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Orijinal araştırma (Original article)

Carabid beetles (Coleoptera: Carabidae) collected from different ecosystems in Iran with new records

Hassan GHAHARI[1] Sakine Serap AVGIN[2*] Hadi OSTOVAN[3]

Summary

The Carabidae (Coleoptera) of apple orchards and alfalfa fields in seventeen agricultural sites of ten provinces of Iran have been investigated. 43 species/subspecies collected from these regions have been listed. Seven of the species are new records for Iran and two species are second find for the Palaearctic Region. The geographical distribution and chorotype data are given for all species.

Key words: Coleoptera, Carabidae, new records, Iran

Anahtar sözcükler: Coleoptera, Carabidae, yeni kayıtlar, İran

Introduction

The significance of the Carabid beetles in both natural and artificial terrestrial biocoenosis is considerable. Most of them are predators on other invertebrates, particularly of arthropods and mollusks. They are important entomophages in anthropocoenosis, where they form a considerable portion of the local community (Hurka, 1996). Even in natural biocoenosis, thanks to their diversity and abundance, the Carabidae plays an important role in keeping the balance, as well as in the energy and matter exchange. This is the main reason why they are used for many years as a model group for various studies, particularly in ecology (Hurka, 1996).

[1] Department of Agriculture, Islamic Azad University, Shahre Rey Branch, Tehran, Iran
[2] Osmaniye Korkut Ata University, Art and Science Faculty, Department of Biology, 80000, Osmaniye, Turkey
[3] Department of Entomology, Islamic Azad University, Fars Science and Research Branch, Iran
* Sorumlu yazar (Corresponding author) e-mail: serapavgin@osmaniye.edu.tr
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There are few studies devoted on the Carabidae of Iran. Considering the large territory of Iran, the species number known till now from the country is insufficient. Some important studies on Iranian Carabidae were made by Jaeger (1990, 1992), Hejkal (2000), Lassalle (2001), Alichi & Minaei (2002 a, b), Heinz (2002), Magrini & Pavesi (2003), Fallahzadeh et al. (2005), Mohammadzadehfard and Hojjat (2005), Jaskuła (2007), Toledano & Marggi (2007), Mohammadzadeh Fard (2008), Ghahari et al. (2009 a, b). As a rule, those studies are devoted to some particular taxonomic group. As the studies on Iranian Carabidae are little and insufficient, new faunistic data and information about the local distribution of the species in Iran is important. The aim of this work is to add new species data of the Iranian Carabidae, and as well to contribute the regional distribution and biodiversity in horticultural and agricultural crops (apple orchards and alfalfa fields) in Iran.

Material and Methods

Carabidae collected in apple orchard and alfalfa field from different regions of Iran have been investigated from 1999 to 2006. The material was collected during different expeditions carried on by different people and was stored in the course of time. In this research a periodic collection has not been done. The samples have been randomly collected by sweeping nets and by hands under stones from apple orchards and alfalfa fields in different regions of Iran. As well, several insect collections of different Universities of Iran were studied.

Although field studies were not a periodic work, it was aimed to give information about biodiversity of Carabidae at apple orchards and alfalfa fields in Iran. A long term periodic works should be done to understand completely the biodiversity of Carabidae in these agriculture lands.

The specimens were collected from apple orchards in Amol and Ghaemshahr (Mazandaran province), Arasbaran (East Azerbaijan province), Damavand (Tehran province), Mashhad (Khorasan province), Ourmieh (West Azerbaijan province), Samirom (Isfahan province) and Shahmirzad (Semnan province), and from alfalfa fields of different Iranian regions including, Behshahr (Mazandaran province), Isfahan and Najaf-Abad (Isfahan province), Shahre Rey (Tehran province), Mashhad (Khorasan province), Arasbaran and Tabriz (East Azerbaijan province), Hamedan (Hamedan province), Sanandaj (Kordestan province) and Gonbad and Gorgan (Golestan province).

All specimens were identified by using literatures and comparing identified materials. The nomenclature of the Carabidae is given sensu Löbl & Smetana (2003), while the zoogeographical chorotypes used are proposed by Vigna Taglianti et al. (1999).

Results and Discussion

Species were collected from 10 provinces (including, Tehran, East Azerbaijan, Semnan, West Azerbaijan, Hamedan, Kordestan, Isfahan, Golestan, Khorasan and Mazandaran). Seven species are new species for Iran, and 2 species represent second finds for the Palaearctic Region. Totally 125 specimens were collected as the highest number originates from the provinces Isfahan and East Azerbaijan, 22 and 18 specimens, respectively. The species belong to 8 subfamilies - Nebriinae (6 species/subspecies), Cicindelinae (1 species), Carabinae (6 species/subspecies), Brachininae (2 species), Scaritinae (3 species/subspecies), Broscinae (1 species), Trechinae (3 species/ subspecies), and Harpalinae (21 species/subspecies).

