

Nineteen New Records of Species of the Family Chrysomelidae (Coleoptera: Chrysomeloidea) for the Fauna of Iran

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Abstract: Data on the species diversity of five subfamilies of the family Chrysomelidae (Coleoptera) from Iran are complemented. A total of 19 new country records within the subfamilies Cassidinae (four species), Criocerinae (two species), Donaciinae (five species), Eumolpinae (three species) and Galerucinae (five species) were identified.

Key words: Leaf beetles, fauna, Chrysomelidae, distribution, new record, Iran

Introduction

The family Chrysomelidae (leaf beetles) comprises over 37,000 described species in more than 2,500 genera, making it the largest family in the class Hexapoda (ŞEN & GÖK 2009, BIONDI & D'ALESSANDRO 2012). Leaf beetles are partially recognisable by their tarsal formula, which appears to be 4-4-4, but is actually 5-5-5 as the fourth tarsal segment is very small and hidden by the third (JOHNSON & TRIPLEHORN 2004). Adults feed on leaves, flowers, pollen and young shoots, while their larvae feed mainly on leaves or roots, thus some species acting as pests of cultivated plants (JOLIVET & PETITPIERRE 1994, JOLIVET & HAWKESWOOD 1995). On the other hand, a few species are beneficial due to their use in biological control of weeds (JOLIVET & VERMA 2002).

Iran forms a large part of the Iranian Plateau and covers an area of 1,623,779 km². Climatologically, Iran is a predominantly arid and semi-arid country but the northern slopes of the Alburz Mts. and the Caspian Lowland receive 800 to 2000 mm annual rainfall, making them the most humid parts of the country. The Dasht-e Kavir and Dasht-e Lut Deserts are the driest areas with an annual precipitation of less than 150 mm. The highlands receive between 250 and 800 mm annual rainfall (ZEHZAD et al. 2002).

Iranian Chrysomelidae have been poorly studied despite many contributions such as those by MEDVEDEV (1957, 1962, 1983), BERTI & RAPILLY (1973), LOPATIN (1977, 1979, 1980, 1981a, 1981b, 1981c, 1984a, b, 1985, 1988, 1990, 2001), MODARRES AWAL (1997), BOROWIEC (2000), SWIETOJANSKA (2001), WARCHAŁOWSKI (2004), BEZDEK (2008), SCHÖLLER (2010), GHAHARI & HAWKESWOOD (2011), GHAHARI & JĘDRYCKOWSKI (2012), DELOBEL & SADEGHI (2014) and SAMIN et al. (2014). This paper presents results of faunistic surveys on Iranian Chrysomelidae adding 19 new species records to the fauna of the country.

Materials and Methods

This faunistic survey was based on specimens collected by the author and other researchers in 2009-2013 from several regions of Iran. The specimens were collected using mostly an entomological net and a few samples – using Malaise trap. Additionally, some materials deposited in the collection of the Islamic Azad University were determined. The specimens were identified at the species level under stereomicroscope using the taxonomic keys and figures given by MOHR (1966), LOPATIN (1984c), BIEŃKOWSKI (2004) and WARCHAŁOWSKI



Fig. 1. Map of Iran showing the cities where samplings were conducted.

(1998, 1999, 2003, 2010). Data about classification, nomenclature and distribution are according to BOROWIEC & SEKERKA (2010) for the Cassidinae, SCHMITT (2010) for the Criocerinae, SILFVERBERG (2010) for the Donaciinae, MOSEYKO (2010) for the Eumolpinae, and BEENEN (2010) for the Galerucinae. The Iranian provinces are shown in Fig. 1.

Results

Nineteen species of the family Chrysomelidae belonging to 13 genera were identified as new records for the Iranian fauna. These genera were *Cassida* Linnaeus (3 species), *Chiridula* Weise (1) (Cassidinae), *Crioceris* Geoffroy (1), *Lilioceris* Reitter (1) (Criocerinae), *Donacia* Fabricius (4), *Plateumaris* Thomson (1) (Donaciinae), *Chrysochus* Chevrolat (2), *Pachnophorus* Chevrolat (1) (Eumolpinae), *Diorhabda* Weise (1), *Galeruca* Geoffroy (1), *Galerucella* Crotch (1), *Luperus* Geoffroy (1) and *Nymphius* Weise (1) (Galerucinae). The list of spe-

cies is given below in alphabetic order, with data on the specimens studied and distribution data.

