Türk. entomol. derg., 2010, 34 (2): 197-210
ISSN 1010-6960

Orijinal araştırma (Original article)

New data to the knowledge of ground beetles (Coleoptera: Carabidae) fauna of Iran

Hussein Sadeghi NAMAGHI[1] Sakine Serap AVGIN[2*] Sara FARAHI[3]

Summary

During 2007 and 2008, a faunistic survey of ground beetles inhabiting agricultural crops in different locations of the North-eastern region of Iran including provinces of Razavi and South Khorasan was carried out. In total, 69 specimens of family Carabidae were collected and examined. As a result of identification, 19 species and 6 subspecies belonging to 10 genera of 4 subfamilies were determined. 11 new species are added to the fauna of Khorasan provinces, including 3 species namely *Dixus clypeatus* P. Rossi, 1790, *Poecilus* (*Poecilus*) *punctulatus* Schaller, 1783 and *Pterostichus* (*Melanius*) *elongatus* Duftschmid, 1812 which are here recorded for the first time from Iran. 2 species previously reported in the literature were not encountered in the survey. With this paper, new faunistic data and some zoogeographical evaluations are presented on ground beetles fauna (Coleoptera, Carabidae) of Iran.

Key words: Coleoptera, Carabidae, Iran

Anahtar sözcükler: Coleoptera, Carabidae, Iran

Introduction

Together with the aquatic families Haliplidae, Dytiscidae and Gyrinidae, as well as the terrestrial family Rhysodidae, the Carabidae belong to the suborder Adephaga, characterized among other beetles by filiform antennae, five-segmented tarsi, coalescent basal segments of the abdomen, and the backwards produced meta-coxae, and the legs are slender, used for running or, in a few genera, the front pair for digging (Lindroth, 1985). Carabids represent, with a considerable degree of uniformity, the life form type of the ground

[1] Department of Plant Protection, Ferdowsi University of Mashhad, Iran
[2] Osmaniye Korkut Ata University, Art and Science Faculty, Department of Biology 80000, Osmaniye, Turkey
[3] Department of Plant Protection, Ferdowsi University of Mashhad, Iran
* Sorumlu yazar (Corresponding author) e-mail: serapavgin@osmaniye.edu.tr
Alınış (Received): 06.09.2009 Kabul ediliş (Accepted): 24.10.2009

predator. They additionally consume carrion and plant material to extents varying from species to species. With a few exceptions, only slight variations on this type are found among the large number of species comprising the family (Thiele, 1977).

The studies are very important on ground beetles (Coleoptera: Carabidae) because they are generalist predators that can reduce insect pests (Best & Beegle, 1977; Clark et al., 1994; Varchola & Dunn, 1999).

Reviewing the literature (Afshar, 1944; Farahbakhsh, 1961; Zomorrodi, 1990; Esmaili et al., 1991; Modarres Awal, 1997; Alichi & Minaie, 2002; Homayoon et al., 2002; Mohammad Zadeh Fard et al., 2004; Shafiei et al., 2004; Mohammad Zadeh Fard & Hodjat, 2008; Ghahhari et al., 2009 a, b), it seems the fauna of Carabidae of Iran has not yet been completed and requires further detailed study. Despite the importance of ground beetles as predators of insect pests in agroecosystems, of a few faunistic studies carried out in the study area (Modarres Awal, 2005; 2006), so far only Ghahhari et al. (2009 a) have previously reported a few species of Carabidae from cotton fields of Kashmar area in Razavi Khorasan province. So to improve fauna of the country, regional field studies should be carried out in every part of Iran, yet have hitherto been conducted only in a few provinces of the country.

Material and Methods

Study area

Generally, the study area is a land of mountains and deserts. North parts of the area support a relatively flourishing agricultural and pastoral economy, while deserts and salt plains dominate the southern parts and because life is centred around oasis.

The material for this investigation was collected from the various habitats from 2007 to 2008. The study areas were Provinces of Razavi and South Khorasan in Northeast Iran.