Nebriinae Laporte, 1834

Nebriini Laporte, 1834

***Leistus* Frölich, 1799**

***Leistus* (*Leistus*) *caucasicus* Chaudoir, 1867**

Material examined: Tehran province: Damavand (1961 m), 1♀, August 2005. Horticultural crop: Apple orchard.

Geographical distribution: This species is recorded first for Iran. This species is distributed in Europe: Ukraine, North Africa: Tunisia, Asia: Cyprus, Israel and Syria (Löbl & Smetana, 2003). Chorotype: SW-Asiatic.

***Leistus* (*Pogonophorus*) *hermonis* Piochard de la Brûlerie, 1875**

Material examined: East Azerbaijan province: Arasbaran (805 m), 2♂♂, 1♀, September 2004. Agricultural crop: Alfalfa field.

Geographical distribution: This species is recorded first for Iran. It is known from Lebanon (Löbl & Smetana, 2003) and Turkey (Casale & Vigna Taglianti, 1999). Chorotype: E-Mediterranean.

***Leistus* (*Pogonophorus*) *spinibarbis rufipes* Chaudoir, 1843**

Material examined: Semnan province: Shahmirzad (1942 m), 2♂♂, July 2003. Horticultural crop: Apple orchard.

Geographical distribution: This species is recorded first for Iran. This species is distributed in Europe: Albania, Bosnia Herzegovina, Bulgaria, Croatia, Greece (incl. Crete), Hungary, Italy (incl. Sardinia, Sicily, San Marino), Macedonia, Slovenia, Yugoslavia (Serbia, Montenegro); Asia: Cyprus, Turkey (Löbl & Smetana 2003). Chorotype: Turano-European.

***Nebria* Latreille, 1802**

***Nebria* (*Alpaeus*) *alpicola* Motschulsky, 1866**

Material examined: East Azerbaijan province: Tabriz (1427 m), 2♂♂, 2♀♀, September 2004. Agricultural crop: Alfalfa field.

Geographical distribution: This species is recorded first for Iran. This species is also second found for the Palaearctic Region. This species is distributed in Asia: Turkey (Löbl & Smetana, 2003). Chorotype: SW-Asiatic.

***Nebria* (*Alpaeus*) *wiedemanni* Fischer von Waldheim, 1844**

Material examined: West Azerbaijan province: Ourmieh (1416 m), 1♀, September 2006. Horticultural crop: Apple orchard.

Geographical distribution: This species is recorded first for Iran. This species is also second found for the Palaearctic Region. This species is distributed in Asia: Turkey (Löbl & Smetana, 2003). Chorotype: SW-Asiatic.

***Nebria* (*Nebria*) *hemprichi* Klug, 1832**

Material examined: Hamedan province: Hamedan (2056 m), 1♀, June 2002. Agricultural crop: Alfalfa field. Material examined: Tehran province: Damavand (1961 m), 1♂, June 2005. Horticultural crop: Apple orchard.

Geographical distribution: This species is distributed in Asia: Israel, Syria and Turkey (Löbl & Smetana 2003), Iran (Ghahari et al. 2009 a). Chorotype: E-Mediterranean.

Cicindelinae Latreille, 1802

Cicindelini Latreille, 1802

Cicindelina Latreille, 1802

***Cicindela* Linné, 1758**

***Cicindela* (*Cicindela*) *rhodoterena* Tschitschérine, 1903**

Material examined: Kordestan province: Sanandaj (1368 m), 2♂♂, 1♀, September 2002. Agricultural crop: Alfalfa field.

Geographical distribution: This species is distributed in Asia: Afghanistan, Iran and Turkmenistan (Löbl & Smetana, 2003). Chorotype: Turanian.

Carabinae Latreille, 1802

Carabini Latreille, 1802

***Calosoma* Weber, 1801**

***Calosoma* (*Calosoma*) *inquisitor cupreum* Dejean, 1826**

Material examined: Isfahan province: Isfahan (1551 m), 1♀ and Najaf-Abad (1588 m), 1♂, 2♀♀, July 2000. Agricultural crop: Alfalfa field.

Geographical distribution: This subspecies is distributed in Europe: Azerbaijan, Armenia, Russia: South European Territory, Asia: Iran (Löbl & Smetana, 2003). Chorotype: Turanian.

***Calosoma* (*Campalita*) *algiricum* Géhin, 1885**

Material examined: East Azerbaijan province: Arasbaran (778 m), 1♂, September 2004. Agricultural crop: Alfalfa field.

Geographical distribution: This species is recorded first for Iran. This species is distributed in Europe: Italy (Sicilia), North Africa: Algeria, Libya, Morocco (incl. Western Sahara), Tunisia and Asia: Iran, Israel, Jordan, Saudi Arabia, and Turkmenistan (Löbl & Smetana, 2003). Chorotype: Mediterraneo-Sindian.

