

## **PRELIMINARY STUDY ON PENTATOMIDS IN WEST AZERBAIJAN PROVINCE OF IRAN(HETEROPTERA)**

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**ABSTRACT:** Pentatomids as well as lygaeids are the third largest families of true bugs which include 760 genera and about 4000 species. A faunistic study was carried out during 2002-2003 in west Azerbaijan province and specimens were collected from 13 regions of the province. Totally 22 genera and 35 species of Pentatominae and Podopinae subfamilies were collected and identified mainly focusing on male genitalia and some other morphological characters. One species and one genus are recorded from Iran for the first time.

**KEY WORDS:** Heteroptera, Pentatomidae, faunistic, true bugs, West Azerbaijan province, Iran.

Among the 8 subfamilies of Pentatomidae, the Pentatominae and Asopinae are the most important pests and biological control agents respectively. Other subfamilies are plant feeders and their foods are various plant species. Economically, injurious species of Pentatominae subfamily are the most notable secondary pests which will outbreak in the near future because of irregular use of chemical poisons and less recognition of the pest.

### **MATERIALS AND METHODS**

West Azarbaijan has located in the northwestern part of Iran. It covers an area of 39,487 km<sup>2</sup>. The climate of west Azarbaijan is largely influenced by the rainy winds of the Atlantic Ocean and Mediterranean. Cold northern winds affect the province during winter and cause heavy snow.

This province encompassing vast and fertile plains, high mountains, enjoying moderate and healthy weather, rivers with high volume of water, vineyards, orchards, luxuriant forest and rangelands, mountain outskirts with wonderful flora, magnificent wildlife and beautiful shores around the lake with different recreational facilities, which all together form one of the most beautiful and spectacular region in Iran.

Sampling performed by the ways of common sampling, including net working, light trap and collecting by observation (Borror et al., 1989), and also the specimens mostly collected from intact regions including pastures and plains and also fields and gardens.

The most important part of the body which used for identification is the male genital organ which has sclerotic structure. Methods of Slater (1950), Kelton (1959), Ashlock (1967) were used for extraction of the organ (Tuxen, 1970).

After that genital organs of male (pygophore and parameres) and female (spermatheca and genital plates) were sand out and supplied constant preparation.

Then for specimens identification was used from various identification keys especially Palearctic region (Bei-Beinko, 1964; Lodos et al.1998; Stichel, 1961) and also other researches in the world (China & Miller, 1989; Borrer et al., 1989) and Iran (Modarres Awal, 1981; Safavi, 1959, 1973, 1974, 1976). Finally important genital organs in identification were drawn. All material is collected by authors and preserved in the Museum of Plant Pests & Diseases Research Institute, Tehran, Iran.

## RESULTS

### Podopinae

#### *Ventocoris trigonus* Krynn. \*

**Urmia (Shohada):** 2 females, 1350m., 12.VII.2002, Mountain foots, On *Ficus* sp.

#### *Ventocoris oblongus* (Hv.) \*

**Mianduab (Ghotar):** 2 females, 1370m., 8. VII. 2003, Under *Astragalus* sp.

#### *Ventocoris fischeri* (H.-S.) \*

**Mianduab (Ghotar):** 1 male, 1 female, 1370m., 8. VII. 2003, **Mahabad (Ghezeldagh):** 2 males, 14. XI. 2001, Under *Astragalus* sp., On *Cichorium* sp.

#### *Tholagus flavolineatus* (F.) \*

**Urmia (Kaboudan isl.):** 3males, 1 female, 1280m., 17. & 18. VI. 2003. In valley, On Umbelliferous plants.

#### *Graphosoma semipunctatum* (F.) \*

**Piranshahr (Kowpar):** 3males, 2 females, 1540m., 16. & 17. VII. 2002, **-Sardasht (Biuran):** 4 males, 2 females, 1750m., 19.VII. 2002, **Urmia (Joulbar):** 2 males, 2 females, 1405m., 26.VII. 2002, **Chaldoran (Kenedy):** 3males, 4 females, 1950m., 27. VII. 2002, **-Maku (Handavar):** 2males, 1female, 30. VII. 2002, **-Khoy (Badalan):** 5male, 4 female, 1550m., 3. & 4. VIII. 2002, **Urmia (Kaboudan isle):** 2males, 2females, 1280m., 17. & 18. VI. 2003, **-Mahabad (Mangour-e-Sharghi):** 2males, 4females, 1800m., 24. VI. 2003, **-Bukan (Khorasaneh):** 1male, 2females, 1500m., 29. VI. & 1. VII. 2003, **-Shahindezh:** 2males, 3females, 1260m., 5. & 6. VII. 2003, **-Mianduab:** 3males, 3females, Barough, 1670m., 9. VII. 2003, **-Salmas (Patevir):** 2males, 2females, 1350m., 21. VII. 2003. Cosmopolitan in all regions of Province and attack Umbelliferous plants.

