

NEW RECORDS OF CHRYSOMELIDAE AND CURCULIONIDAE (COLEOPTERA) FROM IRAN

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New records of Chrysomelidae and Curculionidae (Coleoptera) from Iran.- Ebru Gül Aslan, Andrei A. Legalov, Hassan Ghahari, Andrzej Warchałowski, Enzo Colonnelli, Wojciech B. Jêdryczkowski. – This paper deals with the faunistic survey conducted on two families, Chrysomelidae and Curculionidae (Coleoptera) from Iran. In total, 12 species of Chrysomelidae within five subfamilies, Cassidinae (two species), Cryptocephalinae (seven species), Donaciinae (one species), Eumolpinae (one species), Galerucinae (one species) and 15 species of Curculionidae within six subfamilies, Brachycerinae (three species), Conoderinae (eight species), Cossoninae (one species), Curculioninae (one species), Lixinae (one species), Mesoptiliinae (one species) were collected and identified as new country records.

Key words: leaf beetle, weevil, fauna, species diversity, distribution, Iran

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Нові знахідки твердокрилих родин Chrysomelidae та Curculionidae (Coleoptera) з Ірану. – Ебру Аслан, Андрій Легалов, Хассан Гахари, Анджей Варчаловські, Ензо Колоннеллі, Войцех Єдрицьковські. – У даній роботі розглянуто результати фауністичних досліджень, проведених на території Ірану. Матеріал був зібраний з використанням різних ентомологічних методик. Крім того, були використані матеріали ентомологічних колекцій інститутів та університетів. Всі матеріали зберігаються у колекціях авторів публікації. В роботі для кожного виду надано інформацію про дату збору, локалітет, географічні координати та кількість екземплярів. Класифікацією жуків-довгоносиків наведена згідно Алонсо-Заразага та ін. (2017), а для жуків-листоїдів згідно Льюбл і Сметана (2010). Матеріал містить дані щодо нових знахідок з двох родин твердокрилих – Chrysomelidae та Curculionidae. Загалом наведено 27 нових видів для фауни Ірану. Серед них родина Chrysomelidae – 12 видів з п'яти підродин: Cassidinae (2 види), Cryptocephalinae (7 видів), Donaciinae (1 вид), Eumolpinae (1 вид), Galerucinae (1 вид) і родина Curculionidae – 15 видів з шести підродин: Brachycerinae (3 види), Conoderinae (8 видів), Cossoninae (1 вид), Curculioninae (1 вид), Lixinae (1 вид), Mesoptiliinae (1 вид) були зібрані та зазначені як нові знахідки для Ірану. Представлення в роботі 27 нових знахідок для досліджуваного регіону свідчить про те, що фауна Ірану ще в значній мірі не вивчена, і продовження фауністичних досліджень ще надасть дані про нові знахідки видів комах. Відомості про кількісний видовий склад фауни комах, що поширені на цій території, є важливими не тільки для інвентаризації біоти, але також і для оцінки фактичних втрат біорізноманіття. Значна кількість нових знахідок та нових видів, описаних в Ірані під час останніх досліджень, підтверджує необхідність збільшення зусиль в напрямку продовження існуючих та започаткування нових фауністичних робіт. Крім того, слід зазначити, що жуки-листоїди і жуки-довгоносики представляють собою доволі чисельну групу комах-фітофагів і відіграють значну роль в різних типах екосистем. Інформація про структуру їх угруповань є важливою для розуміння взаємозв'язків «рослина – комаха-фітофаг».

Ключові слова: жуки-листоїди, жуки-довгоносики, фауна, видове різноманіття, поширення, Іран.

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Introduction

The Chrysomelidae is one of the largest families of Coleoptera with up to 40.000 species described in more than 2.000 genera distributed throughout the world (Jolivet & Verma 2002; Jolivet et al. 2009; Löbl & Smetana 2010). The faunistic contributions on Iranian Chrysomelidae have been increased since 1997 to 2012 which 60 species listed by Modarres Awal (1997) reached to 184 by Modarres Awal (2012). Recently, among the different taxa of Iranian Chrysomelidae; Alticini, Bruchinae and Galerucinae s.str. with 180, 117 and 44 species respectively, have been studied well and published (Mirzaei and Nozari, 2016; Ghahari and Borowiec, 2017; Aslan and Ghahari, 2017). The chrysomelids describe close relationship with the Curculionidae due to their distinct phytophagous diet (Hsiao, 1994). The herbivorous feeding of weevils and leaf beetles makes these groups of special interest especially for ecological studies.

