

A faunistic study on Scarabaeidae (Coleoptera: Scarabaeoidea) of Iran

Studium faunistyczne Scarabaeidae Iranu (Coleoptera: Scarabaeoidea)

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ABSTRACT: This paper deals with a faunistic survey on Scarabaeidae (Coleoptera) of Iran. In total, 16 species in 10 genera and five subfamilies Aphodiinae, Cetoniinae, Melolonthinae, Rutelinae and Scarabaeinae were identified. Four species are new records for the fauna of Iran: *Bodilopsis sordida sordida* (FABRICIUS, 1775) and *Phalacrothous biguttatus* (GERMAR, 1824) (Aphodiinae), *Onthophagus (Palaeonthophagus) basipustulatus* HEYDEN, 1889 and *Onthophagus (Palaeonthophagus) coenobita* (HERBST, 1783) (Scarabaeinae).

KEY WORDS: Aphodiinae, Cetoniinae, Melolonthinae, Rutelinae, Scarabaeinae, distribution, new records, Iran.

Introduction

The superfamily Scarabaeoidea is a very large taxon of beetles of which are known roughly 1,600 genera and 35,000 species (RATCLIFFE & PAULSEN 2008). The Scarabaeoidea first appear in the fossil record in the Middle Jurassic (KRELL 2000, 2007). The family Scarabaeidae is the largest family in this superfamily with over 30,000 species worldwide (GUNTER & al. 2016).

The fauna of Iranian Scarabaeoidea has been studied rather well (PETROVITZ 1954, 1958, 1980; BARAUD 1968; BORTESI & ZUNINO 1974; ZAIRI 1976; KABAKOV 1982; NIKODYM & KRÁL 1998; BARARI & al. 1998a, 1998b; BARARI 2001; KEITH & AHRENS 2002; MODARRES AWAL 2006; ZIANI & GUDENZI 2000, 2006, 2007, 2009; ZIANI 2006, 2011; MONTREULL & SERRI 2007; KEITH & ULIANA 2008; MOWLAVI & al. 2008, MORADI GHARAKHLOO & ZIANI 2009, 2010; ZIANI & MORADI GHARAKHLOO 2010; GHAHARI & al. 2011; YARMAND & al. 2012; SAKENIN & SAMIN 2015; BUNALSKI & GHAHARI 2015; BUNALSKI & al. 2016; DAVOODI & al. 2017).

The first checklist of Iranian Scarabaeidae was prepared by MODARRES AWAL (1997) with 148 species, and then MODARRES AWAL (2012) listed 178 species. The first checklist of Iranian Scarabaeoidea with 509 species was prepared by BUNALSKI & al. (2014a).

The purpose of this paper is to record the species of Scarabaeidae from some regions of Iran as part of ongoing faunistic studies of Scarabaeoidea in Iran.

Material and methods

The materials of this research were collected by sweeping net, light traps and knock down during occasional field surveys from some regions of Iran. The collected specimens were killed by ethyl acetate within killing bottle and then pinned, or were put in alcohol (ethanol 75%) and determined by the authors. Information concerning date of collection, locality, and number of specimens are given. Some of the specimens are preserved in Bugsland of Jurassic Park (Tehran, Iran) and private collection of the second author. The classification, nomenclature and distribution of scarab beetles suggested by LÖBL

& SMETANA (2006) and LÖBL & LÖBL (2016) have been followed.

Results

In total, 16 species in 10 genera of Scarabaeidae have been studied in this paper which four species, *Bodilopsis sordida sordida* (FABRICIUS, 1775), *Phalacronothus biguttatus* (GERMAR, 1824), *Onthophagus (Palaeonthophagus) basipustulatus* HEYDEN, 1889 and *Onthophagus (Palaeonthophagus) coenobita* (HERBST, 1783) are represent as new country records. The list of species is given below alphabetically.