#### *Graphosoma stali* Hv. \*

**Piranshahr (Kowpar):** 3males, 1female, 1540m., 16. & 17. VII. 2002, **-Bukan (Ashigolan):** 2males, 2females, 1550m., 28. VI. 2003, **-Mianduab (Ghotar):** 6males, 2females, 1370 m., 8. VII. 2003, **-Salmas (Tazehshahr):** 1male, 2females, 1350m., 1. VIII. 2003. On Umbelliferous plants.

#### *Graphosoma lineatus* (L.) \*

**Piranshahr (Kowpar):** 4males, 2females, 1540m., 16. & 17. VII. 2002, **-Sardasht:** 3males, 2females, Biuran, 1750m., 19. VII. 2002, **-Urmia (Joulbar):** 2males, 2females, 1405m., 26. VII. 2002, **Chaldoran (Kenedy):** 2males, 2females, 1950m., 27. VII. 2002, **-Maku (Handavar):** 2males, 3females, 30. VII. 2002, **-Khoy (Badalan):** 3males, 2females, 1550m., 3. & 4. VIII. 2002, **Urmia (Nooshinshahr):** 2males, 2females, 1370m., 10. VII. 2002, **-Mahabad (Kanibazar):** 1male, 2females, 1550m., 25. & 26. VI. 2003, **Bukan (Khorasaneh):** 1male, 2females, 1500m., 29. VI. & 1. VII. 2003, **-Shahindezh:** 3males, 2females, 1260m., 5. & 6. VII. 2003, **-Miandoab (Ghotar):** 4males, 3females, 1370m., 8. VII. 2003, **- Salmas (Aghesmail):** 2males, 3females, 1380m., 22. VII. 2003, Cosmopolitan in all regions of Province, On Umbelliferous plants.

***Graphosoma melanoxanthum* Hv.**

**Urmia (Dayacheh):** 1280m., 1938, Leg. Kritshenko. (Safavi, 1959) -**Piranshahr (Mashegan):** 5males, 4females, 1850m., 17. VII. 2003. -**Sardasht (Biuran-e-olya & sofla):** 3males, 2females, 1750m., 19. VII. 2002 & 13. VII. 2003. In mountain meadows, On *Heracleum* sp.

**Pentatominae*****Mustha spinosula* (Lef.) \***

**Urmia (Dareh-e-Shohada):** 1male, 1350m., 12. VII. 2002, **Naghadeh (Soltanyaghoub):** 2males, 1390m., 20. VI. 2003. In hilly steppes, On *Crataegus* sp.

***Apodiphus amygdali* (Gm.) \***

**Khoy (Markan):** 2males, 1770m., 6. VIII. 2002, -**Piranshahr (Kowpar):** 1female, 1540m., 16. & 17. VII. 2002, -**Urmia (Nazlou):** 2females, 1360m., 2. VIII. 2002, -**Bukan (Ashigolan):** 2males, 1550m., 28. VI. 2003, -**Shahindezh:** 1male, 1260m., 5. & 6. VII. 2003, -**Mahabad (Amed):** 1male, 2females, 1600m., 23. VI. 2003. Common in gardens, Cosmopolitan in regions.

***Carenoplistus acutus* (Sgn.)**

**Urmia (Daryacheh):** 1280m., 1938, Leg. Kritshenko. (Safavi, 1959) -**Sardasht (Nalas):** 1male, 1050m., 11. VII. 2003. In deciduous forests and on *populus* sp.

***Sciocoris sulcatus* Feib. \***

**Mahabad (Kanibazar):** 1male, 1female, 1550m., 25. & 26. VI. 2003. In meadows, under stone and crucibles.

***Sciocoris cursitans* F. \***

**Naghadeh (Hasanlou):** 1female, 1350m., 21. VI. 2003. In meadows, under stone and crucibles.

***Aelia melonata* Feib.**

**Maku:** 1600m., 1962 & 1966, Leg. Brown. (Safavi, 1959) -**Urmia:** 1350m., 14. VII. 1976 Leg. Shayesteh et al. (1978) -**Khoy (Badalan):** 1male, 1female, 1550m., 3. & 4. VIII. 2002. In grasses.

***Aelia acuminata* (L.) \***

**Khoy (Zavieh):** 2males, 1female 1770m., 5. VII. 2002, -**Salmas (Tazehshahr):** 1males, 1350m., 1. VIII. 2003. In cereals field, on *Avena* spp. & *Triticum sativum*.