Sampling procedure

During years 2007 & 2008, the first and third authors conducted a field survey of the ground beetles inhabiting agroecosystems in different locations of Khorasan-Razavi and South Khorasan provinces. The majority of the collections were made using pitfall traps. To do this, several plastic pitfall traps with about 8 cm in diameter and 10 cm depth, filled partly with ethanol 75% and a few drops of glycerin were used inside and around field crops during the growth season. Also, additional specimens were collected directly by hands when walking through the crops. Data, such as number of carabids, locations and

dates were recorded. The material were identified by the second author. All specimens were identified by using literature and comparing identified material. The some specimens are deposited in the personal collection of the second author, also some paratypes are held in the department of Plant Protection, College of Agriculture, Ferdowsi University of Mashhad, Iran.

The nomenclature of the Carabidae is given sensu Löbl and Smetana (2003), while the zoogeographical chorotypes used are proposed by Vigna Taglianti et al. (1999).

Results and Discussion

A total of 19 species are recorded (listed below), of which 3 species namely *Dixus clypeatus* P. Rossi, 1790, *Poecilus* (*Poecilus*) *punctulatus* Schaller, 1783 and *Pterostichus* (*Melanius*) *elongatus* Duftschmid, 1812 are new records for Iranian fauna. Among the collected species, 11 are new for fauna of the study areas.

Nebriinae Laporte, 1834

Nebriini Laporte, 1834

***Nebria* Latreille, 1802**

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

Material examined and associations: Razavi Khorasan province: 2 specimens, Fariman (59ºE, 35ºN), 11 July 2007, sugar beet field.

Comments: This species was previously reported from Khorasan, Golestan, Mazandaran provinces of Iran (Ghahhari et al., 2009 a, b).

Geographical distribution: This species is distributed in Asia: Israel, Syria, Turkey (Löbl & Smetana, 2003). The range of this species exemplifies a E-Mediterranean chorotype.

Carabinae Latreille, 1802

Carabini Latreille, 1802

***Calosoma* Weber, 1801**

***Calosoma* (*Campalita*) *maderae tectum* Motschulsky, 1844**

Material examined and associations: Razavi Khorasan province: 2 specimens, Mashhad (59ºE, 36ºN), 27 June 2008, wheat field; South Khorasan province: 1 specimen, Nehbandan (58ºE, 33ºN), 12 May 2007, wheat field.

Comments: This species was previously reported only from Fars, Kohkeyloyeh and Boyer Ahmad (Mohammad Zadeh Fard & Hodjat, 2008) and

Mazandaran (Ghahhari et al., 2009b) provinces of Iran. This is new record for the fauna of Razavi and South Khorasan provinces.

Geographical distribution: This species is distributed in Europe: Azerbaijan, Armenia, Georgia, Russia: South European Territory, Asia: Iran, Turkey (Löbl & Smetana, 2003). The range of this species exemplifies a Turanian chorotype.

***Calosoma* (*Campalita*) *olivieri* Dejean, 1831**

Material examined and associations: Razavi Khorasan province: 2 specimens, Torbat-e-Jam (60ºE, 35ºN), 23 July 2007, alfalfa field; 1 specimen, Mashhad (59ºE, 3ºN), 17 August 2008, apple orchard.

Comments: This species was already reported from Khorasan, Mazandaran, Golestan provinces in Iran (Ghahari et al., 2009 a).

Geographical distribution: This species is distributed in Europe: Azores, Malta, North Africa: Algeria, Canary Islands, Egypt, Libya, Morocco (incl. Western Sahara), Tunisia, Asia: Iran, Iraq, Jordan, Pakistan, Saudi Arabia, Syria, Turkmenistan, Uzbekistan (Löbl & Smetana, 2003). The range of this species exemplifies a Saharo-Sindian chorotype.

Scaritinae Bonelli, 1810

Scaritini Bonelli, 1810

Scaritina Bonelli, 1810

***Distichus* Motschulsky, 1858**

***Distichus* (*Distichus*) *planus* Bonelli, 1813**

Material examined and associations: Razavi Khorasan province: 2 specimens, Mah-Velat (57ºE, 35ºN), 15 May 2007, alfalfa field.