***Carabus* Linné, 1758**

***Carabus* (*Archicarabus*) *victor* Fischer von Waldheim, 1836**

Material examined: Isfahan province: Samirom (2457 m), 1♂, 2♀♀, August 2000. Horticultural crop: Apple orchard.

Geographical distribution: This species is distributed in Europe: Georgia, Asia: Turkey (Löbl & Smetana, 2003), Iran (Ghahari et al., 2009 a). Chorotype: Ponto-Caucasian.

***Carabus* (*Deroplectes*) *staudingeri* Ganglbauer, 1886**

Material examined: West Azerbaijan province: Ourmieh (1416 m), 3♀♀, September 2004. Horticultural crop: Apple orchard.

Geographical distribution: This species is recorded first for Iran. This species is distributed in Asia: Tadzhikistan, Uzbekistan (Löbl & Smetana, 2003). Chorotype: Centralasiatic.

***Carabus* (*Mimocarabus*) *roseni roseni* Reitter, 1897**

Material examined: Tehran province: Shahre Rey (1050 m), 1♂, August 2006. Agricultural crop: Alfalfa field.

Geographical distribution: This subspecies is distributed in Asia: Iran, Turkmenistan (Löbl & Smetana, 2003). Chorotype: Turanian.

***Carabus* (*Pachystus*) *tamsi tamsi* Ménétriès, 1832**

Material examined: West Azerbaijan province: Ourmieh (1416 m), 1♂, 3♀♀, July 2001. Horticultural crop: Apple orchard.

Geographical distribution: This subspecies is distributed in Europe: Azerbaijan, Armenia, Asia: Iran, Turkey (Löbl & Smetana, 2003). Chorotype: Turanian.

Brachininae Bonelli, 1810

Brachinini Bonelli, 1810

***Brachinus* Weber, 1801**

***Brachinus* (*Cnecostolus*) *exhalans* P. Rossi, 1792**

Material examined: Isfahan province: Samirom (2457 m), 1♀, August 2000. Horticultural crop: Apple orchard.

Geographical distribution: This species is distributed in Europe: Azerbaijan, Albania, Armenia, France, (incl. Corsica), Monaco, Georgia, Greece (incl. Crete), Italy (incl. Sardinia, Sicily, San Marino), Spain (incl. Gibraltar), Russia: South European Territory, Turkey, North Africa: Algeria, Morocco (incl. Western Sahara), Tunisia, Asia: Iran, Iraq, Israel, Kyrgyzstan, Kazakhstan, Lebanon, Saudi Arabia, Syria, Tadzhikistan, Turkmenistan, Turkey, Uzbekistan (Löbl & Smetana, 2003). Chorotype: Turano-Mediterranean.

***Pheropsophus* Solier, 1833**

***Pheropsophus* (*Stenaptinus*) *catoirei* Dejean, 1825**

Material examined: Tehran province: Damavand (1980 m), 2♀♀, August 2005. Horticultural crop: Apple orchard.

Geographical distribution: This species is distributed in Asia: Afghanistan, Arunachal Pradesh, Bhutan, Himachal Pradesh, Kashmir (India), Nepal, Pakistan, Darjeeling (India), Uttar Pradesh (India) (Löbl & Smetana, 2003), Iran (Ghahari et al., 2009 a). Chorotype: Indo-Mediterranean

Scaritinae Bonelli, 1810

Scaritini Bonelli, 1810

Scaritina Bonelli, 1810

***Scarites* Fabricius, 1775**

***Scarites* (*Parallelomorphus*) *subcylindricus* Chaudoir, 1843**

Material examined: Golestan province: Gorgan (110 m), 1♂, 2♀♀, September 2001; Khorasan province: Mashhad, 1♂, July 2002. Agricultural crop: Alfalfa field.

Geographical distribution: This species is distributed in Europe: Greece (incl. Crete), Spain (incl. Gibraltar), Turkey; North Africa: Algeria, Egypt, Libya, Tunisia, Asia: Afghanistan, Cyprus, Iran, Israel, Iraq, Kazakhstan, Pakistan, Saudi Arabia, Egypt: Sinai, Syria, Turkmenistan, Turkey, Uttar Pradesh (India), Yemen (incl. Socotra) (Löbl & Smetana, 2003). Chorotype: E-Mediterranean.

***Scarites* (*Parallelomorphus*) *terricola terricola* Bonelli, 1813**

Material examined: Isfahan province: Isfahan (1588 m), 2♂♂, 3♀♀, October 1999. Agricultural crop: Alfalfa field.

