pakistan (Poorani, 2004).

#### **Tribe Psylloborini Casey, 1899**

#### **Genus *Halysia* Mulsant, 1846**

**Type species:** *Coccinella sedecimguttata* Linnaeus, 1758: 367.

## 26. *Halyzia sancrita* Mulsant, 1853

### Synonymy

*Halyzia sancrita* Mulsant, 1853a: 152; 1853b: 24; Korschefsky, 1932: 571; Crotch, 1874: 132; Gordon, 1987: 15.

### Description

Body slightly oval. Pronotum brownish with creamy colour in centre and scutellum brownish. Elytron junction with white margin. Elytra bright brownish yellow with a single yellow colored thin line runs from the anterior to the posterior end of each elytron. On both sides of this line, several yellow colored oval shaped spots are present as shown in Figure 33.

### Male genitalia

Trab of phalobase long slightly curved, expanded distally. Basal piece rectangular. Parameres moderately long, broad at base, deeply bent at middle. Median lobe shorter than parameres. Siphonal tube semicircular, thin, uniformly round in size from base then bulging laterally up to subapex. Apex more constricted as shown in Figure 33.

### Remarks

The species has very limited distribution in Palearctic region. Canepari and Milanese (1997) reported single specimen of this species from Nepal. Rafi *et al.* (2005) reported *H. sancrita* as Mycetophagous (feeding on powdery mildew) but also feeds on different species of aphids.

### Host Plant

Shisham trees

### Past record

It was collected from Bagh AJK (Rafi *et al.*, 2005).

### Present record

During present study, this species was collected from Harighel (District Bagh), Samhani (District Bhimber); Topa, Paniola (District Poonch).

### Seasonal occurrence

This species was found active from May to June.

### Distribution

Nepal, Northern India, Southern China, Tibet, Bagh AJK (Pakistan) (Rafi *et al.*, 2005).

## 27. *Halyzia tschitscherini* (Semenov, 1965)

### Synonymy

*Halyzia tschitscherini* Semenov, 1895: 142; Korschefsky, 1932: 573; Bielawski, 1960: 455. Ghorpade, 1979: 113-114.

### Description

Body medium sized. Pronotum brownish with creamy colour in centre and scutellum brownish. Elytra brownish with 18 creamy spots. Each elytron with 6 irregular and 3 elongate spots as shown in Figure 34. A narrow longitudinal creamy band on junction of elytra.

### Male genitalia

Trab of phalobase thin and long. Basal piece broad at base, tapering dorsally. Parameres thick, short, curved, hairs on middle portion. Dense hairs on apical portion. Median lobe long, equally thick, with short basal knife edge, curved distally. Siphonal capsule V shaped, slightly curved, thick at base, then become slender up to middle, distal half thick except apical portion which is thin, tip pointed and slightly curved as shown in Figure 34.

### Remarks

Kapur (1963) reported this species from India with merging elytral spots in the apical half of elytra. Rafi *et al.* (2005) reported this species from Pakistan as new record and they mentioned that like other members of genus *Halyzia*, *H. sancrita* is also mycetophagous and aphidophagous. (Shunxiang *et al.*, 2009) reported this species from China.

### Host Plants

Shisham trees

### Past record

It was collected from Bagh district of Azad Jammu & Kashmir (Khan *et al.*, 1999).

### Present record

During present research work it was collected from District Bhimber, Hattian, Mirpur, Poonch and Sudhnoti.

### Seasonal occurrence

Available collection data suggest that this species is active from May to November. However, it was found abundantly during August, September and October.

### Distribution

Afghanistan, India, Tibet (Pamir), Turkestan (Poorani, 2004) and Pakistan (Rafi *et al.*, 2005).

**Genus *Macroilleis* Miyatake, 1965**

**Type species:** *Halyzia hauseri* Mader, 1930.

**28. *Macroilleis hauseri* (Mader, 1930)**

**Synonymy**

*Halyzia hauseri* Mader, 1930.

*Macroilleis hauseri* Miyatake, 1965: 71.

**Description**

Body oblong, slightly convex, shiny variable in colour as shown in Figures 35, 36. Head deeply inserted. Pronotum brown, spotless. Lateral margins rounded, triangular in shape. Elytra brown, transparent, shiny, without spots.

