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Taxonomic studies of Ground beetles in North and West of Iran (Coleoptera; Carabidae)

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Abstract

This paper presents the results of a faunistic study of ground beetles (Coleoptera: Carabidae) from different regions of Iran, particularly from Kermanshah and Mazandaran provinces, during the period from spring 2012 to Summer 2014. There are also some specimens collected from north west of Iran. A total of 32 species belonging to 19 genera were collected and identified, several species confirmed their exist in Iran.

Zusammenfassung

In dieser Arbeit werden die Ergebnisse einer faunistischen Studie über Laufkäfer (Coleoptera: Carabidae) aus verschiedenen Regionen des Iran vorgestellt, im besonderen aus den Provinzen Kermanshah und Mazandaran, während der Zeitspanne von Frühjahr 2012 bis Sommer 2014. Einige Individuen wurden auch aus dem Nordwesten des Iran gesammelt. Insgesamt konnten 32 Arten aus 19 Gattungen gesammelt und bestimmt werden, einige Arten werden in ihrem Vorkommen für den Iran bestätigt.

Introduction

Iran is subdivided into thirty-one provinces which representing a range of climates, so it would be expected that there is a rich ground beetle fauna existing in this country. In Iran about 955 species of Carabidae are known according a first checklist, arranged by AZADBAKHS & NOZARI (2015). We carried out surveys in the north and west of Iran particularly from the provinces Mazandaran and Kermanshah to study the diversity of ground beetles in various ecosystems. Also some specimen collected from the provinces Golestan and Azarbaijan-Shagi. The Kermanshah province is located in the west of Iran between Zagros mountains range. This province divided into two regions which one of those being the tropical zone in the west and the other the cold region is the rest of the zones. The mountainous climatic zone enjoys cold winters and temperate summers but the semi-desert climatic zone of the western foothills of Zagros having a temperate climate in winter and warm and intolerable weather in summer. Mazandaran province which is located on the northern part of Iran and the southern coast of the Caspian Sea, geographically divided into two parts: the coastal plains, and the mountainous areas. This province enjoys a moderate, subtropical climate with an average temperature of 25° C in summer and about 8° C in winter. Although snow may fall heavily in the mountains in winter, it rarely falls at sea level. Annual rainfall ranges from 900 mm (35 in) in the east (Golestan province) to 1,600 mm (63 in) in the west (Gilan province).

Material and Methods

The studied materials were collected from North and West of Iran, particularly from Kermanshah and Mazandaran provinces from spring 2012 to summer of 2014. Also some materials collected from the provinces Golestan and Azarbaijan-shargi. Material was collected by hand from the ground, under the rocks or trunks, bank side of rivers and etc. The samples are preserved in Ethyl acetate atmosphere or in 96% alcohol. Determination is based on morphological characters and for confirm their proper identification, materials showed to specialist like D.W. WRASE (Berlin/Germany), Matthias HARTMANN (Erfurt, Germany) and etc.

Results

In this study 32 species from, 19 genera were collected that several species reported for the first time from Kermanshah province. The list of collected species follows the nomenclature of LORENZ (2005); distribution notes follow LÖBL & SMETANA (2003) and AZADBAKHS & NOZARI (2015):

Brachininae BONELLI, 1810

***Brachinus (Brachynidius) bodemeyeri* (APFELBECK, 1904)**

Material examined. 5 ex., Iran, Kermanshah province, Razi Agriculture University. 10.4.2014 - 10.5.2014 (34°19'29"N, 47°6'12"E - 1351m), S. AZADBAKHS det.

Distribution. This species distributed mostly in Europe and west of Asia. This species previously reported from Iran but about locality no information is available.

***Brachinus (Brachynidius) explodens* (DUFTSCHMID, 1812)**

Material examined. 6 ex., Iran, Kermanshah province, Razi Agriculture University. 10.IV.2014 - 10.V.2014 (34°19'29"N, 47°6'12"E - 1351m), M. HARTMANN det.

Distribution. This species distributed mostly in Europe and west of Asia. This species previously reported from the provinces Razavi Khorasan (Mashad), Mazandaran and Gilan (Astaneh and Sefid Rud).

