A study on the Chrysomelidae (Coleoptera) from Kurdistan province and adjacent areas, western Iran

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Abstract: The leaf beetle fauna (Coleoptera: Chrysomelidae) from Kurdistan province and adjacent areas of western Iran is studied in this paper. A total of 25 species from 14 genera and 5 subfamilies (Alticinae, Clytrinae, Chrysomelinae, Cryptocephalinae, Galerucinae) were collected.

Key words: Coleoptera, Chrysomelidae, fauna, Kurdistan, Iran.

Introduction

The Chrysomelidae is one of the largest families of Coleoptera with over 50,000 species distributed throughout the world (Booth *et al*., 1990; Gruev, 1992; Warchalowski, 1994; Jolivet & Hawkeswood, 1995). Their biology and host-plants are almost as complex as the number of species and genera (Jolivet *et al*., 1988; Jolivet & Petitpierre, 1994). Leaf beetles feed on leaves, flowers and other parts of plants, so some of them are regarded as agricultural and forest pests (Jolivet & Hawkeswood, 1995; Özdikmen & Aslan, 2009).

The Iranian Chrysomelidae fauna has been studied previously by Medvedev (1957, 1962, 1983), Berti & Rapilly (1973), Sobhian (1976), Barkhordari *et al*. (1981), Modarres Awal (1997), Lopatin (1977, 1979, 1980, 1981a, 1981b, 1981c, 1984a, 1984b, 1985, 1988, 1990, 2001), Borowiec (2000), Swietojanska (2001), Moridi *et al.* (2002), Warchalowski (2004), Padasht Dehkaii & Mojib Hagh-Ghadam (2006), Serri (2006), Alavi (2006), Alavi & Khalili (2006), Hagh Ghadam & Padasht Dahkaii (2006), Mohammad Zade Fard (2007), Serri & Naserzadeh (2007), Bezdek (2008), Mohaghegh & Abaii (2008), Moradian *et al.* (2009), Döberl (2010), Barari & Serri (2010), Keyhanian & Taghaddosi (2010), Schöller (2010) and Ghahari & Jedryczkowski (2011). The aim of this paper is to document a part of the chrysomelid fauna from Kurdistan province and adjacent areas, western Iran. Kurdistan province, 28,817 km^2 in area, is located in the west of Iran and bounded by Iraq on the west, and is located between the provinces Hamadan, Kermanshah, West Azarbayjan and Zanjan. Kurdistan is one of the most mountainous regions in Iran and has a generally mild and quite pleasant climate throughout the spring and summer. As a result of its elevation and mountains, Kurdistan province has many rivers, lakes, glaciers and caves, which render it rather picturesque.

Materials and Methods

Specimens were collected throughout the growing seasons from various agricultural plots, using hand, sweep net and aspirator by a number of collectors. Almost all of the sampled regions were located in Kurdistan province and also a few localities in Hamadan, Kermanshah, West Azarbayjan and Zanjan provinces. Plants with leaves showing feeding

marks were also carefully examined and searched for beetles. Collected beetles were killed by ethyl acetate and taken to the laboratory for further analysis and dissection. Additionally some preserved materials in different museums and insect collections were used in this paper. Classification and nomenclature, and also identifications of the specimens (to species under stereomicroscope) have been followed by using the taxonomic keys provided by Portevin (1934), Mohr (1966, 1981), Kasap (1980), Lopatin (1984c), Döberl (1994), and Warchalowski (1991, 1996, 1998, 2000, 2003). In addition to the adult insects, some larvae collected from several different host plants were determined by identification keys including, Boving (1929), Böving & Craighead (1931) and Medvedev & Zaitzev (1978).

Results

A total of 25 species from 14 genera and 5 subfamilies of Chrysomelidae were collected from Kurdistan province and adjacent areas. The list of species is provided below.

Subfamily Alticinae Kutschera, 1859

Genus *Longitarsus* Latreille, 1829

Longitarsus corynthius corynthius (Reiche et Saulcy, 1858)
Material examined: Kurdistan province: Sanandaj, 1♂, 2♀, July 2007. Kermanshah province: Songhor, 2♂, 16 April 2009.

Longitarsus pulmonariae Weise, 1893
Material examined: Kermanshah province: Javanrood, 1♀, 22 August 2008.

Subfamily Clytrinae Jacoby et Clavareau, 1906

Genus *Clytra* Laicharting, 1781

Clytra (Clytra) laeviscula (Ratzeburg, 1837)
Material examined: Kurdistan province: Bijar, 2♀, June 2007. Zanjan province: Khodabandeh, 1♀, 12 June 2008.

Clytra (Clytraria) novempunctata Oliver, 1808
Material examined: Kurdistan province: Hassan-Abad, 2♂, 2♀, September 2007. Kermanshah province: Paveh, 3♀, 16 May 2010.

Genus *Labidotomis* Germar, 1822

Labidostomis asiatica Falderman, 1837
Material examined: Kurdistan province: Saghez, 1♂, 3♀, June 2007. Hamadan province: Asad-Abad, 1♂, 4 July 2008.

Labidostomis longimana (Linnaeus, 1758)
Material examined: Kurdistan province: Baneh, 1♂, 1♀, August 2007. Kamyaran, 1♀, July 2007.