**Male Genitalia**

Trab of phalobase long and thick. Basal piece somewhat circular. Parameres thin, similar in length with median lobe, slightly curved at base, provided with long hairs at distal end, apex rounded. Median lobe thick, broad at base, distally sharp. Siphonal tube turned broadly at base semicircularly, bulging medially, becoming slender, wavy except tip, tip forming bulb as shown in Figure 35.

**Remarks**

*M. hauseri* was reported as rare species from Chitral, Pakistan (Rafi *et al.*, 2005). Shunxiang *et al.* (2009) reported this species with male genital illustrations from China.

**Host plant**

Coriander, walnut

**Past Record**

Previously not reported from AJK.

**Present Record**

During present study, it is collected from Fateh pur, Hollar, (District Kotli); Khaigala, Rawlakot (District Poonch).

**Seasonal Occurrence**

Present collection show that this species was active from May to June.

**Distribution**

Bhutan, China, India, Taiwan (Poorani, 2004).

**Genus *Psyllobora* Chevrolate, 1836**

**Type species:** *Coccinella lineola* Fabricius, 1792.

**29. *Psyllobora (Thea) bisoconotata* (Mulsant, 1850)**

**Synonymy**

*Vibidia bisoconotata* Mulsant, 1850: 204; 1866: 147.

*Thea bisoconotata* Crotch, 1874 : 134; Korschefsky, 1932: 559; Kapur, 1944: 167; Gordon, 1987:16.

*Psyllobora bisoconotata* lablokoff- Khnzorian, 1982.

**Description**

Body elongate, brownish yellow from below, finely pitted and covered with very fine hair as shown in Figure 37. Pronotum much broader than long and without spots. Pronotum and elytra of same colour. Elytra brownish yellow.

**Male genitalia**

Trab of phalobase long curved inward and distally expanded. Basal piece oblong. Parameres moderate in size, equally thick. Median lobe thick at base, tapering from subapical portion, apex curved inward and pointed. Siphonal capsule absent, tube semicircular having same thickness, constrictions from subapical portion. Apex curved inward as shown in Figure 37.

**Remarks**

Rafi *et al.* (2005) and Sharma and Joshi (2010) reported *Psyllobora bisoconotata* from Pakistan and India respectively. Omkar and Prvez (1999) reported it as predator of aphids and mealy bug from India.

**Host Plant**

Custard plant, mulberry, akk plant, walnut, wheat, shisham trees

**Past record**

Khan *et al.* (1999) reported this species from Mang AJK.

**Present record**

During present study it was collected from almost all localities except Bagh, Harigal (District Bagh); Choki, Somahni, (District Bhimber); Chakswari, Chockian, Jerrt kas (District Mirpur); Murshdabad (District Sudhnoti) Lemnia (District Hattian) Muzafarabad, Patika (District Muzafarabad); Singhola (District Poonch); Authmkam, Batangi, Dwarian, Halmat, Janowai, JhooraJagran, Karen, Kohri, Nausery, Rajpyan, Saidpur, Sharda (District Neelum).

#### Seasonal occurrence

This species was active from April to October. Specimens of this species were found abundantly during April, May and June.

#### Distribution

Africa, Arabia, India. Northern Saudi, Yemen (Poorani, 2004), Pakistan (Khan *et al.*, 1999 and Rafi *et al.*, 2005).

#### Genus *Phrynocoria* Timberlake, 1943

**Type species:** *Coccinella congener* Billberg, in Schonherr, 1808.

#### 30. *Phrynocoria perrotteti* (Mulsant) 1850

##### Synonymy

*Coelophora perrotteti* Mulsant, 1850: 409; 1866: 271; Crotch, 1874: 54; Korschefsky, 1932:296; Gordon, 1987: 19.

*Anegleis (Pseudanegleis) perrotteti*: lablokoff- Khnzorian, 1982: 296.

##### Description

Body medium sized circular strongly convex, glabrous and brown. Pronotum moderate in size with slight depression on the middorsal line, two round black spots on lateral sides. One black patch on the middle of pronotum, two black patches on posterior side. Elytra pale yellow, each elytron with two black stripes next to suture, outer one long, curved up posteriorly as shown in Figure 38.

##### Male genitalia

Trab of phalobase distally expanded and medium sized. Basal piece oblong. Parameres thick, cylindrical with rounded tip, provided with long hairs on dorsal side of apical half. Median lobe with basal knife edge, then gradually tapering to subapical portion. Apex turns inward sharply. Siphonal capsule large, asymmetrical. Siphonal tube broadly turned as shown in Figure 38.