Subfamily Aphodiinae LEACH, 1815

Tribe Aphodiini LEACH, 1815

Subtribe Aphodiina LEACH, 1815

Genus *Agrilinus* MULSANT & REY, 1870

1. *Agrilinus convexus* (ERICHSON, 1848)

Distribution: AFRICA: Algeria, Morocco, Tunisia, ASIA: Iran, Mongolia, Russia, Turkey, EUROPE: Armenia, Austria, Azerbaijan, Bosnia-Herzegovina, Bulgaria, Croatia, Czech Republic, France, Germany, Greece, Hungary, Italy, Netherlands, Poland, Romania, Russia, Serbia, Slovakia, Slovenia, Spain, Switzerland, Ukraine.

Material examined: Gilan prov., Talesh, V 2011, 2 exx.; East Azarbayjan prov., Absh-Ahmad, VII 2016, 3 exx.

Genus *Amidorus* MULSANT & REY, 1870

2. *Amidorus cribrarius* (BRULLÉ, 1832)

Distribution: ASIA: Cyprus, Israel, Iran (NADERIAN & al. 2021), Lebanon, Syria, Turkey, EUROPE: Albania, Azerbaijan, Bosnia-Herzegovina, Bulgaria, Croatia, Georgia, Greece, Macedonia, Russia, Serbia.

Material examined: East Azarbayjan prov., Arasbaran forest, IX 2012, 2 exx.

Genus *Bodilopsis* ÁDÁM, 1994

3. *Bodilopsis sordida sordida* (FABRICIUS, 1775)

Distribution: ASIA: China, Japan, Kazakhstan, Kyrgyzstan, North Korea, Russia, South Korea, Turkey; EUROPE: Albania, Armenia, Austria, Belgium, Bulgaria, Byelorussia, Croatia, Czech Republic, Denmark, Estonia, Finland, France, Germany, Georgia, Great Britain, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Luxembourg, Macedonia, Netherlands, Norway, Poland, Portugal, Romania, Russia, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Ukraine.

Material examined: Isfahan prov., Kashan, 3 exx., VI 2012; Golestan prov., Golestan National Park, 4 exx., IV 2013. These are the first records for Iran.

Genus *Otophorus* MULSANT, 1842

4. *Otophorus haemorrhoidalis* (LINNAEUS, 1758)

Distribution: AFRICA: Algeria, Morocco; ASIA: Bhutan, China, Cyprus, India, Iran, Japan, Kazakhstan, Kyrgyzstan, Nepal, North Korea, South Korea, Mongolia, Russia, Syria, Tadzhikistan, Turkey, Turkmenistan, Uzbekistan; EUROPE: Albania, Armenia, Austria, Azerbaijan, Belgium, Bosnia-Herzegovina, Bulgaria, Byelorussia, Croatia, Czech Republic, Denmark, Estonia, Finland, France, Germany, Georgia, Great Britain, Greece, Hungary, Italy, Kosovo, Latvia, Lithuania, Luxembourg, Malta, Moldavia, Montenegro, Netherlands, Norway, Poland, Portugal, Romania, Russia, Serbia, Slovenia, Spain, Sweden, Switzerland, Ukraine.

Material examined: Semnan prov., Shahrud Jangale-Abr, VI 2011, 5 exx.; Mazandaran prov., Behshahr, VII 2017, 3 exx.

Genus *Phalacronothus* MOTSCHULSKY, 1860

5. *Phalacronothus biguttatus* (GERMAR, 1824)

Distribution: AFRICA: Algeria, Morocco, Tunisia; ASIA: Kazakhstan, Russia, Turkey; EUROPE: Albania, Armenia, Austria, Belgium, Bosnia-Herzegovina, Bulgaria, Croatia, Czech Republic, Germany, Georgia, Great Britain, Hungary, Italy, Latvia, Luxembourg, Macedonia, Moldavia, Netherlands, Poland, Romania, Russia, Serbia, Slovakia, Slovenia, Spain, Switzerland, Ukraine.

Material examined: Zanzjan prov., Abhar, V 2016, 3 exx. This is the first record for Iran.

Subfamily Cetoniinae LEACH, 1815

Tribe Cetoniini LEACH, 1815

Subtribe Cetoniina LEACH, 1815

Genus *Cetonia* FABRICIUS, 1775

6. *Cetonia (Cetonia) viridescens* REITTER, 1891

Distribution: ASIA: Iran, Syria.