The family Curculionidae comprises about 4.600 genera and more than 50.000 described species. It is larger than any other groups in weevils and comprises more than 80% of all weevil species (Oberprieler et al., 2007). The fauna of Iranian Curculionoidea is poorly studied which is represented by 757 species (Legalov et al., 2010).

The aim of this paper is presenting results of a faunistic investigation on Iranian Chrysomelidae and Curculionidae and introducing of 27 new country records.

Material and methods

The specimens of this research were collected by sweeping, beating tray, canopy fogging, leaf litter sifting and processing the samples through Berlese funnels, Malaise and flight intercept traps. Additionally, some materials were obtained from the insect collections and some museums. The materials were determined by the authors and some other specialists and are preserved in the collections of authors. Information concerning date of collection, locality, coordinates, and number of specimens are given. In this paper we follow the classification and the nomenclature of weevils as

suggested by Alonso-Zarazaga et al. (2017), and of leaf beetles by Löbl & Smetana (2010).

Results

Totally 12 species of Chrysomelidae within five subfamilies and six genera, and 15 species of Curculionidae within six subfamilies and 13 genera were collected from different regions of Iran. All the listed species in this paper are new records for the fauna of Iran. The list of species is given below alphabetically together with distributional data.

Family Chrysomelidae Latreille, 1802

Subfamily Cassidinae Gyllenhal, 1813

Tribe Cassidini Gyllenhal, 1813

Genus *Cassida* Linnaeus, 1758

Cassida canaliculata Laicharting, 1781

Material examined: Alborz province, Taleghan (Barikan), 36°18'N 50°76'E, 2 ex, April 2008.

General distribution: Austria, Bosnia Herzegovina, Bulgaria, Croatia, Czech Republic, France, Germany, Hungary, Italy, Kazakhstan, Moldavia, Montenegro, Poland, Romania, Serbia, Slovakia, Slovenia, Switzerland, Turkey, Ukraine.

Cassida sanguinolenta Müller, 1776

Material examined: Fars province, Abadeh, 31°15'N 52°30'E, 4 ex, April 2008.

General distribution: Albania, Algeria, Armenia, Austria, Belgium, Bosnia Herzegovina, Bulgaria, Croatia, Czech Republic, Denmark, Estonia, Finland, France, Great Britain, Germany, Greece, Hungary, Italy, Kazakhstan, Latvia, Lithuania, Macedonia, Montenegro, Netherlands, Norway, Poland, Romania, Russia (North European Territory, South European Territory), Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey, Ukraine.

Subfamily Cryptocephalinae Gyllenhal, 1813

Tribe Clytrini Kirby, 1837

Genus *Labidostomis* Chevrolat, 1836

Labidostomis (Labidostomis) peregrina Weise, 1900

Material examined: West Azarbaijan province, Makoo, 39°19'N 44°48'E, 2 ex, September 2012.

General distribution: Armenia, Azerbaijan, Georgia, Russia (South European Territory), Turkey.

Tribe Cryptocephalini Gyllenhal, 1813

Genus *Cryptocephalus* Geoffroy, 1762

***Cryptocephalus* (*Cryptocephalus*) *anticus* Suffrian, 1848**

Material examined: Isfahan province, Naeen (Ashkestan), 32°86'N 53°08'E, 3 ex, June 2005.

General distribution: Albania, Austria, Azerbaijan, Belgium, Bosnia Herzegovina, Bulgaria, Byelorussia, China, Croatia, Czech Republic, France, Germany, Greece, Hungary, Italy, Jordan, Lithuania, Kazakhstan, Kyrgyzstan, Macedonia, Moldavia, Poland, Romania, Russia (Central European Territory, South European Territory, West Siberia), Slovakia, Slovenia, Spain, Syria, Turkey, Ukraine, Uzbekistan, former Yugoslavia.