***Brachinus (Brachinus) psophia* AUDINET-SERVILLE, 1821**

Material examined. 1 ex., Iran, Mazandaran province, Khiroud forest. 23.VII.2012 (36°59'06"N, 51°56'68"E), S. AZADBAKHS det.

Distribution. This species distributed mostly in Europe and west of Asia. This species previously reported from the provinces Golestan (Azad Shahr) and Tehran (Baraghan River).

***Brachinus (Brachynolomus) brevicollis* MOTSCHULSKY, 1844**

Material examined. 4 ex., Iran, Mazandaran province, Khiroud forest. 23.VII.2012 (36°59'06"N, 51°56'68"E), S. AZADBAKHS det.

Distribution. This species distributed mostly in East of Europe and west of Asia. This species distributed on the north of Iran.

Scaritinae BONELLI, 1810

***Distichus (Distichus) planus* (BONELLI, 1813)**

Material examined. 3 ex., Iran, Kermanshah province. Razi Agriculture University. 10.IV.2014 - 10.V.2014 (34°19'29"N, 47°6'12"E - 1351m), S. AZADBAKHS det.

Distribution. This species distributed in Egypt, France, Georgia, Greece, Iran, Iraq, Italy, Jordan, Kazakhstan, Malta, Morocco, Pakistan, Portugal, Saudi Arabia, Spain, Syria, Tadzhikistan, Turkmenistan, Turkey, Tunisia, Uzbekistan and Yemen. This species previously reported from the provinces Kerman (Zarand), Tehran (Najmaabad), Razavi Khorasan (Mahvelat), Mazandaran (Khirood forest, Now Shahr), Golestan (Azad Shahr) and Giylan (Bandar-e Anzali, Astaneh, Safid Rud).

Pterostichinae BONELLI, 1810

Poecilus (Ancholeus) iranicus (MORVAN, 1974)

Material examined. 2 ex., Iran, Kermanshah province. Razi Agriculture University. 10.IV.2014 - 10.V.2014 (34°19'29"N, 47°6'12"E - 1351m), S. AZADBAKHS det.

Distribution. This species distributed just in Iran. This species previously reported from the provinces Azarbaijan Shargi (Moghan) and Tehran (Varamin).

Amara (Amara) aenea (DEGEER, 1774)

Material examined. 1 ex., Iran, Kermanshah province. Razi Agriculture University. 10.IV.2014 - 10.V.2014 (34°19'29"N, 47°6'12"E - 1351m), S. AZADBAKHS det.

Distribution. This species have widely distribution in Europe and West of Asia and Egypt. This species previously reported from the provinces Kerman, Fars, Golestan, Khorasan-Razavi, Alburz, Mazandaran, Qazvin, Tehran, Isfahan, Chahar Mahali-o-Bakhtiyari.

Amara (Amara) ovata (FABRICIUS, 1792)

Material examined. 1 ex., Iran, Golestan province. Ziarat Road. 11.VIII.2014 (36°44'2"N, 54°28'59"E), S. AZADBAKHS det.

Distribution. This species have widely distribution in Europe and West of Asia. This species previously reported from Khorasan-Razavi and Mazandaran provinces.

Amara (Bradytus) apricaria (PAYKULL, 1790)

Material examined. 1 ex., Iran, Mazandaran province, Khirood forest. 23.V.2012 (36°59'06"N, 51°56'68"E), S. AZADBAKHS det.

Distribution. This species distributed in Afghanistan, Algeria, Armenia, China (Gansu; Qinghai; Xinjiang), Canary Islands, Egypt, Greece, Iran, Iraq, Israel, Jordan, Kyrgyzstan, Kuwait, Kazakhstan, Libya, Lebanon, Morocco, Saudi Arabia, Syria, Tadjikistan, Turkmenistan, Turkey, Tunisia and Uzbekistan. This species previously reported from Mazandaran (C-Elburz, Kandovan, Pass, 36°09'10"N, 51°18'99"E, 3000m; Kelar dasht; Rudbarak), Giylan (Talesh, Pusht-e Kuh, 2000- 2300) provinces.