##### Remarks

As described earlier under *Angelies cardoni*. No records available so far from Pakistan and hence it could be a new record.

##### Host Plant

Custard plant

##### Past record

New record from Pakistan.

##### Present record

During present study it was collected only from Abasspur (District Poonch).

##### Seasonal occurrence

This specie was collected only in month of April.

##### Distribution

India (Poorani, 2004).

#### Subfamily: Coccidulinae Mulsant, 1846

##### Description

Body slightly to moderately convex, oblong with parallel sides and always pubescent, considerably larger than width of head. Antenna long, usually 8-11 segmented, clavate. Compound eyes sometime coarsely faceted. Pronotum transverse, oval and trapezoidal, comparatively small, closely joining elytral base. Apical segment of maxillary palpus securiform, middle coxae separated much more narrowly than hind coxae. Femora very slender, flattened. Middle and hind tibiae with spurs. Tarsi true trimerous, cryptotetramerous.

**Type genus:** *Adalia* Mulsant, 1846.

##### Genus: *Sumnius* Weise, 1892.

**Type species:** *Sumnius cardoni* Weise, 1892: 30.

#### 31. *Sumnius vestita* Mulsant 1850

##### Synonymy

*Aulis vestita* Mulsant, 1850: 934; Crotch, 1874: 294; Gorham, 1894b: 210; Koreshfsky.1931: 96; Lefroy, 1909: 308.

*Sumnius vestita*: Bielawski, 1979: 107.

*Sumnius renardi* Weise, 1892: 29; 1895a: 157; Gorham, 1894b: 210; Korschefsky, 1931: 95.

##### Description

Head exposed pubescent red. Antennae short, red. Eyes black. Pronotum broad, pubescent, anterior margins blackish. Elytra densely pubescent, ground colour red with large black patch along anterior margins, outer margins and on middorsal suture as shown in Figure 39.

**Male genitalia**

Trab of phalobase long and distally curved. Basal piece short triangular and ventrally narrow. Parameres very long, cylindrical, slightly constricted, curved at middle and distally rounded, apex provided with short hairs. Median lobe very short than parameres, broad throughout except apex which is slightly narrow. Siphonal capsule unique, L shaped, tube broadly curved at base semicircularly, forming a complete circle beyond middle as shown in Figure 39.

**Remarks**

Rafi *et al.* (2005) reported this species under its synonym *Suminus renardi* from Peshawar without any plate and description. *S. vestita* and *S. cardoni* may be synonyms (Poorani, 2004).

**Host Plant**

Custard plant

**Past record**

New to Azad Jammu Kashmir.

**Present record**

During present work it was collected from Kadala (District Bhimber) and Azad Patan (District Sudhnoti).

**Seasonal occurrence**

This species was collected only in month of April.

**Distribution**

India, Bhutan, Nepal, Pakistan, Sri Lanka (Poorani, 2004).

**Genus: *Rodalia* Mulsant, 1850**

**Type species:** *Rodalia ruficollis* Mulsant, 1850.

**32. *Rodalia ruficollis* Mulsant, 1853**

**Synonymy**

*Rodalia ruficollis* Mulsant, 1850: 903; Korschefsky, 1931: 102; Kapur, 1949: 535.

*Vedalia ruficollis* Crotch, 1874: 281.

**Description**

Body medium sized. Head concealed, light brown. Antennae short, pale brown. Eyes black. Pronotum broader, pubescent dark brown with black patch on the middle of posterior side. Scutellum small, triangular and brown in colour. Ground colour dark brown with three black stripes, two along outer margin and one in middorsal suture as shown in Figure 40.

**Male genitalia**

Trab of phalobase: long and slightly curved. Basal piece short and circular. Parameres long thin without hairs. Median lobe long, length equal to parameres, thickness uniform, tip circular. Siphonal capsule unique obliquely articulated with tube. Tube broadly bent as shown in Figure 40.

**Remarks**

Earlier this species was reported by Rafi *et al.* (2005) from Pakistan without any description and genitalia structure. During this study, its identification was confirmed on the basis of genitalia.

**Host Plant**

Custard plant

**Past record**

New record for Azad Jammu Kashmir.

**Present record**

During this study it was collected from Kadala; Hollar, Kotli ; Jatlan ; Kahigala, Paniola

**Seasonal occurrence**

This species is active in May and June.