SUBFAMILY CASSIDINAE GYLLENHAL, 1813

Tribe Cassidini Gyllenhal, 1813

Genus *Cassida* Linnaeus, 1758

Cassida habitziae Motschulsky, 1838

Material examined: Yasuj (Kuhgiluyeh & Boyer-Ahmad), 30°65'N 51°60'E, 1849 m a.s.l., 1 ex, 10.05.2011. General distribution: Armenia, Georgia, Russia (South European territory), Turkey.

Cassida seraphina Ménétries, 1836

Material examined: Gorgan (Golestan Province), 36°50'N 54°30'E, 110 m a.s.l., 1 ex, 09.05.2012. General distribution: Armenia, Greece, Kazakhstan, Russia (South European territory), Turkey.

Cassida turcmunica Weise, 1892

Material examined: Jiroft (Kerman Province), 28°50'N 57°35'E, 1176 m a.s.l., 2 ex, 10.05.2009. General distribution: Afghanistan, Kazakhstan, Mongolia, Tibet, Turkmenistan, Uzbekistan.

Genus *Chiridula* Weise, 1889

Chiridula semenovi Weise, 1889

Material examined: Jiroft (Kerman Province),

28°50'N 57°35'E, 1176 m a.s.l., 1 ex, 10.05.2009. General distribution: Afghanistan, Armenia, Kazakhstan, Kyrgyzstan, Pakistan, Tadjikistan, Tibet, Turkmenistan.

SUBFAMILY CRIOCERINAE LATREILLE, 1804

Genus *Crioceris* Geoffroy, 1762

***Crioceris bicrucata* Sahlberg, 1823**

Material examined: Gorgan (Golestan Province), 36°50'N 54°30'E, 110 m a.s.l., 2 ex, 09.05.2012. General distribution: Bulgaria, Greece, Jordan, Kazakhstan, Macedonia, Tadjikistan, Turkey, Uzbekistan.

Genus *Liliocerus* Reitter, 1913

***Liliocerus faldermanni* (Guérin-Ménéville, 1844)**

Material examined: Ahar (East Azerbaijan Province), 38°30'N 47°08'E, 1365 m a.s.l., 3 ex, 09.07.2009. Urmia (West Azerbaijan Province), 37°33'N 45°00'E, 1416 m a.s.l., 2 ex, 25.05.2011. General distribution: Armenia, Azerbaijan, Cyprus, Georgia, Greece, Iraq, Israel, Jordan, Russia (South European territory), Syria, Turkey.

SUBFAMILY DONACIINAE KIRBY, 1837

TRIBE DONACIINI KIRBY, 1837

Genus *Donacia* Fabricius, 1775

***Donacia aquatica* (Linnaeus, 1758)**

Material examined: Bojnurd (Khorasan-e Shomali Province), 37°35'N 57°20'E, 1084 m a.s.l., 2 ex, 07.05.2009. General distribution: Austria, Belgium, Bosnia Herzegovina, Byelorussia, China, the Czech Republic, Denmark, Estonia, Finland, France, Great Britain, Georgia, Germany, Hungary, Ireland, Italy, Japan, Latvia, Liechtenstein, Lithuania, Luxembourg, Montenegro, Netherlands, Norway, Poland, Romania, Russia (Central European territory, East Siberia, Far East, North European territory, West Siberia), Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey, Ukraine.

***Donacia impressa* Paykull, 1799**

Material examined: Yasuj (Kuhgiluyeh & Boyer-Ahmad), 30°65'N 51°60'E, 1849 m a.s.l., 3 ex, 10.05.2011. General distribution: Algeria, Austria, Azerbaijan, Belgium, Bosnia Herzegovina, Bulgaria, Byelorussia, Croatia, the Czech Republic, Denmark, Estonia, Finland, France, Great Britain, Georgia, Germany, Hungary, Ireland, Italy, Kazakhstan, Latvia, Lithuania, Luxembourg, Montenegro, Morocco, Netherlands, Norway, Poland, Portugal, Romania, Russia (Central European territory, East Siberia, North European territory, West Siberia), Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey, Ukraine.