Geographical distribution: This subspecies is distributed in Europe: Austria, Azores, Bulgaria, France (incl. Corsica), Monaco, Greece (incl. Crete), Hungary, Italy (incl. Sardinia, Sicily, San Marino), Moldavia, Romania, Spain (incl. Gibraltar), Turkey, Yugoslavia (Serbia, Montenegro); North Africa: Algeria, Egypt, Libya, Morocco (incl. Western Sahara), Tunisia, China: Fujian (Fukien), Heilongjiang (Heilungkiang), Asia: Iran, Iraq, Kyrgyzstan, Kazakhstan, Mongolia, Pakistan, Shanghai, Tadzhikistan, Turkmenistan, Turkey, Uzbekistan (Löbl & Smetana, 2003). Chorotype: Palaearctic.

***Scarites* (*Scarites*) *procerus eurytus* Fischer von Waldheim, 1828**

Material examined: Kordestan province: Sanandaj (1368 m), 1♂, 3♀♀, September 2002. Agricultural crop: Alfalfa field.

Geographical distribution: This subspecies is distributed in Europe: Azores, Georgia, Greece (incl. Crete), Italy (incl. Sardinia, Sicily, San Marino), Spain (incl. Gibraltar), Russia: South European Territory, Turkey, North Africa: Algeria, Egypt, Libya, Morocco (incl. Western Sahara), Tunisia, Asia: Afghanistan, Iran, Iraq, Kyrgyzstan, Kazakhstan, Pakistan, Saudi Arabia, Syria, Turkmenistan, Turkey, Uzbekistan (Löbl & Smetana, 2003). Chorotype: Turano-Mediterranean.

Broscinae Hope, 1838

Broscini Hope, 1838

Broscina Hope, 1838

***Broscus* Panzer, 1813**

***Broscus laevigatus* Dejean, 1828**

Material examined: Hamedan province: Hamedan (2056 m), 1♀, July 2003; East Azerbaijan province: Tabriz, 1♂, 1♀, August 2005. Agricultural crop: Alfalfa field. Material examined: Khorasan province: Mashhad (992 m), 2♀♀, July 2006. Horticultural crop: Apple orchard.

Geographical distribution: This species is distributed in North Africa: Egypt, Libya, Tunisia, Asia: Israel, Egypt: Sinai, Syria (Löbl & Smetana, 2003), Iran (Ghahari et al., 2009 a, b). Chorotype: N-African.

Trechinae Bonelli, 1810

Bembidiini Stephens, 1827

Bembidiina Stephens, 1827

***Bembidion* Latreille, 1802**

***Bembidion* (*Euperyphus*) *combustum combustum* Ménétriès, 1832**

Material examined: Khorasan province: Mashhad (992 m), 3♀♀, October 2003; Semnan province: Shahmirzad (1942 m), 2♂♂, 1♀, June 2005. Horticultural crop: Apple orchard.

Geographical distribution: This subspecies is distributed in Europe: Azerbaijan, Albania, Armenia, Bosnia Herzegovina, Bulgaria, Cyprus, Greece (incl. Crete), Macedonia, Russia: South European Territory, Yugoslavia (Serbia, Montenegro), Asia: Iran, Lebanon, Turkey (Löbl & Smetana, 2003). Chorotype: SW-Asiatic.

***Bembidion* (*Nepha*) *menetriesii* Kolenati, 1845**

Material examined: Mazandaran province: Ghaemshahr (18 m), 4♀♀, October 2003; East Azerbaijan province: Arasbaran (805 m), 1♂, 1♀, August 2005. Horticultural crop: Apple orchard.

Geographical distribution: This species is distributed in Europe: Russia: Central European Territory, Russia: South European Territory, Turkey, Asia: Iran, Kyrgyzstan, Kazakhstan, Lebanon, Turkey (Löbl & Smetana, 2003). Chorotype: Turanian.

***Bembidion* (*Peryphus*) *subcostatum subcostatum* Motschulsky, 1850**

Material examined: Semnan province: Shahmirzad (1942 m), 1♂, 2♀♀, August 2006. Horticultural crop: Apple orchard.

Geographical distribution: This subspecies is distributed in Europe: Azerbaijan, Armenia, Georgia, Russia: South European Territory, Asia: Iran (Löbl & Smetana, 2003). Chorotype: Turano-Mediterranean.

Harpalinae Bonelli, 1810

Anthiini Bonelli, 1813

***Anthia* Weber, 1801**

***Anthia* (*Termophilum*) *duodecimguttata* Bonelli, 1813**

Material examined: Mazandaran province: Ghaemshahr (18 m), 2♀♀, May 2004. Horticultural crop: Apple orchard.

Geographical distribution: This species is distributed in North Africa: Egypt, Asia: Iran, Iraq, Saudi Arabia, Yemen (incl. Socotra) (Löbl & Smetana, 2003). Chorotype: NE-African-Sindian.