Comments: This species was previously reported from Tehran and Khorasan provinces of Iran (Ghahhari et al., 2009 a).

Geographical distribution: This species is distributed in Europe: Azerbaijan, France (incl. Corsica, Monaco), Georgia, Greece (incl. Crete), Italy (incl. Sardinia, Sicily, San Marino), Malta, Portugal, Spain (incl. Gibraltar), Turkey, North Africa: Egypt, Morocco (incl. Western Sahara), Tunisia, Asia: Iran, Iraq, Jordan, Kazakhstan, Pakistan, Saudi Arabia, Syria, Tadzhikistan, Turkey,Turkmenistan, Uzbekistan, Yemen (incl. Socotra) (Löbl & Smetana, 2003). The range of this species exemplifies a Afrotropico-Indo-Mediterranean chorotype.

Harpalinae Bonelli, 1810

Harpalini Bonelli, 1810

Ditomina Bonelli, 1810

***Dixus* Billberg, 1820**

***Dixus clypeatus* P. Rossi, 1790**

Material examined and associations: Razavi Khorasan province: 3 specimens, Kashmar (58ºE, 35ºN), 17 July 2008, grape orchard surroundings.

Comments: This species is a new record for Iranian fauna.

Geographical distribution: This species is distributed in Europe: Albania, Bosnia Herzegovina, Bulgaria, Croatia, France (incl. Corsica, Monaco), Greece (incl. Crete), Hungary, Italy (incl. Sardinia, Sicily, San Marino), Malta, Macedonia, Moldavia, Portugal, Romania, Slovakia, Slovenia, Spain (incl. Gibraltar), Ukraine, Yugoslavia (Serbia, Montenegro), North Africa: Algeria, Morocco (incl. Western Sahara), Tunisia, Asia: Turkey (Löbl & Smetana, 2003). The range of this species exemplifies a Europeo-Mediterranean chorotype.

Harpalina Bonelli, 1810

***Acinopus* Dejean, 1821**

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

Material examined and associations: Razavi Khorasan province: 2 specimens, Mashhad (59ºE, 36ºN), 7 June 2007, sugar beet field; South Khorasan province: 2 specimens, Ferdows (58ºE, 34ºN), 24 June 2008, wheat field surroundings.

Comments: This species was previously reported from Fars, Kohkeyloyeh and Boyer ahmad (Mohammad Zadeh Fard & Hodjat, 2008), Khorasan, Golestan, Tehran, Mazandaran provinces (Ghahhari et al., 2009 a, b).

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, Turkey, Turkmenistan, Uzbekistan, Xinjiang (Sinkiang) (Löbl & Smetana, 2003). The range of this species exemplifies a Turano-Mediterranean chorotype.

***Acinopus* (*Acinopus*) *picipes* Olivier, 1795**

Material examined and associations: Razavi Khorasan province: 3 specimens, Kashmar (58ºE, 35ºN), 9 June 2008, cotton field surroundings.

Comments: This species is new for the fauna of Razavi Khorasan province. It was already reported from Fars province of Iran by Alichi & Minaie (2002).

Geographical distribution: This species is distributed in Europe: Azerbaijan, Albania, Armenia, Bosnia Herzegovina, Bulgaria, Croatia, France (incl. Corsica, Monaco), Georgia, Greece (incl. Crete), Hungary, Italy (incl. Sardinia, Sicily, San Marino), Malta, Macedonia, Moldavia, Portugal, Romania, Slovenia, Spain (incl. Gibraltar), Russia: South European Territory, Turkey, Ukraine, Yugoslavia (Serbia, Montenegro), Asia: Cyprus, Iran, Iraq, Israel, Syria, Turkey (Löbl & Smetana, 2003). The range of this species exemplifies a Turano-European chorotype.