***Cryptocephalus* (*Burlinius*) *bilineatus* (Linnaeus, 1767)**

Material examined: Razavi Khorasan province, Ferdows, 34°10'N 57°40'E, 4 ex, May 2013.

General distribution: Armenia, Austria, Belgium, Belarus, Bulgaria, China, Croatia, Czech Republic, Denmark, Estonia, Finland, France, Georgia, Germany, Great Britain, Hungary, Italy, Japan, Kazakhstan, Latvia, Lithuania, Luxembourg, Moldavia, Mongolia, Montenegro, Netherlands, North Korea, Poland, Portugal, Romania, Russia (Central European Territory, East Siberia, Far East, North European Territory, West Siberia), Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey, Ukraine.

***Cryptocephalus* (*Burlinius*) *elegantulus* Gravenhorst, 1807**

Material examined: Golestan province, Minudasht, 37°10'N 55°30'E, 3 ex, August 2007.

General distribution: Albania, Armenia, Austria, Azerbaijan, Belgium, Bosnia Herzegovina, Bulgaria, Belarus, China, Croatia, Czech Republic, Denmark, France, Georgia, Germany, Great Britain, Greece, Hungary, Italy, Kazakhstan, Latvia, Macedonia, Moldavia, Mongolia, Montenegro, Netherlands, North Korea, Poland, Romania, Russia (Central European Territory, East Siberia, Far East, North European Territory, South European Territory, West Siberia), Serbia, Slovakia, Slovenia, Spain, Turkey, Ukraine.

***Cryptocephalus* (*Burlinius*) *labiatus* (Linnaeus, 1760)**

Material examined: Mazandaran province, Savadkuh, 36°05'N 52°55'E, 2 ex, June 2009.

General distribution: Albania, Austria, Azerbaijan, Belgium, Bosnia Herzegovina, Bulgaria, Belarus, Croatia, Czech Republic, Denmark, Estonia, Finland, France, Germany, Great Britain, Hungary, Ireland, Italy, Kazakhstan, Latvia, Lithuania, Macedonia, Moldavia, Mongolia, Montenegro, Netherlands, Norway, Poland, Romania, Russia (North European Territory), Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey, Ukraine.

***Cryptocephalus* (*Cryptocephalus*) *parvulus* Müller, 1776**

Material examined: Lorestan province, Shool-Abad, 33°18'N 49°19'E, 3 ex, August 2009.

General distribution: Albania, Armenia, Austria, Azerbaijan, Belgium, Bosnia Herzegovina, Bulgaria, Belarus, Croatia, Czech Republic, Denmark, Finland, France, Georgia, Germany, Great Britain, Hungary, Ireland, Israel, Italy, Japan, Kazakhstan, Kazakhstan, Latvia, Lithuania, Mongolia, Montenegro, Netherlands, North Korea, Norway, Poland, Romania, Russia (Central European Territory, East Siberia, Far East, North European Territory, West Siberia), Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey, Ukraine.

***Cryptocephalus* (*Cryptocephalus*) *virens* Suffrian, 1847**

Material examined: Isfahan province, Kashan, 29°35'N 51°40'E, 2 ex, April 2011.

General distribution: Austria, Azerbaijan, Bosnia Herzegovina, Bulgaria, Croatia, Czech Republic, Germany, Hungary, Italy, Kazakhstan, Mongolia, Poland, Romania, Russia (South European Territory, West Siberia), Serbia, Slovakia, Slovenia, Turkey, Ukraine.

Subfamily Donaciinae Kirby, 1837

Tribe Donaciini Kirby, 1837

Genus *Donacia* Fabricius, 1775

***Donacia vulgaris vulgaris* Zschach, 1788**

Chaharmahal & Bakhtiari province, Kuhrang (Ghaleh-Bakhtiar), 32°25'N 50°16'E, 2 ex, August 2003.

General distribution: Armenia, Austria, Azerbaijan, Belgium, Bosnia Herzegovina, Bulgaria, Byelorussia, China, Czech Republic, Denmark, Estonia, Finland, France, Great Britain, Georgia, Germany, Hungary, Ireland, Italy, Japan, Kazakhstan, Latvia, Liechtenstein, Lithuania, Luxembourg, Latvia, Liechtenstein, Lithuania, Luxembourg, Montenegro, Netherlands, Norway, Poland, Portugal, Romania, Russia (Central European Territory, East Siberia, Far East, North

European Territory, West Siberia), Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey, Ukraine.