Chlaeniini Brullé, 1834

Chlaeniina Brullé, 1834

***Chlaenius* Bonelli, 1810**

***Chlaenius* (*Amblygenius*) *dimidiatus* Chaudoir, 1842**

Material examined: East Azerbaijan province: Arasbaran (805 m), 1♂, 5♀♀, October 2004. Agricultural crop: Alfalfa field.

Geographical distribution: This species is distributed in Europe: Armenia, Turkey, North Africa: Egypt, Asia: Iran, Israel, Syria, Turkmenistan, Turkey, Russia: west Siberia (Löbl & Smetana, 2003). Chorotype: SW-Asiatic.

***Chlaenius* (*Nectochlaenius*) *canariensis persicus* L. Redtenbacher, 1850**

Material examined: Mazandaran province: Amol (198 m), 2♂♂, 1♀, September 2005. Horticultural crop: Apple orchard.

Geographical distribution: This subspecies is distributed in Asia: Afghanistan, Iran (Löbl & Smetana, 2003). Chorotype: Turanian.

***Chlaenius* (*Stenochlaenius*) *lederi picicornis* Mandl, 1972**

Material examined: Khorasan province: Mashhad (1184 m), 2♂♂, April 2004. Horticultural crop: Apple orchard.

Geographical distribution: This subspecies is distributed in Asia: Iran (Löbl & Smetana, 2003), Iran (Ghahari et al., 2009a). Chorotype: Iran.

Harpalini Bonelli, 1810

Anisodactylina Lacordaire, 1854

***Diachromus* Erichson, 1837**

***Diachromus germanus* Linné, 1758**

Material examined: Mazandaran province: Ghaemshahr (25 m), 1♂, September 2005. Horticultural crop: Apple orchard.

Geographical distribution: This species is distributed in Europe: Albania, Armenia, Austria, Belgium, Bosnia Herzegovina, Bulgaria, Byelorussia, Croatia, Czech Republic, France (incl. Corsica), Monaco, Germany, Georgia, Greece (incl. Crete), Hungary, Italy (incl. Sardinia, Sicily, San Marino), Kazakhstan, Latvia, Luxembourg, Malta, Macedonia, Netherlands, Poland, Portugal, Slovakia, Russia: South European Territory, Asia: Iran, Kyrgyzstan, Kazakhstan, Syria, Tadzhikistan, Turkmenistan (Löbl & Smetana, 2003). Chorotype: Turano-European-Mediterranean.

Harpalina Bonelli, 1810

***Acinopus* Dejean, 1821**

***Acinopus* (*Acinopus*) *laevigatus laevigatus* Ménétriés, 1832**

Material examined: East Azerbaijan province: Arasbaran (778 m), 1♂, 1♀, September 2006. Horticultural crop: Apple orchard.

Geographical distribution: This subspecies is distributed in Europe: Azerbaijan, Armenia, Bulgaria, Croatia, Georgia, Greece (incl. Crete), Moldavia, Romania, Russia: South European Territory, Asia: Afghanistan, Gansu (Kansu), Iran, Iraq, Israel, Kyrgyzstan, Kazakhstan, Egypt: Sinai, Tadzhikistan,

Turkmenistan, Turkey, Uzbekistan, Xinjiang (Sinkiang) (Löbl & Smetana, 2003). Chorotype: Turano-Mediterranean.

***Acinopus* (*Osimus*) *ammophilus* Dejean, 1829**

Material examined: Mazandaran province: Amol (198 m), 2♂♂, July 2002. Tehran province: Damavand (1977 m), 1♂, 2♀♀, August 2005. Horticultural crop: Apple orchard.

Geographical distribution: This species is distributed in Europe: Azerbaijan, Armenia, Bulgaria, Georgia, Greece (incl. Crete), Hungary, Italy (incl. Sardinia, Sicily, San Marino), Macedonia, Moldavia, Romania, Russia: South European Territory, Turkey, Ukraine, Yugoslavia (Serbia, Montenegro), Asia: Iran, Kazakhstan, Turkmenistan, Turkey (Löbl & Smetana, 2003). Chorotype: Turano-European.

***Harpalus* Latreille, 1802**

***Harpalus* (*Harpalus*) *caspius* Steven, 1806**

Material examined: Isfahan province: Najaf-Abad (1588 m), 3♀♀, July 2000. Agricultural crop: Alfalfa field.

Geographical distribution: This species is distributed in Europe: Azerbaijan, Armenia, Austria, Bulgaria, Croatia, Czech Republic, Germany, Georgia, Hungary, Moldavia, Poland, Romania, Slovakia, Slovenia, Russia: South European Territory, Ukraine, Yugoslavia (Serbia, Montenegro), Asia: Iran, Turkey (Löbl & Smetana, 2003). Chorotype: Turano-European.

***Harpalus* (*Harpalus*) *smyrnensis medicus* Kataev, 1993**

Material examined: Khorasan province: Mashhad (1184 m), 2♂♂, May 2006. Agricultural crop: Alfalfa field.