***Harpalus* Latreille, 1802**

***Harpalus* (*Harpalus*) *distinguendus distinguendus* Duftschmid, 1812**

Material examined and associations: Razavi Khorasan province: Mashhad (59ºE, 36ºN), 2 specimens, 15 April 2007, wheat field; Neyshabor (58ºE, 36ºN), 1 specimen, 25 April 2007, sugar beet field; Torbat-e- Heydariye (59ºE, 35ºN), 2 specimens, 10 July 2008, alfalfa field; Torbat-e- Jam (60ºE, 35ºN), 1 specimen, 3 August 2008, alfalfa field; Kashmar (58ºE, 35ºN), 3 specimens, 22 July 2008, cotton field; South Khorasan province: Ghaenat (60ºE, 34ºN), 1 specimen, 7 June 2007, sugar beet field.

Comments: This species was already reported from Iran (Löbl & Smetana, 2003).

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), Germany, Georgia, Greece (incl. Crete), Hungary, Italy (incl. Sardinia, Sicily, San Marino), Kazakhstan, Latvia, Lithuania, Luxembourg, Macedonia, Moldavia, Netherlands, Norway, Russia: North European Territory, Poland, Portugal, Romania, Slovakia, Slovenia, Spain (incl. Gibraltar), Russia: South European Territory, Sweden, Switzerland, Turkey, Ukraine, Yugoslavia (Serbia, Montenegro), North Africa: Algeria, Canary Islands, Morocco (incl.Western Sahara), Madeira Archipelago, Asia: Afghanistan, Cyprus, Russia: East Siberia, Iran, Israel, Kyrgyzstan, Kazakhstan, Mongolia, Syria, Tadzhikistan, Turkey, Turkmenistan, Uzbekistan, Russia: west Siberia, Xinjiang (Sinkiang) (Löbl & Smetana, 2003). The range of this species exemplifies a Palearctic chorotype.

***Harpalus* (*Harpalus*) *honestus honestus* Duftschmid, 1812**

Material examined and associations: Razavi Khorasan province: 3 specimens, Chenaran (59ºE, 36ºN), 18 June 2008, sugarbeet field.

Comments: This species was already reported from Golestan & Khorasan provinces in Iran (Ghahhari et al., 2009 a).

Geographical distribution: This species is distributed in Europe: Azerbaijan, Albania, Armenia, Austria, Belgium, Bosnia Herzegovina, Bulgaria, Croatia, Czech Republic, France (incl. Corsica, Monaco), Great Britain (incl. Channel Islands), Germany, Georgia, Greece (incl. Crete), Hungary, Italy (incl. Sardinia, Sicily, San Marino), Liechtenstein, Luxembourg, Macedonia, Netherlands, Poland, Romania, Slovakia, Slovenia, Spain (incl. Gibraltar), Russia: South European Territory, Switzerland, Turkey, Ukraine, Yugoslavia (Serbia, Montenegro), Asia: Iran, Syria, Turkey. (Löbl & Smetana, 2003). The range of this species exemplifies a Sibero-European chorotype.

***Harpalus* (*Harpalus*) *oblitus oblitus* Dejean, 1829**

Material examined and associations: Razavi Khorasan province: 2 specimens, Mashhad (59ºE, 36ºN), 5 May 2008, wheat field; 1 specimen, Sabzevar (57ºE, 36ºN), 5 May 2008, wheat field; South Khorasan province: 2 specimens, Birjand (59ºE, 32ºN), 6 May 2007, alfalfa field.

Comments: This species was already reported from Iran (Löbl & Smetana, 2003), but locality is not given.

Geographical distribution: This species is distributed in Europe: Albania, Bosnia Herzegovina, Bulgaria, Croatia, France (incl. Corsica, Monaco), Georgia, Greece (incl. Crete), Hungary, Italy (incl. Sardinia, Sicily, San Marino), Kazakhstan, Moldavia, Romania, Slovenia, Russia: South European Territory, Turkey, Ukraine, Yugoslavia (Serbia, Montenegro), Asia: Iran, Iraq, Kazakhstan, Syria, Tadzhikistan, Turkey, Russia: west Siberia (Löbl & Smetana, 2003). The range of this species exemplifies a Turano-European-Mediterranean chorotype.