**Distribution**

India, Pakistan, Thailand (Poorani, 2004).

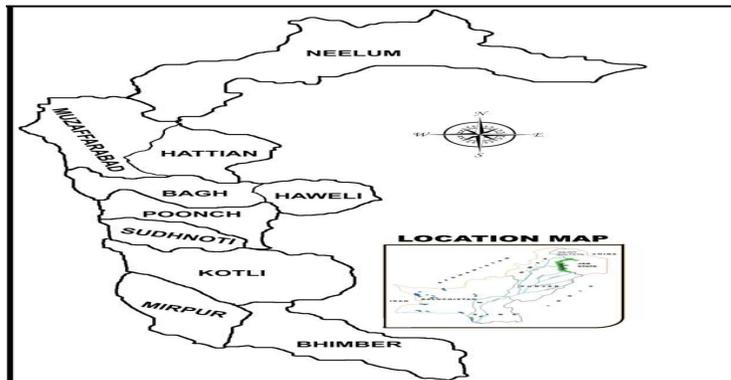


Figure 1. Map of Azad Jammu and Kashmir



Figure 2. *Adalia tetraspilota* a,b: adult; c: male genitalia



Figure 3. *Ailocaria hexaspilota* a: adult; b: male genitalia



Figure 4. *Anegleis cardoni* a: adult; b: male genitalia



Figure 5. *Calvia punctata* a: adult; b: male genitalia



Figure 6. *Calvia punctata* b,c,d,e: adult



Figure 7. *Calvia punctata* f,g, h, i: adult



Figure 8. *Coccinella septempunctata* a: adult; b: male genitalia



Figure 9. *Coccinella transversalis* a: adult; b: male genitalia



Figure 10. *Coccinella undecimpunctata* a: adult; b: male genitalia



Figure 11. *Harmonia dimidiata* a: adult; b: male genitalia



Figure 12. *Harmonia dimidiata* b: adult



Figure 13. *Harmonia eucharis* a: adult; b: male genitalia



Figure 14. *Hippodamia variegata* a: adult; b: male genitalia



Figure 15. *Illeis confusa* a, b: adult c: male genitalia



Figure 16. *Illeis timberlakei* a: adult; b: male genitalia



Figure 17. *Illeis indica* a: adult; b: male genitalia



Figure 18. *Illeis shensiensis* a: adult; b: male genitalia





Figure 19. *Coelophora bissellata* a: adult; b: male genitalia



Figure 20. *Cheliomenes sexmaculatus* a: adult; b: male genitalia



Figure 21. *Cheliomenes sexmaculatus* a,b,c,d,e: adult



Figure 22. *Micraspis allardi* a: adult; b: male genitalia



Figure 23. *Micraspis vincta* a,b : adult b: male genitalia



Figure 24. *Oenopia conglobata* a: adult; b: male genitalia





Figure 25. *Oenopia conglobata* c,d, d, e : adult



Figure 26. *Oenopia mimica* a: adult; b: male genitalia



Figure 27. *Oenopia sauzeti* a: adult; b: male genitalia



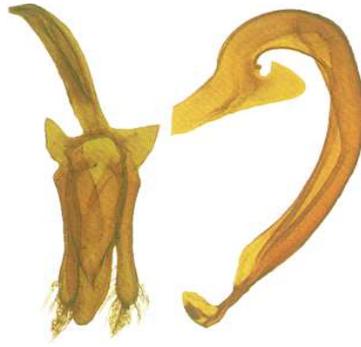


Figure 28. *Palaeoneda auriculata* a: adult; b: male genitalia



Figure 29. *Propylea dissecta* a: Adult; b: Male genitalia



Figure 30. *Propylea dissecta* a,b,c,d,e: adult



Figure 31. *Propylea luteopustulata* a: adult; b: male genitalia



Figure 32. *Propylea quatuordecimpunctata* a,b: adult c: male genitalia



Figure 33. *Halyzia sancrita* a: adult; b: male genitalia



Figure 34. *Halyzia tschitscherini* a: adult; b: male genitalia



Figure 35. *Macroilleis hauseri* a: adult; b: male genitalia



Figure 36. *Macroilleis hauseri* a,b: adult



Figure 37. *Psyllobora bisoconotata* a: adult; c: male genitalia





Figure 38. *Phrynocoria perrotteti* a: adult; b: male genitalia



Figure 39. *Sumnius vestita* a: adult; b: male genitalia



Figure 40. *Rodalia ruficollis* a: adult; b: male genitalia