***Donacia thalassina thalassina* Germar, 1811**

Material examined: Ahar (East Azerbaijan Province), 38°30'N 47°08'E, 1365 m a.s.l., 3 ex, 09.07.2009. General distribution: Armenia, Austria, Azerbaijan, Belgium, Bulgaria, Byelorussia, the Czech Republic, Denmark, Estonia, Finland, France, Great Britain, Georgia, Germany, Hungary, Ireland, Italy, Kazakhstan, Latvia, Lithuania, Luxembourg, Mongolia, Montenegro, Netherlands, Norway, Poland, Romania, Russia (Central European territory, East Siberia, North European territory, West Siberia), Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey, Ukraine.

***Donacia tomentosa* Ahrens, 1810**

Material examined: Borujerd (Lorestan Province),

33°50'N 48°50'E, 1588 m a.s.l., 4 ex, 11.08.2013. General distribution: Azerbaijan, Belgium, Bosnia Herzegovina, Bulgaria, Byelorussia, the Czech Republic, Estonia, Finland, France, Germany, Hungary, Italy, Kazakhstan, Latvia, Lithuania, Luxembourg, Netherlands, Poland, Romania, Russia (Central European territory, North European territory, West Siberia), Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey, Turkmenistan, Ukraine, Uzbekistan.

TRIBE PLATEUMARINI BÖVING, 1922

Genus *Plateumaris* Thomson, 1859

***Plateumaris* (*Plateumaris*) *braccata* (Scopoli, 1772)**

Material examined: Sabzevar (Khorasan-e Razavi Province), 36°12'N 57°35'E, 1024 m a.s.l., 2 ex, 23.08.2012. General distribution: Austria, Azerbaijan, Belgium, Bulgaria, Byelorussia, the Czech Republic, Denmark, Estonia, Finland, France, Great Britain, Georgia, Germany, Hungary, Italy, Kazakhstan, Latvia, Lithuania, Luxembourg, Moldavia, Netherlands, Norway, Poland, Romania, Russia (Central European territory, West Siberia), Slovakia, Slovenia, Spain, Sweden, Switzerland, Ukraine.

SUBFAMILY EUMOLPINAE HOPE, 1840

TRIBE BROMIINI CHAPUIS, 1874

Genus *Chrysochus* Chevrolat, 1836

***Chrysochus asclepiadeus asclepiadeus* (Pallas, 1773)**

Material examined: Arak (Markazi Province), 34°14'N 49°38'E, 1760 m a.s.l., 1 ex, 06.09.2012. Bijar (Kordestan Province), 35°52'N 47°36'E, 1746 m a.s.l., 1 ex, 15.08.2012. General distribution: Armenia, Austria, Azerbaijan, Croatia, the Czech Republic, France, Germany, Greece, Hungary, Italy, Kazakhstan, Macedonia, Moldavia, Montenegro, Poland, Russia (South European territory), Serbia, Slovakia, Switzerland, Ukraine.

Genus *Pachnophorus* Chevrolat, 1836

***Pachnophorus pilosus* (Rossi, 1790)**

Material examined: Malayer (Hamadan province), 34°20'N 48°45'E, 1776 m a.s.l., 1 ex, 19.09.2010. General distribution: Albania, Austria, Azerbaijan, Belgium, Bosnia Herzegovina, Bulgaria, Byelorussia, Croatia, the Czech Republic, Estonia, Finland, France, Germany, Hungary, Latvia, Liechtenstein, Lithuania, Luxembourg, Montenegro, Poland, Romania, Russia (Central European territory, East Siberia, North European territory, South European territory, West Siberia), Serbia, Slovakia, Spain, Switzerland, Turkey, Ukraine.