***Harpalus* (*Harpalus*) *smaragdinus* Duftschmid, 1812**

Material examined and associations: South Khorasan province: 3 specimens, Ferdows (58ºE, 34ºN), 29 April 2008, wheat field.

Comments: This species was already reported from Iran (Löbl & Smetana, 2003), but locality is not given.

Geographical distribution: This species is distributed in Europe: Azerbaijan, Albania, Armenia, 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, Georgia, Hungary, Italy (incl. Sardinia, Sicily, San Marino), Kazakhstan, Latvia, Lithuania, Luxembourg, Macedonia, Moldavia, Netherlands, Norway, Russia: North European Territory, Poland, Romania,

Slovakia, Slovenia, Spain (incl. Gibraltar), Russia: South European Territory, Sweden, Switzerland, Turkey, Ukraine, Yugoslavia (Serbia, Montenegro), Asia: Cyprus, Russia: East Siberia, Iran, Kyrgyzstan, Kazakhstan, Tadzhikistan, Turkmenistan, Turkey, Uzbekistan, Russia: west Siberia, (Xinjiang) Sinkiang (Löbl & Smetana, 2003). The range of this species exemplifies a Asiatic-European chorotype.

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

Material examined and associations: Razavi Khorasan province: 2 specimens, Bardaksan (57ºE, 35ºN), 19 August 2008, alfalfa field; 3 specimens, Mashhad (59º E, 36ºN), 9 June 2007, sugar beet field; 2 specimens, Dargaz (59ºE, 37ºN), 17 July 2007, wheat field surroundings; 2 specimens, Serakhs (61ºE, 36ºN), 28 April 2008, wheat field; South Khorasan province: 1 specimen, Ghaenat (60ºE, 34ºN), 9 July 2007, alfalfa field; 2 specimens, Ferdows (58ºE, 34ºN), 22 June 2008, wheat field.

Comments: This species was previously reported from provinces of Khorasan, Mazandaran in Iran (Ghahhari et al., 2009 a; b).

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, Turkey, Turkmenistan, Uzbekistan, Russia: west Siberia, Xinjiang (Sinkiang), Yunnan, Zhejiang (Chekiang), Oriental Region (Löbl & Smetana, 2003). The range of this species exemplifies a Palearctic chorotype.

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

Material examined and associations: Razavi Khorasan province: 1 specimen, Mashhad (59ºE, 36ºN), 28 August 2007, alfalfa field; 2 specimens, Neyshabor (58ºE, 36ºN), 12 May 2008, wheat field surroundings.

Comments: Previous provincial records of this species in Iran include Fars, Kohkeyloyeh and Boyer ahmad (Mohammad Zadeh Fard & Hodjat, 2008), Tehran, Ardabil, Mazandaran, Semnan & Khorasan (Ghahhari et al., 2009 a).

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, Turkey, Turkmenistan, Uzbekistan, Russia: west Siberia, Xinjiang (Sinkiang), Nearctic Region (Löbl & Smetana, 2003). The range of this species exemplifies a Palearctic chorotype.

Lebiini Bonelli, 1810

Cymindidina Laporte, 1834

***Cymindis* Latreille, 1806**

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

Material examined and associations: Razavi Khorasan province: 2 specimens, Mashhad (59ºE, 36ºN), 12 May 2007, alfalfa field.

Comments: This species is reported from Khorasan provinces for the first time, it was already reported from Fars, Mazandaran and Boyer ahmad (Mohammad Zadeh & Hodjat, 2008), Ahvaz (Shafiei et al., 2004; Ghahhari et al. 2009 b).

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, Turkey, Turkmenistan, Yemen (incl. Socotra) (Löbl & Smetana, 2003). The range of this species exemplifies a Turano-Mediterranean chorotype.

Pterostichini Bonelli, 1810

***Poecilus* Bonelli, 1810**

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

Material examined and associations: Razavi Khorasan province: 2 specimens, Chenaran (59ºE, 36ºN), 28 April 2008, apple orchard surroundings.