#### 4. DISCUSSION

During this exploration 32 species under 20 genera in subfamilies Coccinellinae and Coccidullinae were confirmed. Subfamily Coccidullinae is represented by 2 species under 2 genera including *Suminus vestita* and *Rodalia ruficollis*. Both are reported as new to study area. The members of this subfamily are important predator and feed on coccids. Previously Rafi *et al.* (2005) reported these 2 genera from Dir, Peshawar and Sargodha. The members of this subfamilies are medium and some genera are cosmopolitan. Subfamily Coccinellinae is the largest one with 30 species in 18 genera. Among these *Illeis indica*, *Illeis shensiensis*, *Micraspis vincta*, *Propylea quatuordecimpunctata*, *Phrynocoria perrotteti*, *Macroilleis hauseri*, are reported for the first time from study area. Members of this subfamily are medium to large sized. This is the most abundant and widespread subfamily of Coccinellidae with more than 100 genera (Rafi *et al.*, 2005). Beetles of this subfamily are predominantly aphidophages but generalist also. Species *Halyzia tschitscherini*, *Halyzia sancrita*, *Macroilleis hauseri*, *Psyllobora bisoctonotata* are usually mycetophagous and feeding on powdery mildew.

*Ailocoria hexaspilota* is variable in colour pattern. Canepari (1995) confirmed this species from Nepal Himalaya. Khan *et al.* reported this species from Azad Jammu and Kashmir.

*Harmonia dimidiata* is variable in colour pattern, size and have three distinct polymorphs.

During present study 6 polymorphs of *Cheliomenes sexmaculata* are reported. Slipinski (2007) and Rafi *et al.* used name *Menochilous sexmaculata* for this species whereas Sharma and Joshi (2010) named this species as *Cheliomenes sexmaculata*. Previously reported by all workers from Pakistan.

*Oenopia sauzeti* and *Oenopia mimica* also resemble in general appearance but diagnostic characters are provided in this manuscript.

*Coccinella septempunctata* is among the most abundant species reported from AJK.. It is found from almost all habitats of agricultural crops, range lands and forests. This species is sometime confused with *Coccinella undecimpunctata* but can be separated by spotted pattern as in case of *C. undecimpunctata* elytra red with 11 black spots of equal size. Khan *et al.* (1999), Inayatullah *et al.* (2005) recorded this species from Pakistan.

The work related to systematic, morphology and distribution (Ahmad 68, Inayatullah and Siddique 1978, Inayatullah 1980, Irshad 2001a, b 2003; Rafi *et al.* 2005; Hayat *et al.* 2014; Ashfaque *et al.* 2015 from Pakistan support identification host plant and distribution of coccinellids of subfamily Coccinellinae and Coccidullinae in this area. These findings confirm members of these families from Pakistan but this findings is unique as *Suminus vestita*, *Rodalia ruficollis*, *Illeis indica*, *Illeis shensiensis*, *Micraspis vincta*, *Propylea quatuordecimpunctata*, *Phrynocoria perrotteti* and *Macroilleis hauseri* were new records to the Azad Jammu and Kashmir fauna. This study helps to make present investigation more valid by giving more focus on male genitalia of coccinellids.

Further exploration is required to dig out more species as the area has unique diverse ecology.