***Pachnophorus villosus* (Duftschmid, 1825)**

Material examined: Urmia (West Azerbaijan Province), 37°33'N 45°00'E, 1416 m a.s.l., 2 ex, 25.05.2011. General distribution: Albania, Austria, Azerbaijan, Bosnia Herzegovina, Bulgaria, Croatia, the Czech Republic, Greece, Hungary, Italy, Montenegro, Romania, Russia (South European territory), Serbia, Slovakia, Turkey, Ukraine.

SUBFAMILY GALERUCINAE LATREILLE, 1802

TRIBE GALEUCICINI LATREILLE, 1802

Genus *Diorhabda* Weise, 1883

***Diorhabda elongata* (Brulle, 1836)**

Material examined: Borujerd (Lorestan Province), 33°50'N 48°50'E, 1588 m a.s.l., 2 ex, 11.08.2013. General distribution: Albania, Algeria, Bosnia Herzegovina, Bulgaria, Croatia, Cyprus, Egypt, Greece, Lebanon, Macedonia, Montenegro, Portugal, Russia (South European territory), Serbia, Spain, Syria, Turkey.

Genus *Galeruca* Geoffroy, 1762

***Galeruca (Galeruca) pomonae* (Scopoli, 1763)**

Material examined: Qaémshahr (Mazandaran Province), 36°28'N 52°52'E, 18 m a.s.l., 4 ex, 14.07.2010. General distribution: Albania, Austria, Azerbaijan, Belgium, Bulgaria, Byelorussia, China, the Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Italy, Kazakhstan, Luxembourg, Mongolia, Montenegro, Morocco, Netherlands, Norway, Poland, Romania, Russia (West Siberia), Serbia, Slovakia, Sweden, Switzerland, Tadjhikistan, Turkey, Ukraine.

Genus *Galerucella* Crotch, 1873

***Galerucella (Galerucella) nymphaeae* (Linnaeus, 1758)**

Material examined: Karaj (Elburz Province), 35°50'N 51°00'E, 1350 m a.s.l., 1 ex, 3.08.2013. General distribution: Albania, Austria, Azerbaijan, Belgium, Bosnia Herzegovina, Bulgaria, Byelorussia, the Czech Republic, Denmark, Estonia, Finland, France, Great Britain, Germany, Greece, Hungary, Israel, Italy, Kazakhstan, Latvia, Lithuania, Macedonia, Mongolia, Montenegro, Netherlands, Norway, Poland, Romania, Russia (Far East, South European territory), Serbia, Slovakia, Sweden, Switzerland, Turkey, Ukraine.

TRIBE LUPERINI GISTEL, 1848

Genus *Luperus* Geoffroy, 1762

***Luperus flavipes flavipes* (Linnaeus, 1767)**

Material examined: Kashan (Esfahan Province), 34°00'N 51°20'E, 933 m a.s.l., 2 ex, 26.06.2010. General distribution: Albania, Austria, Azerbaijan, Belgium, Bosnia Herzegovina, Bulgaria, Byelorussia, Croatia,

the Czech Republic, Denmark, Estonia, Finland, France, Germany, Great Britain, Greece, Hungary, Italy, Kazakhstan, Latvia, Liechtenstein, Lithuania, Luxembourg, Macedonia, Mongolia, Montenegro, Netherlands, Poland, Russia, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey, Ukraine.

Genus *Nymphius* Weise, 1900

***Nymphius stylifer stylifer* (Weise, 1899)**

Material examined: Urmia (West Azerbaijan Province), 37°33'N 45°00'E, 1416 m a.s.l., 1 ex, 25.05.2011. General distribution: Armenia, Azerbaijan, Georgia, Russia (South European territory), Turkey.

Discussion

We collected and identified 19 chrysomelid species as new records from 14 Iranian localities. This indicates that the fauna of Iranian Chrysomelidae is really diverse and, on the other hand, insufficiently studied. With this study, the total species number of Iranian Cassidinae, Criocerinae, Donaciinae, Eumolpinae and Galerucinae reaches 29, 12, 13, 21 and 38 species, respectively (Fig. 2). However, Iran is a large country with various geographical regions and comprises diverse flora in different regions, especially in the northern and western regions. Therefore, further new findings (new country records, distribution and host data) on Iranian Chrysomelidae are expected to be discovered by faunistic surveys. Additionally, biology and host plants of Chrysomelidae have not been studied in Iran and are poorly explored in the world (JOLIVET & VERMA 2002), while these research topics are the main steps for the establishment of efficient controlling methods.