Comments: This is the second record of this species in the study area. It was already reported from Khorasan, Mazandaran, Fars, Ardabil, Tehran, Semnan provinces of Iran (Ghahhari et al., 2009 a, b).

Geographical distribution: This species 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). The range of this species exemplifies a Asiatic-European chorotype.

***Poecilus* (*Poecilus*) *punctulatus* Schaller, 1783**

Material examined and associations: Razavi Khorasan province: 2 specimens, Chenaran (59ºE, 36ºN), 24 July 2008, wheat field.

Comments: This species is new for Iranian fauna.

Geographical distribution: it is distributed in Europe: Austria, Belgium, Bulgaria, Byelorussia, Russia: Central European Territory, Czech Republic, Denmark, Estonia, France (incl. Corsica, Monaco), Germany, Hungary, Italy (incl. Sardinia, Sicily, San Marino), Kazakhstan, Latvia, Lithuania, Moldavia, Netherlands, Russia: North European Territory, Poland, Slovakia, Russia: South European Territory, Sweden, Switzerland, Ukraine, Asia: Kazakhstan, Uzbekistan, Russia: west Siberia (Löbl & Smetana, 2003). The range of this species exemplifies a Turano-European chorotype.

***Poecilus* (*Poecilus*) *subcoeruleus* Quensel, 1806**

Material examined and associations: Razavi Khorasan province: 3 specimens, Mashhad (59ºE, 36ºN), 18 May 2007, alfalfa field.

Comments: This species was already reported from Iran (Löbl & Smetana 2003), but locality is not given.

Geographical distribution: This species is distributed in Europe: Bulgaria, Byelorussia, Moldavia, Portugal, Russia: South European Territory, Ukraine, Asia: Iran (Löbl & Smetana, 2003). The range of this species exemplifies a Turano-European chorotype.

***Pterostichus* Bonelli, 1810**

***Pterostichus* (*Melanius*) *elongatus* Duftschmid, 1812**

Material examined and associations: South Khorasan province: 2 specimens, Ghaenat (60ºE, 34ºN), 27 June 2007, wheat field.

Comments: This species is new for Iranian fauna.

Geographical distribution: it is distributed in Europe: Albania, Austria, Bosnia Herzegovina, Bulgaria, Croatia, Czech Republic, France (incl. Corsica, Monaco), Greece (incl. Crete), Hungary, Italy (incl. Sardinia, Sicily, San Marino), Moldavia, Romania, Slovakia, Slovenia, Spain (incl. Gibraltar), Russia: South European Territory, Ukraine, Yugoslavia (Serbia, Montenegro), North Africa: Morocco (incl.Western Sahara), Asia: Afghanistan, Kazakhstan, Turkey (Löbl & Smetana, 2003). The range of this species exemplifies a Europeo-Mediterranean chorotype.

Zabrini Bonelli, 1810

Amarina C. Zimmermann, 1831

***Amara* Bonelli, 1810**

***Amara* (*Amara*) *proxima* Putzeys, 1866**

Material examined and associations: Razavi Khorasan province: 2 specimens, Mashhad (59ºE, 36ºN), 16 August 2007, sugar beet field.

Comments: This species was already reported from Iran (Löbl & Smetana 2003), but locality is not given.

Geographical distribution: This species is distributed in Europe: Azerbaijan, Albania, Armenia, Austria, Bosnia Herzegovina, Bulgaria, Croatia, France (incl. Corsica, Monaco), Germany, Georgia, Greece (incl. Crete), Hungary, Italy (incl. Sardinia, Sicily, San Marino), Macedonia, Romania, Switzerland, Slovakia, Slovenia, Spain (incl. Gibraltar), Russia: South European Territory, Ukraine, Yugoslavia (Serbia, Montenegro), Asia: Iran, Turkey, Turkmenistan, (Löbl & Smetana, 2003). The range of this species exemplifies a S-European chorotype.