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### REFERENCES

1. Ahmad, R., 1968. A new species of *Pseudoscymnus* Chapmin (Coleoptera: Coccinellidae) predacious on scale insects in Pakistan. *Entomophaga*, 13: 377-379.
2. Ahmad, R., 1970a. Studies in West Pakistan on the biology of one Nitidulid species and Coccinellid species (Coleoptera) that predate on scale insects (Homoptera:Coccidae). *Bulletin of Entomological Research.*, 60:5-16.
3. Ahmad, R., 1970b. A new species of *Pharoscygnus* (Bedel) (Coleoptera: Coccinellidae) predacious on scale insects in Pakistan. *Entomophaga*, 15:233-235.
4. Ahmad, R., 1973. A new tribe of the family Coccinellidae (Coleoptera) *Bulletin of Entomological Research.*, 62:449-452. Bielawski R. 1961. *Materialy do poznania Coccinellidae (Coleoptera)*. II. *Ann. Zool. Warszawa*, 19 (10): 383-345.
5. Ahmad, R., M.A. Ghani, 1966a. A new genus and species of *Chilocorni* (Coleoptera: Coccinellidae) from Pakistan. *Proceedings of Royal Entomological Society London (B)*, 35(1-2):9-10.
6. Alam, M.Z., 1969. *Insect Pests of vegetable and their control in East Pakistan*. Agriculture Information Service, Department of Agriculture, R.K. Mission Road, Dhaka, Bangladesh, pp. 140
7. Anonymous, 2013. *Statistics, Planning and Development Department Muzafarabad, Azad Government of Jammu and Kashmir*. pp. 1- 109.
8. Ashfaque, M., 2015. Taxonomic study of subfamily Scymninae (Coleoptera:Coccinellidae) with one new record from Gilgit-Baltistan, Pakistan. *Turkish Journal of Zoology*.39 (6): 1034-1040.
9. Canepari, C., 1997. Coccinellidae (Coleoptera) from the Nepal Himalayas. *Stuttgarter Beitrage zur Naturkunde, Serie A (Biologie)*, 565 (65): 1-65.
10. Chaudhry, G.U., M. I. Chaudhry and N.K. Malik, 1970. Survey of insect fauna of forests of Pakistan. Final Technical Report II. Pakistan Forest Institute, pp. 205.
11. Chaudhry, G.U., M.I. Chaudhry and M. S. Khan, 1966. Survey of insect fauna of forests of Pakistan. Final Technical Report. Pakistan Forests Institute Peshawar, pp. 167.
12. Commonwealth Institute of biological control, 1982. Investigation on natural enemies of *Epilachna* spp. in Pakistan. Final report, Commonwealth Institute of Biological control, Pakistan station, Rawalpindi, pp. 31.
13. Crotch, G.R., 1874. A revision of the Coleopterous family Coccinellidae. Edward Wesley. Janson, London, 16: 311.