***Zabrus (Pelor) spinipes* (FABRICIUS, 1798)**

Material examined. 3 ex., Iran, Kermanshah province. Razi Agriculture University. 10.IV.2014 - 10.V.2014 (34°19'29"N, 47°6'12"E - 1351m), D.W. WRASE det.

Distribution. This species distributed in Austria, Belgium, Czech, Greece, Hungary, Poland, Slovakia, Serbia, Sweden and Turkey. This species distributed west to north west of Iran and maybe exist in the north but more information is available about its distribution in Iran.

***Zabrus (Zabrus) tenebrioides* GOEZE, 1777**

Material examined. 5 ex., Iran, Kermanshah province. Razi Agriculture University. 10.IV.2014 - 10.V.2014 (34°19'29"N, 47°6'12"E - 1351m), S. AZADBAKSH det.

Distribution. This species has a wide distribution in Europe and west of Asia. In Iran this species distributed mostly in center, west and north west of Iran.

Licininae BONELLI, 1810

***Licinus (Neorescius) astrabadensis* REITTER, 1902**

Material examined. 1 ex., Iran, Mazandaran province, Khirood forest. 23.VII.2012 (36°59'06"N, 51°56'68"E), S. AZADBAKSH det.

Distribution. This species described from Mazandaran province (Astar-Abad) by REITTER (1902) and it is the second record of this species from Iran after more than 100 years.

Subfamily Harpalinae BONELLI, 1810

***Harpalus (Harpalus) caspius* STEVEN, 1806**

Material examined. 2 ex., Iran, Mazandaran province, Khirood forest. 23.VII.2012 (36°59'06"N, 51°56'68"E), S. AZADBAKHSH det.

Distribution. This species distributed in Azerbaijan, Armenia, Austria, Bulgaria, Croatia, Czech, Germany, Georgia, Hungary, Iran, Moldavia, Poland, Romania, Russia, Slovakia, Slovenia, Turkey and Ukraine. This species previously reported from the provinces Mazandaran (Kolijak, Now Shahr, Lashak), Gilan (Hashtpar. Lahijan) and Ardabil (Pars-Abad).

***Harpalus (Harpalus) affinis* (SCHRANK, 1781)**

Material examined. 1 ex., Iran, Mazandaran province, Khirood forest. 23.VII.2012 (36°59'06"N, 51°56'68"E), S. AZADBAKHSH det.

Distribution. This species widely distributed in Europe and West of Asia. No information is available about its distribution in Iran.

***Harpalus (Cryptophonus) melancholicus melancholicus* DEJEAN, 1829**

Material examined. 1 ex., Iran, Kermanshah province. Razi Agriculture University. 10.IV.2014 - 10.V.2014 (34°19'29"N, 47°6'12"E - 1351m), S. AZADBAKHSH det.

Distribution. This species distributed in Albania. No information is available about its distribution in Iran.

***Harpalus (Harpalus) metallinus metallinus* MENETRIES, 1836**

Material examined. 10 ex., Iran, Kermanshah province. Razi Agriculture University. 10.IV.2014 - 10.V.2014 (34°19'29"N, 47°6'12"E - 1351m), S. AZADBAKHSH det.

Distribution. This species distributed in Azerbaijan, Armenia, Bulgaria, Cyprus, Georgia, Greece, Iran, Iraq, Israel, Lebanon, Russia (Caucasus), Syria and Turkey. This species previously reported from Kerman province (Sabzawaran).

***Harpalus (Harpalus) distinguendus* (DUFTSCHMID, 1812)**

Material examined. 4 ex., Iran, Kermanshah province. Razi Agriculture University. 10.IV.2014 - 10.V.2014 (34°19'29"N, 47°6'12"E - 1351m), S. AZADBAKHSH det.

Distribution. This species have widely distribution from Europe to West of Asia. This

species previously reported from the provinces Razavi Khorasan (Mashad. Neyshabor. Torbat-e- Heydariye. Kashmar. Ghaenat), Golestan (Azad Shahr). Gilan (Hashtpar). Mazandaran (Kolijak, Kolyak, Javaherdeh Road, Doshoon Kooh). Qazvin (Kordak, Kordak River).