This study reports three new records of family Carabidae to Iranian fauna and 11 new records for the study area. Two previously recorded species in the study area, *Anthia mannerheimi* Chaudoir, 1842 (Afshar, 1944); *Zabrus tenebrioides* Goeze, 1777 (Afshar, 1944; Zomorrodi, 1990; Farahbakhsh, 1961; Modarres Awal, 1997) were not encountered in this and the previous study by Ghahari et al. (2009 a, b). 3 new records for Iranian fauna are: *Dixus clypeatus*, *Poecilus* (*Poecilus*) *punctulatus* and *Pterostichus* (*Melanius*) *elongatus*. In addition to the later species, the following species are added to the fauna of Razavi and South Khorasan provinces: *Acinopus* (*Acinopus*) *picipes* Olivier,

1795, *Cymindis* (*Cymindis*) *andreae* Ménétriés, 1832, *Calosoma* (*Campalita*) *maderae tectum* Motschulsky, 1844, *Poecilus* (*Poecilus*) *subcoeruleus* Quensel, 1806, *Harpalus* (*Harpalus*) *smaragdinus* Duftschmid, 1812, *Harpalus* (*Harpalus*) *distinguendus distinguendus* Duftschmid, 1812, *Harpalus* (*Harpalus*) *oblitus oblitus* Dejean, 1829, *Amara* (*Amara*) *proxima* Putzeys, 1866.

Crop associations from which samples were collected in this survey are helpful in linking the data to crops for later consideration in crop protection. The six crop types surveyed yielded a total of 19 carabid species in the following associations: wheat 9 species, alfalfa 8 species, sugar beet 6 species, cotton and apple orchard each 2 species. Only 1 species was found in grape orchard. With this results, we can not judge about the species richness of Carabidae in the crop surveyed.

With more long-term and periodic work can be found different and more species of Carabids. We therefore consider that this study represents preliminary results and that further faunistic studies are required. Clearly more species are to be expected after more investigative collecting.

Özet

İran'ın Carabidae (Coleoptera) faunasına yeni katkılar

Bu çalışmada 2007 ve 2008 yıllarında İran'ın kuzeydoğusundaki Razavi ve Güney Horasan illerinde farklı tarım alanlarında yaşayan Carabidae üzerine faunistik araştırmalar yapılmıştır. Carabidae familyasına ait 69 örnek toplanmış ve incelenmiştir. Teşhislerin sonucunda 4 altfamilyanın 10 cinsine ait olan, 19 tür ve 6 alttür tespit edilmiştir. Horasan ilinin Carabidae faunasına 11 yeni tür eklenmiştir. Bu türler içinde 3 tür [*Dixus clypeatus* P. Rossi, 1790, *Poecilus* (*Poecilus*) *punctulatus* Schaller, 1783 ve *Pterostichus* (*Melanius*) *elongatus* Duftschmid, 1812] İran için ilk kez kaydedilmiştir. Bu illerden daha önce kaydedilen 2 tür bu çalışmada kaydedilmemiştir. Bu çalışmayla İran'ın Carabidae'leri (Coleoptera) üzerine yeni faunistik bilgiler ve bazı zoocoğrafik değerlendirmeler sunulmuştur.

Acknowledegements

Athours are gratefull to Ferdowsi University of Mashhad for their support during this study.

References

Afshar, J., 1944. Les Nomes Scientifique de Quelques Coleopteres de I' Iran et Leurs Importance en Agriculture. Ministry of Agriculture, Tehran. 22 pp.

Alichi, M. & K. Minaie, 2002. "New records of the Carabidae in Fars province, 175". Proceedings of the 15 th Iranian Plant Protection Congress, Razi University, Kermanshah.

Best, R. L. & C. C. Beegle, 1977. Food preferences of five species of carabids commonly found in Iowa cornfields. **Environmental Entomology, 6** (1): 9-12.

Clark, M. S., J. M. Luna, N. D. Stone & R. R. Youngman, 1994. Generalist predator consumption of armyworm (Lepidoptera: Noctuidae) and effect of predator removal on damage in no-till corn. **Environmental Entomology, 23** (3): 617-622.

Esmaili, M., A.A. Mirkarimi & P. Azmayesh Farad, 1991. Agricultural Entomology. University of Tehran Press. 2073: 552 pp.