Labidostomis mesopotamica Heyden, 1886
Material examined: Hamadan province: Gol-Tappeh, 2♀, 26 September 2006.

Labidostomis peregrina Weise, 1900
Material examined: Kurdistan province: Ghorveh, 1♀, July 2007.

Genus *Smargdina* Chevrolat, 1837

Smaragdina limbata (Steven, 1806)
Material examined: Kurdistan province: Sanandaj, 2♂, 4♀, July 2007. Kermanshah province: Ravansar, 3♂, 2♀, 11 April 2008. Zanjan province: Khodabandeh, 1♀, 12 June 2008.

Smaragdina (Monrosia) vaulogeri Pic, 1894
Material examined: Kermanshah province: Ravansar, 1♀, 11 April 2008.

Subfamily Chrysomelinae Latreille, 1802

Genus *Chrysolina* Motschulsky, 1860

Chrysolina marginata (Linnaeus, 1767)
Material examined: Kurdistan province: Bijar, 1♀, June 2007.

Chrysolina sahlbergi (Menetries, 1832)
Material examined: Hamadan province: Gol-Tappeh, 2♂, 26 September 2006. Kermanshah province: Javanrood, 1♂, 2♀, 24 August 2008.

Genus *Colaphus* Weise, 1916

Colaphus sophiae (Schaller, 1783)
Material examined: Zanjan province: Mahneshan, 1♂, 1♀, 12 June 2008.

Genus *Entomoscelis* Chevrolat, 1837

Entomoscelis adonidis (Pallas, 1771)
Material examined: Kurdistan province: Baneh, 2♀, August 2007.

Genus *Gastrophysa* Chevrolat, 1837

Gastrophysa polygoni (Linnaeus, 1758)
Material examined: Kurdistan province: Dehkalan, 1♀, April 2007. Hamadan province: Asad-Abad, 1♂, 2♀, 14 July 2008.

Genus *Phratora* Chevrolat, 1837

Phratora tibialis (Suffrian, 1851)
Material examined: Kurdistan province: Saghez, 1♀, June 2007.

Phratora vitellinae (Linnaeus, 1758)
Material examined: Zanjan province: Mahneshan, 1♂, 12 June 2008. Kurdistan province: Kamyaran, 1♀, July 2007.

Genus *Prasocuris* Latreille, 1802

Prasocuris junci (Brahm, 1790)
Material examined: Kurdistan province: Ghorveh, 1♀, July 2007.

Subfamily Cryptocephalinae Chapuis, 1874

Genus *Cryptocephalus* Geoffroy, 1762

Cryptocephalus duplicatus Suffrian, 1847
Material examined: Kurdistan province: Kamyaran, 1♂, 2♀, July 2007.

Cryptocephalus octacosmus Bedel, 1891
Material examined: Zanjan province: Mahneshan, 1♀, 12 June 2008.

Cryptocephalus schaefferi Schrank, 1789
Material examined: Kermanshah province: Javanrood, 1♀, 24 August 2008.

Cryptocephalus variceps Weise, 1884
Material examined: Kurdistan province: Sanandaj, 2♀, July 2007.

Subfamily Galerucinae Seidlitz, 1891

Genus *Diorhabda* Weise, 1883

Diorhabda persica Faldermann, 1837
Material examined: Kurdistan province: Kamyaran, 1♂, 2♀, July 2007. Kermanshah province: Songhor, 1♀, 16 April 2009.

Genus *Galeruca* Müller, 1764

Galeruca (Emarhopa) rufa Germar, 1824
Material examined: Kurdistan province: Hassan-Abad, 1♀, September 2007.

Genus *Luperus* Müller, 1764

Luperus flavipennis Lucas, 1849
Material examined: Kurdistan province: Divandarreh, 2♂, 4♀, August 2007. Zanjan province: Mahneshan, 11♂, 2♀, 12 June 2008.

Discussion

As a result of this research, a total of 25 species are reported from Kurdistan province and adjacent areas. This research is a partial study on the species diversity of Chrysomelidae from the mentioned regions. Further and detailed discussion of these findings will be provided at a later date. Completing the faunistic surveys will undoubtedly result in the discovery of many other species in this region, even probably new species. Among the 5 subfamilies listed in this paper, Chrysomelinae with 5 genera and 8 species, is more diverse than the others. With attention to the agricultural and forest perspective, fortunately none of these eight species are important pests; because the population density of larvae and adults is under the economic injury level in the sampled regions. Almost all of the specimens of this research were determined on the basis of adults but some larvae from the subfamilies Galerucinae and Alticinae were also collected and studied. Through the study of the larvae of these leaf beetles, a few larvae were identified to species level. There are very few detectable differences between larvae of Galerucinae and Alticinae (Böving & Craighead 1931; Lawrence & Britton 1991). Finally, the host plants of leaf beetles were not studied for this paper; therefore this can be an incentive to researchers to work on the host plants of Chrysomelidae in different regions of Iran as undoubtedly new records will be made. The members of this family have diverse and interesting host plants which all of the known host plant genera and families were listed by Jolivet & Hawkeswood (1995).

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