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

Material examined. 5 ex., Iran, Kermanshah province. Razi Agriculture University. 10.IV.2014 - 10.V.2014 (34°19'29"N, 47°6'12"E - 1351m), S. AZADBAKSH det.

Distribution. This species have widely distribution in Europe and Asia. This species distributed all over country and previously reported from different parts of Iran from south to North.

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

Material examined. 1 ex., Iran, Kermanshah province. Razi Agriculture University. 10.IV.2014 - 10.V.2014 (34°19'29"N, 47°6'12"E - 1351m), S. AZADBAKSH det.

Distribution. This species have widely distribution in Europe and Asia. This species distributed all over country and previously reported from different parts of Iran from south to North.

***Anisodactylus (Anisodactylus) binotatus* (FABRICIUS, 1787)**

Material examined. 5 ex., Iran, Mazandaran province, Khiroud forest. 23.VII.2012 (36°59'06"N, 51°56'68"E), S. AZADBAKSH det.

Distribution. This species widely distributed in Palearctic region and New Zealand. This species previously reported from the provinces Azarbaijan-Shargi, Mazandaran, Gilan and Chahar Mahali-o-Bakhtiari.

***Ophonus (Hesperophonus) rebellus* (SCHAUBERGER, 1926)**

Material examined. 9 ex., Iran, Kermanshah province. Razi Agriculture University. 10.IV.2014 - 10.V.2014 (34°19'29"N, 47°6'12"E - 1351m), S. AZADBAKSH det.

Distribution. This species distributed in Iran and Turkmenistan. This species previously reported from the provinces Alburz (Karaj, Uni of Agriculture), Teheran (Baraghan, River),

Mazandaran (Kolyak, 40km S Tavar, Kolijak, Firooz Kola), Chahar Mahali-o-Bakhtiyari (Ghole, Sabz, Shahr-e Kord) and Isfahan (Quamsar).

***Bradycellus (Bradycellus) heinzi* JAEGER, 1990**

Material examined. 2 ex., Iran, Mazandaran province, Khirood forest. 23.VII.2012 (36°59'06"N, 51°56'68"E), S. AZADBAKHSH det.

Distribution. This species distributed in Azerbaijan and Iran. This species previously reported from Gilan (Jaeger, 1990), Azarbaijan and Ardebil provinces.

***Acinopus (Oedematicus) megacephalus* (P. ROSSI, 1794)**

Material examined. 1 ex., Iran, Mazandaran province, Khirood forest. 23.VII.2012 (36°59'06"N, 51°56'68"E), S. AZADBAKHSH det.

Distribution. This species distributed in Albania, Armenia, Bulgaria, Croatia, Cyprus, France, Georgia, Greece, Iran, Iraq, Israel, Italy, Macedonia, Russia, Slovenia, Syria, Turkmenistan and Turkey. This species mostly distributed in North and west of Iran and previously reported from Mazandaran (Ramsar) province.

***Carterus (Carterus) rufipes* (CHAUDOIR, 1843)**

Material examined. 3 ex., Iran, Kermanshah province, Razi Agriculture University. 10.IV.2014 - 10.V.2014 (34°19'29"N, 47°6'12"E - 1351m), S. AZADBAKHSH det.

Distribution. This species distributed in Israel, Syria, Turkey, Iran and Lebnan. No information is available about its distribution in Iran. But our previously study showed this species distributed in the west of Iran.

***Dixus obscurus* (DEJEAN, 1825)**

Material examined. 5 ex., Iran, Kermanshah province, Razi Agriculture University. 10.IV.2014 - 10.V.2014 (34°19'29"N, 47°6'12"E - 1351m), S. AZADBAKHSH det.

Distribution. This species distributed in Azerbaijan, Albania, Armenia, Bulgaria, Cyprus, Georgia, Greece, Iran, India, Israel, Italy, Macedonia, Moldavia, Romania, Syria, Turkey and Ukraine. This species previously reported from the provinces Gilan, Teheran, Qazvin and Mazandaran.