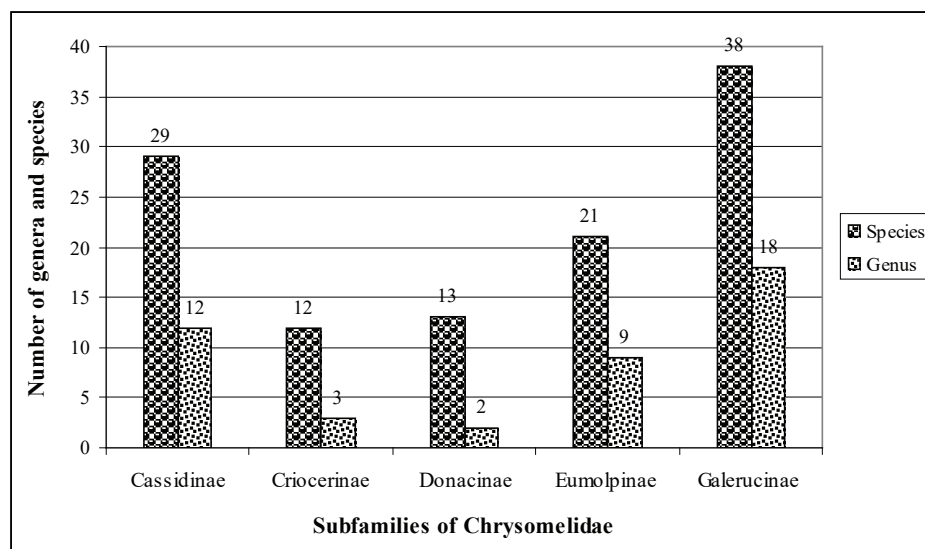


Fig. 2. Species diversity of the Iranian Cassidinae, Criocerinae, Donaciinae, Eumolpinae and Galerucinae (Löbl & Smetana 2010 and the present paper).