***Stagonomus amoenus* Brulle. \***

**Piranshahr (Kowpar):** 1male, 1540m., 16. & 17. VII. 2002.

***Eysarcoris inconspicuus* H.-S. \***

**Miandoab (Barough):** 2males, 3females, 1670m., 9. VII. 2003, -**Salmas (Aghesmail):** 1female, 1380m., 22. VII. 2003. In cereals field and meadows.

***Palomena prasina* (L.) \***

**Urmia (Shohada):** 1male, 1350m., 12. VII. 2002, -**Mahabad (Mangour-e-Sharghi):** 2males, 1female, 1800m., 24. VI. 2003, -**Bukan (Ashigolan)** 1female: 1550m., 28. VI. 2003. On nettle & raspberry, Crucibles in moist localities.

***Holcostethus inclusus* Dohrn. \***

**Poldasht (Roud -e- Aras):** 1male, 990m, 29. VII. 2002, -**Sardasht (Biuran):** 1male, 1female 1750m., 19. VII. 2002, -**Mahabad (Amed):** 2males, 1female 1600m., 23. VI. 2003.

***Holcostethus vernalis* Wolft. \***

**Piranshahr (Kowpar):** 2males, 1female 1540m., 16. & 17. VII. 2002, **-Bukan:** 1male, 1female, Ashigolan, 1550m., 28. VI. 2003, **-Miandoab (Ghotar):** 2males, 1370m., 8. VII. 2003, **-Urmia (Nazlou):** 2females, 1360m., 2. VIII. 2002, **-Salmas (Patevir):** 2males, 2females, 1350m., 21. VII. 2003. Cosmopolitan in relatively moist regions.

***Carpocoris purpureipennis* (Deg.) \***

**Sardasht (Alvatan):** 2males, 3females, 1800m., 21. & 22. VII. 2002, **-Miandoab (Ghotar):** 3males, 4females 1370m., 8. VII. 2003, **-Mahabad (Amed):** 3males, 2females 1600m., 23. VI. 2003, **-Urmia (Nooshinshahr):** 3males, 1female 1370m., 10. VII. 2002, **-Piranshahr (Tizkesh):** 4males, 2females 1500m., 16. VII. 2002, **-Naghadeh (Balaghchi):** 1male, 2females 1630m., 20. VI. 2003, **-Shahindezh (Pirmohammad):** 2males, 2females 2300m., 4. VII. 2003, **-Bukan (Hossienabad):** 3males, 2females 2050m., 2. VII. 2003, **-Maku (Handavar):** 3males, 4females 1600m., 30. VII. 2002, **-Khoy (Badalan):** 5males, 4females 1550m., 3. & 4. VIII. 2002. In field and meadows and pastures.

***Carpocoris mediterraneus* Tam. \***

**Khoy (Zavieh):** 1male, 1770m., 5. VII. 2002. The near of field.

***Carpocoris fuscispinus* Boh. \***

**Khoy (Badalan):** 3males, 2females, 1550m., 3. & 4. VIII. 2002. The near of field. On *Circium* sp. & *Verbascum* sp.

***Carpocoris pudicus* (Pd.) \***

**Khoy (Badalan):** 2males, 1female, 1550m., 3. & 4. VIII. 2002, **-Sardasht (Biuran):** 1male, 2females, 1750m., 19. VII. 2002, **-Piranshahr (Mashegan):** 2females 1850m., 17. VII. 2003. The near of fields.

***Dolycois baccarum* (L.)**

**Urmia (Band):** 1350m., 24. VI. 1976 Leg. Shayesteh et al. (1978)-**Khoy (Badalan):** 3males, 2females, 1550m., 3. & 4. VIII. 2002, **-Sardasht (Biuran):** 3male, 1750m., 19. VII. 2002, **-Piranshahr (Kowpar):** 5males, 2females, 1540m., 16. & 17. VII. 2002, **-Urmia (Joulbar):** 2males, 2females, 1405m., 26. VII. 2002, **-Chaldoran (Kenedy):** 2females, 1950m., 27. VII. 2002, **-Salmas (Patevir):** 3males, 2females 1350m., 21. VII. 2003, **-Bukan (Khorasaneh):** 2males, 1500m., 29. VI. & 1. VII. 2003, **-Shahindezh:** 1male, 2females, 1260m., 5. & 6. VII. 2003, **-Miandoab (Barough):** 3males, 1female, 1670m., 9. VII. 2003, **-Mahabad (Mangour-e-Sharghi):** 3males, 2females, 1800m., 24. VI. 2003. In fields and hilly meadows, cosmopolitan in all regions.

***Anthemina pusio* Kol \***

**Maku (Handavar):** 2males, 2female, 1600m., 30. VII. 2002, **-Poldasht (Aras):** 2males, 29. VII. 2002, **-Urmia (Kaboudan isle):** 1male, 2females, 1280m., 17 & 18. VI. 2003. In beside of river and lake.