Geographical distribution: This subspecies is distributed in Europe: Azerbaijan, Armenia, Georgia, Asia: Iran, Iraq, Israel, Lebanon, Syria, Turkey (Löbl & Smetana, 2003), Iran (Ghahari et al., 2009 a). Chorotype: SW-Asiatic.

***Harpalus* (*Pseudoophonus*) *griseus* Panzer, 1796**

Material examined: Golestan province: Gonbad (73 m), 1♂, 1♀, August 2005. Agricultural crop: Alfalfa field.

Geographical distribution: This species is distributed in Europe: Azerbaijan, Armenia, Austria, Azores, Belgium, Bosnia Herzegovina, Bulgaria, Byelorussia, Croatia, Russia: Central European Territory, Czech Republic, Denmark, Estonia, Finland, France (incl. Corsica), Monaco, Great Britain (incl. Channel Islands), Germany, Georgia, Greece (incl. Crete), Hungary, Italy (incl. Sardinia, Sicily, San Marino), Kazakhstan, Latvia, Liechtenstein, Lithuania,

Luxembourg, Malta, Macedonia, Moldavia, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain (incl. Gibraltar), Russia: South European Territory, Sweden, Switzerland, Ukraine, Yugoslavia (Serbia, Montenegro), North Africa: Algeria, Egypt, Morocco (incl. Western Sahara), Tunisia, Asia: Afghanistan, Cyprus, Russia: East Siberia, Russia: Far East, Gansu (Kansu), Heilongjiang (Heilungkiang), Iran, Iraq, Israel, Japan, Jiangsu (Kiangsu), Jilin (Kirin), Kyrgyzstan, Kazakhstan, Liaoning, North Korea, South Korea, Shaanxi (Shensi), Shanghai, Shandong (Shantung), Shanxi (Shansi), Tadzhikistan, Turkmenistan, Turkey, Uzbekistan, Russia: west Siberia, Xinjiang (Sinkiang), Yunnan, Zhejiang (Chekiang), Oriental Region (Löbl & Smetana, 2003). Chorotype: Palaearctic.

***Harpalus* (*Pseudoophonus*) *rufipes* DeGeer, 1774**

Material examined: Khorasan province: Mashhad (992 m), 1♂, 1♀, July 2002. Agricultural crop: Alfalfa field.

Geographical distribution: This species is distributed in Europe: Azerbaijan, Albania, Armenia, Austria, Azores, Belgium, Bosnia Herzegovina, Bulgaria, Byelorussia, Croatia, Russia: Central European Territory, Czech Republic, Denmark, Estonia, Finland, France (incl. Corsica, Monaco), Great Britain (incl. Channel Islands), Germany, Georgia, Greece (incl. Crete), Hungary, Ireland, Italy (incl. Sardinia, Sicily, San Marino), Kazakhstan, Latvia, Liechtenstein, Lithuania, Luxembourg, Malta, Macedonia, Moldavia, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain (incl. Gibraltar), Russia: South European Territory, Sweden, Switzerland, Turkey, Ukraine, Yugoslavia (Serbia, Montenegro), North Africa: Algeria, Morocco (incl. Western Sahara), Tunisia, Asia: Afghanistan, Cyprus, Russia: East Siberia, Iran, Iraq, Kyrgyzstan, Kazakhstan, Tadzhikistan, Turkmenistan, Turkey, Uzbekistan, Russia: west Siberia, Xinjiang (Sinkiang), Nearctic Region (Löbl & Smetana, 2003). Chorotype: Palaearctic.

Lebiini Bonelli, 1810

Agrina Kirby, 1837

***Merizomena* Chaudoir, 1872**

***Merizomena grandinella* Semenov, 1890**

Material examined: Tehran province: Damavand (1977 m), 2♀♀, October 2003. Horticultural crop: Apple orchard.

Geographical distribution: This species is distributed in Asia: Turkmenistan (Löbl & Smetana, 2003), Iran (Ghahari et al., 2009 a). Chorotype: Turanian.

Cymindidina Laporte, 1834

***Cymindis* Latreille, 1806**

***Cymindis* (*Cymindis*) *andreae* Ménétriés, 1832**

Material examined: Mazandaran province: Behshahr (57 m), 1♀, September 2005. Agricultural crop: Alfalfa field.

Geographical distribution: This species is distributed in Europe: Armenia, Azerbaijan, Georgia, Russia: South European Territory, North Africa: Egypt, Asia: Afghanistan, Cyprus, Iran, Iraq, Kyrgyzstan, Kazakhstan, Lebanon, Pakistan, Saudi Arabia, Tadzhikistan, Turkmenistan, Turkey, Yemen (incl. Socotra) (Löbl & Smetana, 2003). Chorotype: Turano-Mediterranean.