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References

- BEENEN R. 2010. Subfamily Galerucinae, pp. 443-491. In: Löbl, I. & Smetana, A. 2010. Catalogue of Palaearctic Coleoptera. Vol. 6. Chrysomeloidea. Stenstrup: Apollo Books, 924 p.
- BERTI N. & RAPILLY M. 1973. Contribution a la faune de l'Iran; Voyages de MM. R. Naviaux et M. Rapilly (Col.: Chrysomelidae). Annales de la Société Entomologique de France 91: 861-894.
- BEZDEK J. 2008. New species and subspecies of *Nymphius* (Coleoptera: Chrysomelidae: Galerucinae) from Iran and Turkey. Acta Entomologica Musei Nationalis Pragae 48: 79-93.
- BIEŃKOWSKI A. O. 2004. Leaf-beetles (Coleoptera: Chrysomelidae) of the Eastern Europe. New key to subfamilies, genera and species. Moscow: Mikron-print, 278 p.
- BIONDI M. & D'ALESSANDRO P. 2012. Afrotropical flea beetle genera: a key to their identification, updated catalogue and biogeographical analysis (Coleoptera, Chrysomelidae, Galerucinae, Alticini). ZooKeys 253: 1-158.
- BOROWIEC L. 2000. *Hypocassida convexipennis*, a new species from Iran (Coleoptera: Chrysomelidae: Cassidinae). Genus 11: 601-605.
- BOROWIEC L. & SEKERKA L. 2010. Subfamily Cassidinae, pp. 368-390. In: Löbl I. & SMETANA A. 2010. Catalogue of Palaearctic Coleoptera. Vol. 6. Chrysomeloidea. Stenstrup: Apollo Books, 924 p.
- DELOBEL A. & SADEGHI S. E. 2014. Two new *Bruchus* species from the Iranian highlands, with biological data (Chrysomelidae: Bruchinae). Genus 25 (3): 433-440.
- GHAHARI H. & HAWKESWOOD T. J. 2011. A study on the Chrysomelidae (Coleoptera) from Kurdistan province and adjacent areas, western Iran. Calodema 195: 1-6.
- GHAHARI H. & JĘDRYCKOWSKI W. B. 2012. A contribution to the knowledge of leaf beetles (Coleoptera: Chrysomelidae) from Arasbaran Biosphere Reserve and its neighboring areas (Northwestern Iran). Acta Zoologica Bulgarica 64 (4): 347-352.
- JOHNSON N. F. & TRIPLEHORN C. A. 2004. Borror and DeLong's Introduction to the study of insects. Seventh Edition. Cengage Learning, 864 p.
- JOLIVET P. & HAWKESWOOD T. 1995. Host-plants of Chrysomelidae of the World. Balogh Scientific Books, 281 p.
- JOLIVET P. & PETITPIERRE E. 1994. Novel aspects of the biology of Chrysomelidae. Dordrecht: Kluwer Academic Publishers, 582 p.
- JOLIVET P. & VERMA K. K. 2002. Biology of leaf beetles. Intercept Ltd., USA, 332 p.
- LÖBL I. & SMETANA A. 2010. Catalogue of Palaearctic Coleoptera. Vol. 6. Chrysomeloidea. Stenstrup: Apollo Books, 924 p.
- LOPATIN I. K. 1977. Eine neue *Cryptocephalus*-Art aus Iran (Coleoptera, Chrysomelidae). Mitteilungen entomologische Gesellschaft Basel, N. F. 27: 116-118.
- LOPATIN I. K. 1979. New genus and new species of leaf beetles (Coleoptera, Chrysomelidae) from Iran. Review of Entomology 58: 586-589.
- LOPATIN I. K. 1980. Leaf beetles (Coleoptera, Chrysomelidae) of Iran. Results of Czechoslovak-Iranian expedition 1973. I. Review of Entomology 59: 613-623.
- LOPATIN I. K. 1981a. Ergebnisse der tschechoslowakisch-iranischen entomologischen Expeditionen nach dem Iran (1970). Coleoptera: Chrysomelidae. Acta Entomologica Musei Nationalis Pragae 40: 371-376.
- LOPATIN I. K. 1981b. Correlation of Central Asian and Iranian faunas. Problems of common entomology. Transaction of All-Union Entomological Society 63: 79-81.
- LOPATIN I. K. 1981c. New genera and species of leaf beetles from Iran. Results of Czechoslovak-Iranian expedition in 1973. Part II. Review of Entomology 60: 623-628.
- LOPATIN I. K. 1984a. Zhuki lystoedy (Coleoptera, Chrysomelidae) Irana. Rezultaty Chekchoslovatsko-Iranskih ekspedycii 1973-1977 gg. III. Entomologicheskoe Obozrenie, 63: 79-92.
- LOPATIN I. K. 1984b. Leaf beetles of Iran. Experiment of zoogeographic characteristics of fauna. In: IX Congress of All-Union Entomological Society, Theses of proceedings, part 2, Kiev, pp. 22.
- LOPATIN I. K. 1984c. Leaf-beetles (Chrysomelidae) of Middle Asia and Kazakhstan. New Delhi: Oxonian Press, 413 p.
- LOPATIN I. K. 1985. Leaf-beetles (Coleoptera, Chrysomelidae) of Iran. Results of the Czechoslovak-Iranian Expeditions of the 1973-1977. IV. Entomologicheskoe Obozrenie 64: 760-771 (in Russian).
- LOPATIN I. K. 1988. *Calomicrus ghilarovi* sp. n. and its related species from Central Asia and Iran (Coleoptera, Chrysomelidae). Systematics of insects and mites. Transactions of All-Union Entomological Society 70: 65-67.
- LOPATIN I. K. 1990. Fauna of leaf beetles of subfamily Alticinae (Coleoptera, Chrysomelidae) of Iran. Results of Czechoslovak-Iranian expeditions in 1970-1977. V. Review of Entomology 69 (3): 598-608.
- LOPATIN I. K. 2001. Review of Iranian species of the genus *Tituboea* Lacordaire, 1848 (Coleoptera: Chrysomelidae). Genus 12: 35-43.
- MEDVEDEV L. N. 1957. Neue palaearktische Blattkäferarten (Coleoptera: Chrysomelidae). Beitrage Entomology 7: 326-333.
- MEDVEDEV L. N. 1962. Review of leaf beetles of the genus *Antipa* (Coleoptera, Chrysomelidae) of the fauna of the USSR and contiguous countries. Entomologicheskoe Obozrenie 41: 613-624 (in Russian).
- MEDVEDEV L. N. 1983. Chrysomelidae from Iran (Insecta: Coleoptera). Senckenbergiana-Biologica, 64: 133-140.
- MODARRES AWAL M. 1997. Family Chrysomelidae, pp. 151-153. In: MODARRES AWAL M. (Ed.): List of agricultural pests and their natural enemies in Iran. Ferdowsi University Press, 429 p.
- MOHR K. H. 1966. Chrysomelidae. In: FREUDE H., HARDE K., LOHSE G. A. (eds.), Die Käfer Mitteleuropas, Krefeld 9: 95-299.
- MOSEYKO A. G. 2010. Subfamily Eumolpinae, pp. 619-643. In: Löbl I. & SMETANA A. 2010. Catalogue of Palaearctic Coleoptera. Vol. 6. Chrysomeloidea. Stenstrup: Apollo Books, 924 p.
- SAMIN N., GHAHARI H. & JĘDRYCKOWSKI W. B. 2014. A study on the Chrysomelidae (Coleoptera) from the Golestan Province, Northern Iran. Acta Phytopathologica et Entomologica Hungarica 49 (2): 253-260.
- SCHMITT M. 2010. Subfamily Criocerinae, pp. 359-368. In: Löbl