Subfamily Eumolpinae Hope, 1840

Tribe Bromiini Chapuis, 1874

Genus *Pachnephorus* Chevrolat, 1836

***Pachnephorus (Pachnephorus) tessellatus* (Duftschmid, 1825)**

Material examined: Semnan province, Damghan, 35°30'N 54°20'E, 3 ex, June 2011.

General distribution: Afghanistan, Albania, Armenia, Austria, Azerbaijan, Belgium, Bosnia Herzegovina, Bulgaria, Byelorussia, Canary Islands, China, Croatia, Czech Republic, Estonia, France, Germany, Greece, Hungary, Italy, Kazakhstan, Kyrgyzstan, Latvia, Liechtenstein, Lithuania, Mongolia, Montenegro, Poland, Romania, Russia (Central European Territory, East Siberia, Far East, South European Territory, West Siberia), Serbia, Slovakia, Spain, Switzerland, Tadjikistan, Turkey, Turkmenistan, Ukraine, Uzbekistan.

Subfamily Galerucinae Latreille, 1802

Tribe Galerucini Latreille, 1802

Genus *Galeruca* Geoffroy, 1762

***Galeruca (Galeruca) tanacetii tanacetii* (Linnaeus, 1758)**

Material examined: Fars province, Kazerun, 29°35'N 51°40'E, 3 ex, April 2008.

General distribution: Albania, Algeria, Armenia, Austria, Azerbaijan, Belgium, Bosnia Herzegovina, Bulgaria, Byelorussia, Czech Republic, Denmark, Estonia, Finland, France, Great Britain, Germany, Greece, Hungary, Italy, Japan, Kazakhstan, Kyrgyzstan, Latvia, Liechtenstein, Lithuania, Luxembourg, Macedonia, Montenegro, Morocco, Netherlands, Norway, Poland, Romania, Russia (West Siberia), Serbia, Slovakia, Spain, Sweden, Switzerland, Syria, Tunisia, Turkey, Ukraine.

Family Curculionidae Latreille, 1802

Subfamily Brachycerinae Billberg, 1820

Tribe Brachycerini Billberg, 1820

Genus *Brachycerus* Olivier, 1789

***Brachycerus sinuatus* Olivier, 1807**

Material examined: Ardabil province, Givi, 37°68'N 48°34'E, 1 ex, July 2008.

General distribution: Armenia, Azerbaijan, Cyprus, Georgia, Greece, Italy, Macedonia, Romania, Russia (South European Territory), Turkey, Ukraine.

Tribe Erihrinini Schoenherr, 1825

Genus *Notaris* Germar, 1817

***Notaris scirpi* (Fabricius, 1792)**

Material examined: Zanjan province, Mah-Neshan, 36°40'N 47°30'E, 3 ex, June 2005.

General distribution: Albania, Austria, Belgium, Bosnia Herzegovina, Bulgaria, Byelorussia, Croatia, Czech Republic, Denmark, Estonia, Finland, France, Germany, Great Britain, Greece, Ireland, Italy, Japan, Kazakhstan, Latvia, Luxembourg, Netherlands, Norway, Poland, Romania, Russia (Central European Territory, East Siberia, Far East, South European Territory, West Siberia), Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey, Ukraine.

Genus *Tournotaris* Alonso-Zarazaga & Lyal, 1999

***Tournotaris bimaculata* (Fabricius, 1787)**

Material examined: Razavi Khorasan province, Dargaz, 37°20'N 59°05'E, 2 ex, May 2013.

General distribution: Albania, Austria, Belgium, Bosnia Herzegovina, Bulgaria, Byelorussia, China, Croatia, Czech Republic, Denmark, Estonia, Finland, France, Germany, Great Britain, Greece, Hungary, Ireland, Italy, Japan, Kazakhstan, Kyrgyzstan, Latvia, Liechtenstein, Moldavia, Montenegro, Netherlands, Norway, Poland, Romania, Russia (Central European Territory, East Siberia, Far East, South European Territory, West Siberia), Serbia, Slovakia, Slovenia, Sweden, Switzerland, Tadjikistan, Turkey, Turkmenistan, Ukraine, Uzbekistan.