14. Dixon, A.F., 2000. Insects predator-prey dynamics. Lady bird beetles and biological control. New York: Cambridge University Press, pp. 257.
15. Farooq, A.K., M.I.U.Baig and S.G. Mustafa, 1999. Studies on spatial distribution and penology of adult *Chilocorus infernalis*. Sarhad Journal of Agriculture 15 (4): 343- 346.
16. Hayat, A., M.R. Khan, 2013. Biodiversity and species composition of lady bird beetles Coccinellidae: Coleoptera from Mirpur Division of Azad Jammu and Kashmir, Pakistan. Sarhad Journal of Agriculture 30 3: 341-350.
17. Hayat, A., M.R. Khan, F. Naz and M. A. Rafi, 2014. Ladybird beetles of Sub-family Chilocerinae (Coccinellidae: Coleoptera) of Azad Jammu and Kashmir. Pakistan Entomologist, 36 2): 135-143.
18. Iablokoff- Khnזורian, S.M., 1982. Les Coccinelles Coleopteres- Coccinellidae Tribu Coccinellini des regions Palearctique et Orientale. Boubee, Paris, pp. 568.
19. Irshad, M., 2001a. Aphids and their biological control in Pakistan. Pakistan Journal of Biological Sciences 6:40-4
20. Irshad, M., 2001b. Distribution, Hosts, Ecology, and Biotic potential of coccinellids of Pakistan. Pakistan Journal of Biological Sciences, 4(10):1259-1263.
21. Irshad, M., 2003. Parasitoids, predators and pathogens of agricultural and forest pests of Pakistan. IPM, National Agricultural Research Center. Islamabad. Perfect Printers, Islamabad, pp. 78.
22. Irshad, M. and M.R. Khan, 2005. Insect pests of plants and their parasitoids, predators and pathogens in Pakistan. PIPS (Pvt) Limited, pp. 72.
23. Inayatullah, C. 1980. Comparative skeletal anatomy of the thorax of *Coccinella septempunctata* and *Coccinella undecimpunctata* (Coleoptera: Coccinellidae). Pakistan Journal of Zoology. 12: 225-237.
24. Inayatullah, M., A. Hayat and M.A. Rafi, 2005. Species composition, distribution and seasonal occurrence of Coccinellidae (Coleoptera) in District Poonch, Azad Kashmir with new records. Sarhad Journal of Agriculture, 21 (1): 97-100.
25. Inayatullah, C., E. M. Siddiqui, 1977. Comparative studies on the anatomy of the abdomen of *Coccinella septempunctata* and *Coccinella undecimpunctata* (Coleoptera: Coccinellidae). Pakistan Journal of Zoology. 10: 261-271.
26. Joshi, C.P., K.P. Sharma, 2010. First records of Coccinellid beetles (Coccinellidae) from Haridwar. National History Journal of Chulalongkon University, 8(2): 157-167.
27. Kapur, A.P., 1958. Coccinellidae of Nepal. Records of Indian Museum., 53:309-338.
28. Kapur, A.P., 1963. The Coccinellidae of the third Mount Everest expedition, 1924 (Coleoptera). Bulletin of Brititsh Museum (Natural History) Entomology London. 14(1): 1-48.
29. Khan, M.G.R., M. Inayatullah, M.A.Rafi and M. Ashfaq, 1999. Species composition, distribution and host plants of predatory coccinellids (Coccinellidae: Coleoptera) in District Bagh, Azad Jammu and Kashmir. Pakistan Journal of Entomology, Karachi, 14(1-2):1-4.
30. Khan, M.R., M.K. Sheikh, M.A. Rafi and A. Sharif, 1999. Predatory Coccinellid Fauna (Coleoptera: Coccinellidae) of Sudhnuti District, Azad Jammu and Kashmir. Pakistan Journal of Entomology, Karachi, 14 (1-2): 5-7.
31. Khan, M.R., M. Irshad, and M.A. Rafi, 2008. Insect fauna of Azad Jammu and Kashmir. MK Traders, Islamabad, pp. 143.
32. Khan, I.S. Din, S.K. Khalil and M.A. Rafi, 2007. Survey of predatory Coccinellids (Coleoptera: Coccinellidae) in the Chitral District, Journal of Insect Science., 7 (7): 6.
33. Kuznetsov, V.N., 1997. Lady beetles of the Russian Far East. Memoir No. 1. The Sand hill Crane Press, Inc. Gainesville, Finland, pp. 248.
34. Majerus, M., P. Kearns, 1989. Naturalists Hand Books "Lady Birds" University of Cambridge. Richmond Publishing Co. Ltd. England, 101pp.
35. Mader ,L., 1929. Zur Variabilitat der melioden und Coccinelliden. Entomology Anz.9 (6): 108-114.
36. Miyatake, M., 1965. Some Coccinellidae (excluding Scymnini) of Formosa (Coleoptera). Special Bulletin of the Lepidopterists' Society of Japan. 1: 50-74.

37. Miyatake, M., 1970. The East- Asian Coccinellid-beetles preserved in the California Academy of Sciences, tribe Chilocorini. *Memoirs of Ehime University*.14. N 3: 303-340.
38. Miyatake, M., 1985. Coccinellidae collected by the Hokkaido University Expedition to Nepal Himalaya, 1968 (Coleoptera). *Insecta Matsumurana*, pp. 30-33.
39. Omkar, A., Pervez, 1999. New Records of coccinellids from Uttar Pardesh I. *Journal of Advanced Zoology.*, 20: 106-112.
40. Poorani, J., 2004. Notes on the Coccinellidae (Coleoptera) of the Indian sub-continent, including new synonymies. *Journal of Biological Control*. 18(2): 185-187.
41. Rafi, A. M., M. Irshad and M. Inaytullah, 2005. *Predatory Ladybird beetles of Pakistan*. Rohani Art Press, Blue Area, Islamabad, Pakistan, pp. 105.
42. Slipinski, A., 2007. Australian Ladybird beetles (Coleoptera: Coccinellidae), their biology and Classification. *Australian Biological Resources Study. Coll. Illus.*, pp. 288.
43. Shunxiang, R., X. Xingmen, P. Hong, P. Zhengqiang and Z. Tao, 2009. *Colored pictorial handbook of Ladybird beetles in China*. Science Press No.16. North Street, City DongHuang, Beijing China, pp. 336.
44. Vandenberg, N., R.D. Gordon, 1991. Farewell to *Pania* Mulsant (Coleoptera: Coccinellidae): a new synonym of *Propylea* Mulsant. *Coccinella*, 3: 30-35.
45. Weise, J., 1892. Les Coccinellides du Chota- Nagpore. *Annales Society Entomology. Belg.*, 36: 16-30