Oodini LaFerté-Sénectère, 1851

***Oodes* Bonelli, 1810**

***Oodes gracilis* A. Villa & G. B. Villa, 1833**

Material examined: Semnan province: Shahmirzad (1942 m), 1♂, 2♀♀, July 2006. Horticultural crop: Apple orchard.

Geographical distribution: This species is distributed in Europe: Albania, Austria, Bosnia Herzegovina, Bulgaria, Croatia, Russia: Central European Territory, Czech Republic, Estonia, France (incl. Corsica), Monaco, Germany, Greece (incl. Crete), Hungary, Italy (incl. Sardinia, Sicily, San Marino), Latvia, Moldavia, Poland, Romania, Slovakia, Slovenia, Spain (incl. Gibraltar), Russia: South European Territory, Sweden, Ukraine, Yugoslavia (Serbia, Montenegro), Asia: Turkmenistan, Turkey (Löbl & Smetana, 2003), Iran (Ghahari et al., 2009 a). Chorotype: Turano-European.

Pterostichini Bonelli, 1810

***Poecilus* Bonelli, 1810**

***Poecilus* (*Ancholeus*) *wollastoni* Wollaston, 1854**

Material examined: West Azerbaijan province: Ourmieh (1416 m), 1♀, September 2006. Horticultural crop: Apple orchard.

Geographical distribution: This species is distributed in North Africa: Algeria, Canary Islands, Egypt, Libya, Morocco (incl. Western Sahara), Madeira Archipelago, Tunisia, Asia: Iraq, Saudi Arabia, Yemen (incl. Socotra), Afrotropical Region (Löbl & Smetana, 2003), Iran (Ghahari et al., 2009 b). Chorotype: Saharo-Sahelo-Arabian.

***Poecilus* (*Poecilus*) *cupreus cupreus* Linné, 1758**

Material examined: Kordestan province: Sanandaj (1374 m), November 2005, 1♂, 2♀. Agricultural crop: Alfalfa field.

Geographical distribution: This subspecies is distributed in Europe: Azerbaijan, Albania, Armenia, Austria, Belgium, Bosnia Herzegovina, Bulgaria, Byelorussia, Russia: Central European Territory, Czech Republic, Denmark, Estonia, Finland, France (incl. Corsica, Monaco), Great Britain (incl. Channel Islands), Germany, Georgia, Greece (incl. Crete), Hungary, Ireland, Italy (incl. Sardinia, Sicily, San Marino), Kazakhstan, Latvia, Liechtenstein, Lithuania, Moldavia, Netherlands, Norway, Russia: North European Territory, Poland, Romania, Slovakia, Spain (incl. Gibraltar), Russia: South European Territory, Sweden, Switzerland, Turkey, Ukraine, Yugoslavia (Serbia, Montenegro), Asia: Russia: East Siberia, Kyrgyzstan, Kazakhstan, Syria, Tadzhikistan, Turkmenistan, Turkey, Uzbekistan, Russia: west Siberia (Löbl & Smetana, 2003), Iran (Ghahari et al., 2009 a). Chorotype: Asiatic-European

***Pterostichus* Bonelli, 1810**

***Pterostichus* (*Platysma*) *niger niger* Schaller, 1783**

Material examined: Tehran province: Shahre Rey (1050 m), 1♀, September 2006. Agricultural crop: Alfalfa field. Material examined: Mzandaran province: Amol (218 m), 1♀; Ghaemshahr (37 m), 2♂♂, 1♀, September 2005. Horticultural crop: Apple orchard.

Geographical distribution: This species is distributed in Europe: Azerbaijan, Austria, Belgium, Bosnia Herzegovina, Bulgaria, Byelorussia, Croatia, Russia: Central European Territory, Czech Republic, Denmark, Estonia, Finland, France (incl. Corsica), Monaco, Great Britain (incl. Channel Islands), Germany, Greece (incl. Crete), Hungary, Ireland, Italy (incl. Sardinia, Sicily, San Marino), Latvia, Liechtenstein, Lithuania, Macedonia, Moldavia, Netherlands, Norway, Russia: North European Territory, Poland, Romania, Slovakia, Slovenia, Spain (incl. Gibraltar), Russia: South European Territory, Sweden, Switzerland, Ukraine, Yugoslavia (Serbia, Montenegro), Asia: Iran, Kyrgyzstan, Kazakhstan, Tadzhikistan, Turkey, Uzbekistan, Russia: west Siberia (Löbl & Smetana, 2003). Chorotype: Asiatic-European.

Sphodrini Laporte, 1834

Calathina Laporte, 1834

***Calathus* Bonelli, 1810**

***Calathus* (*Calathus*) *libanensis pluriseriatus* Putzeys, 1873**

Material examined: Isfahan province: Samirom (2457 m), 1♂, 3♀♀, August 2000. Horticultural crop: Apple orchard.