- I. & SMETANA A. 2010. Catalogue of Palaearctic Coleoptera. Vol. 6. Chrysomeloidea. Stenstrup: Apollo Books, 924 p.
- SCHÖLLER M. 2010. *Pachybrachis salsuginosus* n. sp. from Iran (Coleoptera: Chrysomelidae: Cryptocephalinae). Mitteilungen Internationaler Entomologischer Verein 35: 149–154.
- ŞEN I. & GÖK A. 2009. Leaf beetle communities (Coleoptera: Chrysomelidae) of two mixed forest ecosystems dominated by pine-oak hawthorn in Isparta province, Turkey. *Annales Zoologici Fennici* 46 (3): 217–232.
- SILFVERBERG H. 2010. Subfamily Donaciinae, pp. 354–358. In: LÖBL I. & SMETANA A. 2010. Catalogue of Palaearctic Coleoptera. Vol. 6. Chrysomeloidea. Stenstrup: Apollo Books, 924 p.
- SWIETOJANSKA J. 2001. *Hispa tarsata*, a new species from Iran (Coleoptera: Chrysomelidae: Hispinae). *Genus* 12: 479–482.
- WARCHALOWSKI A. 1998. Chrysomelidae Stonkowate (Insecta: Coleoptera), Część VI, Fauna Polski, Tom 20, Warszawa, 292 p.
- WARCHALOWSKI A. 1999. Übersicht der westpaläarktischen Arten der Untergattung *Burlinius* Lopatin, 1965 (Coleoptera: Chrysomelidae: Cryptocephalus). *Genus* 10 (4): 529–627.
- WARCHALOWSKI A. 2003. The leaf-beetles (Chrysomelidae) of Europe and the Mediterranean region. Warszawa: Natura optima dux Foundation, 600 p.
- WARCHALOWSKI A. 2004. *Labidostomis kantneri* sp. nov. from Iran (Coleoptera: Chrysomelidae: Clytrinae). *Annales Zoologici* 54: 557–559.
- WARCHALOWSKI A. 2010. The Palearctic Chrysomelidae: Identification keys, Vol. 2. Warszawa: Natura Optima Dux Foundation, 685 p.
- ZEHZAD B., KIABI B. H. & MADJNOONIAN H. 2002. The natural areas and landscape of Iran: an overview. *Zoology in the Middle East* 26: 7–10.

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