Farahbakhsh, Gh., 1961. Checklist of Important Insects and Other Pests of Plants and Agricultural Products in Iran. Ministry of Agriculture, Department of Plant Protection. Tehran 1: 1-153 pp.

Ghahhari, H., M. Kesdek, N. Samin, H. Ostovan, M. Havaskary & S. Imani, 2009a. Ground beetles (Coleoptera:Carabidae) of Iranian cotton fields and surrounding grasslands. **Munis Entomology & Zoology, 4** (2): 436-450.

Ghahhari, H., B. Wojciech, J. Czkowsi, M. Kesdek, H. Otovan & M. Tabari., 2009b. Ground beetles (Coleoptera: Carabidae) from rice fields and surrounding grasslands of Northern Iran. **Journal of Biological Control, 23** (2): 105-109.

Homayoon, F., P. Shishehbor & M. Alichi, 2002. “Introducing some ground beetle (Coleoptera: Carabidae) in three different crop plants in Marvdasht region, 176”. 15th, Iranian Plant Protection Congress, Kermanshah University, Kermanshah.

Lindroth, C. H., 1985. The Carabidae (Coleoptera) of Fennoscandia and Denmark. **Fauna Entomologica Scandinavica**, **15 (1)** 225 pp.

Löbl, I. & A. Smetana, 2003. Catalogue of Palaearctic Coleoptera. Volume I. Archostemata-Myxophaga-Adephaga. Apollo Books. Stenstrup, Denmark, 819 pp.

Modarres Awal, M., 1997. List of Agricultural Pests and Their Natural Enemies in Iran. Ferdowsi University Press. 147: 429 pp.

Modarres Awal, M., 2005. A contribution to the longhorned beetles fauna (Coleoptera: Cerambycidae) of Khorasan province, Iran. **Türkiye Entomoloji Dergisi, 29** (4): 273-278.

Modarres Awal, M., 2006. Preliminary studies on scarabaeoidea (Coleoptera) fauna of Razavi Khorasan province of Iran. **Türkiye Entomoloji Dergisi, 30** (3): 163-172.

Mohammad Zadeh Fard, S., S. H. Hodjat & M. Alichi, 2004. “New records of Carabid beetles from Iran, 125”. 16th Iranian Plant Protection Congress, University of Tabriz, Tabriz.

Mohammad Zadeh Fard, S. & S. H. Hodjat, 2008. “A comparison survey on fauna of Family Carabidae (Insecta: Coleoptera) in natural and agricultural areas, 89”. 18th Iranian Plant Protection Congress, Bu-Ali Sina University, Hamadan.

Shafiei, R., E. Soleiman Nejadian, P. Shishehbor & J. Muilwijk, 2004. “Faunistic survey of family Carabidae (Insecta: Coleoptera) in Ahwaz region, 139”. 16th Iranian Plant Protection Congress, University of Tabriz, Tabriz.

Thiele, H. U., 1977. Carabid Beetles in Their Environments. Springer-Verlag. Berlin, Germany. 369 pp.

Varchola, J. M. & J. P. Dunn, 1999. Changes in ground beetle (Coleoptera: Carabidae) assemblages in farming systems bordered by complex or simple roadside vegetation. **Agriculture, Ecosystems and Environment. 73**: 41-49.

Vigna Taglianti, A., P. A. Audisio, M. Biondi, M. A. Bologna, G. M. Carpaneto, A. D. Biase, S. Fattorini, E. Piattella, R. Sindaco, A. Venchi & M. Zapparoli, 1999. "A Proposal For a Chorotype Classification of The Near East Fauna, in The Framework of The Western Palearctic Region, 31-59". In: Biogeographia. Parte I. Biogeografia Dell'Anatolia. Pubblicato Sotto Gli Auspici Del Ministero Dei Beni Culturali Ed Ambientali. Siena, Italy, 406 pp.

Zomorrodi, A., 1990. Plants and Agricultural Products Sanitation. Tehran. 598 pp.