Subfamily Conoderinae Schoenherr, 1833

Tribe Ceutorhynchini Gistel, 1848

Genus *Calosirus* C. G. Thomson, 1859

***Calosirus terminatus* Herbst, 1795**

Material examined: West Azarbaijan province, Makoo, 39°19'N 44°48'E, 4 ex, September 2012.

General distribution: Algeria, Austria, Azerbaijan, Belgium, Bulgaria, Cyprus, Czech Republic, Denmark, France, Georgia, Germany, Great Britain, Greece, Hungary, Ireland, Italy, Latvia, Luxembourg, Morocco, Netherlands, Poland, Portugal, Romania, Russia (Central European Territory, South European Territory), Slovakia, Spain, Sweden, Switzerland, Syria, Turkey, Ukraine.

Genus *Ceutorhynchus* Germar, 1823

***Ceutorhynchus griseus* Brisout de Barneville, 1869**

Material examined: Zanjan province, Mah-Neshan, 36°40'N 47°30'E, 2 ex, June 2013.

General distribution: Armenia, Austria, Azerbaijan, Belgium, Bosnia Herzegovina, Bulgaria, Byelorussia, Croatia, Czech Republic, Denmark,

Finland, France, Georgia, Germany, Greece, Hungary, Italy, Macedonia, Netherlands, Poland, Romania, Russia (Central European Territory, South European Territory), Serbia, Slovakia, Spain, Sweden, Switzerland, Syria, Turkey, Turkmenistan, Ukraine.

***Ceutorhynchus obstrictus* (Marshall, 1802)**

Material examined: Guilan province, Siyahkal, 37°16'N 49°87'E, 5 ex, June 2010.

General distribution: Austria, Azerbaijan, Belgium, Bulgaria, Byelorussia, Croatia, Czech Republic, Denmark, Estonia, Finland, France, Germany, Great Britain, Greece, Hungary, Ireland, Italy, Kazakhstan, Latvia, Liechtenstein, Lithuania, Luxembourg, Moldavia, Mongolia, Montenegro, Netherlands, Norway, Poland, Portugal, Romania, Russia (Central European Territory, North European Territory, South European Territory), Serbia, Slovakia, Slovenia, South Korea, Spain, Sweden, Switzerland, Turkey, Ukraine.

Genus *Mogulones* Reitter, 1916

***Mogulones albosignatus* (Gyllenhal, 1837)**

Material examined: East Azarbaijan province, Varzaqan, 38°51'N 46°64'E, 1 ex, August 2011.

General distribution: Armenia, Austria, Azerbaijan, Belgium, Bulgaria, Czech Republic, France, Germany, Hungary, Iraq, Moldavia, Netherlands, Poland, Romania, Russia (Central European Territory, South European Territory), Serbia, Slovakia, Switzerland, Turkey, Ukraine.

***Mogulones andreae* Germar, 1823**

Material examined: Chaharmahal & Bakhtiari province, Kuhrang (Ghaleh-Bakhtiar), 32°25'N 50°16'E, 1 ex, August 2003.

General distribution: Armenia, Austria, Bosnia Herzegovina, Czech Republic, France, Georgia, Germany, Greece, Hungary, Israel, Italy, Poland, Romania, Slovakia, Switzerland, Syria, Turkey, Ukraine.

Genus *Sirocalodes* Voss, 1958

***Sirocalodes mixtus* (Mulsant & Rey, 1858)**

Material examined: Kordestan province, Bijar, 35°52'N 47°36'E, 2 ex, July 2009.

General distribution: Algeria, Armenia, Belgium, Bulgaria, Croatia, Cyprus, Denmark, France, Georgia, Great Britain, Greece, Iraq, Ireland, Israel, Italy, Lebanon, Morocco, Netherlands, Portugal, Romania, Slovenia, Spain, Switzerland, Syria, Tunisia, Turkey.

Genus *Thamiocolus* C.G. Thomson, 1859

***Thamiocolus sinapis* Desbrochers des Loges, 1893**

Material examined: Zanjan province, Mah-Neshan, 36°40'N 47°30'E, 1 ex, June 2005.