***Codophila varia* F. \***

**Maku (Handavar):** 2females, 1600m., 30. VII. 2002, **-Khoy (Zavieh):** 2males, 1female, 1770m., 5. VII. 2002, **-Miandoab (Barough):** 2males, 1670m., 9. VII. 2003, **-Salmas (Aghesmail):** 1male, 1female, 1380m., 22. VII. 2003, **-Bukan (Khorasaneh):** 1male, 1500m., 29. VI. & 1. VII. 2003. In side of fields.

***Acrosternum millieri* (Ms. & Rey.) \***

**Mahabad (Kanibazar):** 2males, 1female, 1550m., 25. & 26. VI. 2003, In hilly steppes.

***Rhaphigaster nbeulosa* Poda \***

**Khoy (Markan):** 1female, 1770m., 6. VIII. 2002, **-Urmia (Nazlou):** 1male, 1360m., 2. VIII. 2002, **-Bukan (Ashigolan):** 1male, 1female, 1550m., 28. VI. 2003. In deciduous forest.

***Piezodorus lituratus* F.**

**Khoy:** 1750m., 1973, Leg. Hoberlandt (1995), **-Piranshahr (Mashegan):** 1female, 1850m., 17. VII. 2003, **-Salmas (Tazehshahr):** 1male, 1female, 1350m., 1. VIII. 2003. In foot of mountain, On *Vicia* sp. and *Rubus* sp.

***Eurydema ornata* L. \***

**Maku (Handavar):** 2males, 1female, 1600m., 30. VII. 2002, **-Khoy (Zavieh):** 3males, 2females, 1770m., 5. VII. 2002, **-Sardasht (Biuran):** 3males, 2females, 1750m., 19. VII. 2002, **-Urmia (Dareh-e-Shohada):** 4males, 1female, 1550m., 14. VI. 2003, **-Piranshahr (Kanibagh):** 2males, 4females, 1500m., 16. VII. 2003, **-Shahindezh:** 2males, 2females, 1260m., 5. & 6. VII. 2003, **-Mahabad (Mangour-e-Sharghi):** 4males, 2females, 1800m, 24. VI. 2003, **-Miandoab (Barough):** 1male, 3females, 1670m., 9. VII. 2003. In hilly meadows, On *Allysum murale*.

***Eurydema fieberi* Fieb. \***

**Piranshahr (Kowpar):** 3males, 1female, 1540m., 16. & 17. VII. 2002, **-Mahabad (Mangour-e-Sharghi):** 2males, 2females, 1800m., 24. VI. 2003, **-Bukan (Khorasaneh):** 2males, 1female, 1500m., 29. VI. & 1. VII. 2003. In hilly meadows and moist regions, On *Allysum* sp. and Brassicacea plants.

***Eurydema oleracea* L. \***

**Mahabad (Amed):** 2males, 1600m., 23. VI. 2003. In moist valleys, On *Sinapis* sp.

***Bagrada confusa* Hv. \*\***

**Urmia (Kaboudan isle):** 1males, 1280m., 17. & 18. VI. 2003. In steppe habitats, New Record of species for the fauna of Iran.

***Trochiscocoris hemipterus* Jak. \*\*\***

**Mahabad (Kanibazar):** 2males, 1female, 1550m., 25. & 26. VI. 2003. In dry dales, On *Isatis* sp. New Record of genus for the fauna of Iran.

**DISCUSSION**

The sampling was performed in all part of the province uniformly because of there is various climates in this province. Among collected 36 species, 28\* species and 2\*\* species and 1\*\* genus were reported for the first time in province (-) and Iran (\*\*) respectively.

The species of *Graphosoma lineatum* and *G. melonoxanthum* are similar morphologically, but red or orange and shine yellow respectively. Also these two species are certainly distinguished via genital organs of male.

The most abundant genus of this family is *Carpocoris* which collected about 200 specimens belonging to four species. Among these species, *C. podicus* was easily distinguished but the others were distinguished to comparing morphological characters and genial organ of male. The genus and species *Trochiscocoris hemipterus* (Jak.) which collected from Bukan Township in the south province is the first time report from Iran. Outstanding character of *T. hemipterus* (Jak.) is loss of membran wing. In the male, parameres is similar to knife and there is two dorsal and ventral sharp processes in median part, apical corners of pygophores are swollen and distinct.

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\* New Record of species for the fauna of Western Azerbaijan Province

\*\* New Record of species for the fauna of Iran

\*\*\* New Record of genus for the fauna of Iran

*Bagrada confusa* Hv. which collected from Kaboudan isle in Lake Urmia, is the first time report from Iran, and a part of anterior parameres is narrow and strongly curved. Pygophore miss notches proximal to apical corners and the median process is bifid.

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