Geographical distribution: This subspecies is distributed in Europe: Azerbaijan, Armenia, Asia: Iran, Iraq, Turkey (Löbl & Smetana, 2003). Chorotype: E-Mediterranean.

Sphodrina Laporte, 1834

***Laemostenus* Bonelli, 1810**

***Laemostenus* (*Sphodroides*) *cordicollis* Chaudoir, 1854**

Material examined: Tehran province: Shahre Rey (1064 m), 2♀♀, August 2006. Agricultural crop: Alfalfa field.

Geographical distribution: This species is distributed in North Africa: Egypt, Asia: Cyprus, Iran, Iraq, Israel, Lebanon, Syria, Turkey (Löbl & Smetana, 2003). Chorotype: E-Mediterranean.

Zabrini Bonelli, 1810

Amarina C. Zimmermann, 1831

***Amara* Bonelli, 1810**

***Amara* (*Curtonotus*) *convexiuscula* Marsham, 1802**

Material examined: Mazandaran province: Behshahr (57 m), 2♀♀, June 2001. Golestan province: Gonbad (73 m), 1♂, August 2005. Agricultural crop: Alfalfa field.

Geographical distribution: This species is distributed in Europe: Austria, Belgium, Bosnia Herzegovina, Bulgaria, Croatia, Russia: Central European Territory, Czech Republic, Denmark, Estonia, Finland, France (incl. Corsica), Monaco, Germany, Greece (incl. Crete), Great Britain (incl. Channel Islands), Hungary, Ireland, Latvia, Lithuania, Luxembourg, Moldavia, Netherlands, Norway, Russia: North European Territory, Poland, Romania, Slovakia, Russia: South European Territory, Sweden, Ukraine, Asia: Kyrgyzstan, Kazakhstan, Mongolia, Turkey, Russia: west Siberia, Xinjiang (Sinkiang) (Löbl & Smetana, 2003), Iran (Ghahari et al., 2009 b). Chorotype: Sibero-European.

Zabrina Bonelli, 1810

***Zabrus* Clairville, 1806**

***Zabrus* (*Eutroctes*) *aurichalceus aurichalceus* M.F. Adams, 1817**

Material examined: East Azerbaijan province: Arasbaran (815 m), 2♀♀, August 2005. Horticultural crop: Apple orchard. Material examined: West Azerbaijan province: Ourmieh (1454 m), 1♀, September 2006. Horticultural crop: Apple orchard.

Geographical distribution: This subspecies is distributed in Europe: Georgia, Asia: Turkey (Löbl & Smetana, 2003), Iran (Ghahari et al., 2009 b). Chorotype: Ponto-Caucasian.

Comment: *Zabrus* species are the agricultural pests especially in gramineous fields (Khajehzadeh, 1998; Kivan & Ozder, 1998). Study of their diversity and biology is necessary in Iran as a separate research project.

Carabids are important bioindicators of a regional fauna (Avgın & Luff, 2010). The negative effect of chemicals used in agricultural can be understanded from these species. The information on the biodiversity of carabids is important in agricultural lands. Having this information is important for further ecologic, biogeographic and biological control studies.

Many species of the Carabid Beetles are predators-polyphagous, and they play an important role in reducing the numbers of various crop pests (Coaker & Williams, 1963; Dempster, 1967; Chiverton, 1987). Therefore, it is worthwhile considering the effects of intercropping on carabids, on the grounds that their beneficial effect may be increased (Armstrong & McKinlay, 1997). Now in many agricultural and forest ecosystems, the carabids are being evaluated to determine their role as control agents of a wide array of economically important arthropods (Epstein et al., 2001). Aviron et al. (2005) also said that many studies in agro-ecology have focused on beneficial arthropods in agricultural landscapes. The Carabid have been studied (Kromp, 1999) as they play a potential role in crop pest control of arable crops (Lang et al., 1999; Aviron et al., 2005).

The diversity of Carabids are different in each habitat. This study have presented biodiversity in horticultural and agricultural crops (apple and alfalfa fields) in Iran. The long-term and more detailed study or similar studies to be done will be more useful. Such studies are invaluable as they not only enable agricultural practices that are detrimental to carabid diversity to be determined, but also help in the identification of indicator species that are susceptible to particular farming practices (Cole et al., 2002).

Özet

Yeni kayıtlarla İran'ın farklı ekosistemlerinden toplanan Carabid'ler (Coleoptera: Carabidae)

Carabidae (Coleoptera) türleri İran'ın on şehrinde onyedi tarımsal alandaki elma bahçeleri ve yonca tarlalarında araştırılmıştır. Bu bölgelerden toplanan 43 tür/alttür listelenmiştir. Bunların içinde yedi tür İran için yeni kayıt olup, iki tür Palearktik Bölge için ikinci kez kaydedilmiştir. Bütün türler için coğrafik dağılım ve korotip bilgisi verilmiştir.

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