General distribution: Algeria, Armenia, Azerbaijan, Croatia, Cyprus, Georgia, Greece, Italy, Morocco, Russia (South European Territory), Turkey.

Genus *Zacladus* Reitter, 1913

***Zacladus geranii* (Paykull, 1800)**

Material examined: Golestan province, Golestan National Park, Dasht-e-Mirzabaylu, 3 ex, August 2007.

General distribution: Austria, Azerbaijan, Belgium, Bulgaria, Byelorussia, China, Czech Republic, Denmark, Estonia, Finland, France, Georgia, Germany, Great Britain, Greece, Hungary, Italy, Japan, Kazakhstan, Kyrgyzstan, Latvia, Liechtenstein, Luxembourg, Moldavia, Mongolia, Netherlands, North Korea, Norway, Poland, Portugal, Romania, Russia (Central European Territory, East Siberia, Far East, North European Territory, South European Territory, West Siberia), Slovakia, Slovenia, South Korea, Spain, Sweden, Switzerland, Turkey, Turkmenistan, Ukraine.

Subfamily Cossoninae Schoenherr, 1825

Tribe Rhyncolini Gistel, 1848

Genus *Rhyncolus* Germar, 1817

***Rhyncolus sculpturatus* Waltl, 1839**

Material examined: West Azarbaijan province, Makoo, 39°19'N 44°48'E, 2 ex, September 2012.

General distribution: Austria, Bosnia Herzegovina, Byelorussia, Croatia, Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Italy, Latvia, Lithuania, Montenegro, Norway, Poland, Romania, Russia (North European Territory, South European Territory), Slovakia, Spain, Sweden, Turkey.

Subfamily Curculioninae Latreille, 1802

Tribe Tychiini C. G. Thomson, 1859

Genus *Sibinia* Germar, 1817

***Sibinia (Dichotychius) staticis* (Becker, 1864)**

Material examined: Golestan province, Minudasht, 37°10'N 55°30'E, 3 ex, August 2007.

General distribution: Kazakhstan, Russia (South European Territory), Turkey, Turkmenistan, Ukraine, Uzbekistan.

Subfamily Lixinae Schoenherr, 1823

Genus *Cyphocleonus* Motschulsky, 1860

***Cyphocleonus achates* Fåhraeus, 1842**

Material examined: Golestan province, Golestan National Park (Dasht-e-Mirzabaylu), 2 ex, August 2007.

General distribution: Armenia, Austria, Bulgaria, Czech Republic, Greece, Hungary, Italy, Kazakhstan, Madeira Archipelago, Romania, Russia (Central European Territory, South European Territory, West Siberia), Slovakia, Syria, Turkey, Turkmenistan, Ukraine.

Subfamily Mesoptiliinae Lacordaire, 1863

Tribe Magdalidini Pascoe, 1870

Genus *Magdalis* Germar, 1817

***Magdalis (Porrothus) cerasi* (Linnaeus, 1758)**

Material examined: Ardabil province, Givi, 37°68'N 48°34'E, 3 ex, July 2008.

General distribution: Algeria, Austria, Azerbaijan, Belgium, Bulgaria, Byelorussia, China, Croatia, Czech Republic, Denmark, Estonia, France, Great Britain, Georgia, Germany, Greece, Hungary, Italy, Lithuania, Luxembourg, Moldavia, Netherlands, North Korea, Norway, Portugal, Russia (Central European Territory, Far East, West Siberia), Slovakia, Slovenia, Spain, Sweden, Switzerland, Tadjikistan, Turkey, Turkmenistan, Ukraine.

Discussion

Studies on the insect fauna of Iran have been recently increased in all groups (Modarres Awal 2012). Presenting 27 new country records in this study proves that the fauna of Iran is still largely

unknown and continuing of faunistic surveys will result in new findings. Despite its great territorial superiority, data on invertebrate animals in general is very scarce for many regions and much more work is needed to gather comprehensive data for Iran. Knowledge of insect species numbers inhabiting this area is important not only for taking inventory but also for providing a reference to estimate actual biodiversity loss. The high number of new records and species described from Iran in the recent studies confirms the need to increase the effort in this respect. Furthermore leaf beetles and weevils represent a large part of the herbivorous insect fauna in many ecosystems, and information about their communities is essential to understand plant-herbivore interactions.

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