Subfamily Lebiinae BONELLI, 1810

***Cymindis (Cymindis) andreae* MENETRIES, 1832**

Material examined. 1 ex., Iran, Kermanshah province. Razi Agriculture University. 10.IV.2014 - 10.V.2014 (34°19'29"N, 47°6'12"E - 1351m), S. AZADBAKHSH det.

Distribution. This species distributed in Azerbaijan, Afghanistan, Armenia, Cyprus, Egypt, Georgia, Iran, Iraq, Kyrgyzstan, Kazakhstan, Lebanon, Pakistan, Saudi Arabia, Tadzhikistan, Turkmenistan, Turkey and Yemen. This species previously reported from the provinces Isfahan (Quamsar), Khorasan-e Razavi (Mashhad), Tehran (Derbend) and Khuzestan (30Km, Shush).

***Apristus reticulatus* SCHAUM, 1857**

Material examined. 1 ex., Iran, Azarbaijane- Shargi province. Tabriz, Talkhe river. 17.VI.2014 (38°7'45"N, 46°16'3"E), S. AZADBAKHSH det.

Distribution. This species distributed in Azerbaijan, Bulgaria, Greece, Iran, Italy, Kyrgyzstan, Turkey and Uzbekistan. This species distributed from north and west of Iran previously reported from Gilan province (Rasht).

***Syntomus obscuroguttatus* (DUFTSCHMID, 1812)**

Material examined. 1 ex., Iran, Azarbaijane- Sharhi province. Tabriz. Talkhe river. 17.VI.2014 (38°7'45"N, 46°16'3"E), S. AZADBAKHSH det.

Distribution. This species distributed mostly in Europe and some part of West Asia. This species previously reported from the provinces Kerman and East Azarbaijan by MANDL (1963).

Subfamily Siagoninae BONELLI, 1813

***Siagona europaea europaea* DEJEAN, 1826**

Material examined. 2 ex., Iran, Kermanshah province. Razi Agriculture University. 10.IV.2014 - 10.V.2014 (34°19'29"N, 47°6'12"E - 1351m), S. AZADBAKHSH det.

Distribution. This species distributed in Algeria, Albania, Armenia, Bulgaria, Canary islands, Croatia, Egypt, Georgia, Greece, Italy, Libya, Macedonia, Morocco, Portugal,

Russia (S of Russian plains), Spain, Turkey and Tunisia. This species reported from different parts of Iran and maybe exist in all provinces.

Subfamily Platyninae BONELLI, 1810

***Synuchus elburzensis* MORVAN, 1977**

Material examined. 1 ex., Iran, Mazandaran province, Khirood forest. 23.VII.2012 (36°59'06"N, 51°56'68"E), S. AZADBAKHSH det.

Distribution. This species distributed Just in Iran. This species previously reported and described from the province Ghazvin (Damash) by MORVAN (1977).

***Calathus (Neocalathus) melanocephalus* (LINNAEUS, 1758)**

Material examined. 1 ex., Iran, Kermanshah province. Razi Agriculture University. 10.IV.2014 - 10.V.2014 (34°19'29"N, 47°6'12"E - 1351m), S. AZADBAKHSH det.

Distribution. This species is distributed in Europe and Russia, Iran and Afghanistan. In Iran it is widely distributed in all parts.

***Calathus (Calathus) fuscipes* (GOEZE, 1777)**

Material examined. 2 ex., Iran, Mazandaran province, Khirood forest. 23.VII.2012 (36°59'06"N, 51°56'68"E), S. AZADBAKHSH det.

Distribution. This species widely distributed in Europe and Russia, Iran and Iraq. This species have widely distribution in north and west of Iran and also in some parts of center of country.

Conclusions

In this study 32 species belonging to 19 genera from family Carabidae collected and identified, which most of them reported for the first time from Kermanshah province. About dispersal of the species *Brachinus (Brachynidius) bodemeyeri* (APFELBECK, 1904), *Harpalus (Harpalus) affinis* SCHRANK, 1781, *Harpalus (Cryptophonus) melancholicus melancholicus* DEJEAN, 1829 and *Carterus (Carterus) rufipes* CHAUDOIR, 1843 no comprehensive information were available, so these records can enhance our knowledge about the distribution of these species in Iran.

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