Material examined: West Azarbayjan prov., Oshnavieh, VIII 2014, 1 ex.

Genus *Protaetia* BURMEISTER, 1842

7. *Protaetia (Philhelena) ignisternum ignisternum* (REITTER, 1891)

Distribution: ASIA: Iran, Iraq, Turkey, Turkmenistan; EUROPE: Azerbaijan.

Material examined: West Azarbayjan prov., Salmas, IX 2009, 2 exx.

Genus *Tropinota* MULSANT, 18428. *Tropinota (Epicometis) senicula*
(MÉNÉTRIÉS, 1832)

Distribution: ASIA: Iran, Turkey, EUROPE: Armenia, Azerbaijan, Georgia.

Material examined: East Azarbayjan prov., Arasbaran forest, IX 2012, 3 exx.

Tribe Valgini MULSANT, 1842

Genus *Valgus* SCRIBA, 17909. *Valgus hemipterus hemipterus*
(LINNAEUS, 1758)

Distribution: AFRICA: Algeria, Morocco, Tunisia; ASIA: Iran, Kazakhstan, Kyrgyzstan, Russia, Tadjikistan, Turkey, Uzbekistan; EUROPE: Albania, Armenia, Austria, Azerbaijan, Belgium, Bosnia-Herzegovina, Bulgaria, Byelorussia, Croatia, Czech Republic, Denmark, Estonia, Finland, France, Germany, Georgia, Great Britain, Greece, Hungary, Italy, Kosovo, Latvia, Lithuania, Luxembourg, Macedonia, Moldavia, Montenegro, Netherlands, Norway, Poland, Portugal, Romania, Russia, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey, Ukraine.

Material examined: Isfahan prov., Najaf-Abad, V 2010, 3 exx.; Fars prov., Abadeh, VI 2017, 2 exx.

Subfamily Melolonthinae LEACH, 1819

Tribe Melolonthini LEACH, 1819

Genus *Polyphylla* HARRIS, 184110. *Polyphylla (Polyphylla) olivieri*
(LAPORTE, 1840)

Distribution: ASIA: Iran, Israel, Syria, Turkey, Turkmenistan; EUROPE: Armenia, Azerbaijan, Georgia, Greece, Russia.

Material examined: Ardabil prov., Aslandooz, VI 2012, 4 exx.; Kurdistan prov., Bijar, VIII 2015, 2 exx.; Mazandaran prov., Qaemshahr, V 2017, 3 exx.

Tribe Rhizotrogini BURMEISTER, 1855

Genus *Amphimallon* LATREILLE, 182511. *Amphimallon leuthneri* REITER, 1902

Distribution: ASIA: Iran, Syria, Turkey.

Material examined: Kurdistan prov., Baneh, IV 2013, 2 exx.

Subfamily Rutelinae W.S. MACLEAY, 1819

Tribe Adoretini BURMEISTER, 1844

Subtribe Adoretina BURMEISTER, 1844

Genus *Adoretus* DEJEAN, 183312. *Adoretus (Adoretus) nigrifrons*
(STEVEN, 1809)

Distribution: ASIA: Afghanistan, China, Iran, Kazakhstan, Kyrgyzstan, Russia, Tadjikistan, Turkmenistan, Uzbekistan; EUROPE: Azerbaijan, Georgia, Russia.

Material examined: East Azarbayjan prov., Maragheh, VII 2016, 2 exx.

Subfamily Scarabaeinae LATREILLE, 1802

Tribe Onitini LAPORTE, 1840

Genus *Onitis* FABRICIUS, 179813. *Onitis humerosus* (PALLAS, 1771)

Distribution: ASIA: Afghanistan, China, Iran, Israel, Jordan, Kazakhstan, Kyrgyzstan, Lebanon, Pakistan, Russia, Syria, Tadjikistan, Turkey, Turkmenistan, Uzbekistan; EUROPE: Armenia, Azerbaijan, Cyprus, Georgia, Russia.

Material examined: Semnan prov., Damghan, VI 2011, 1 ex.; Razavi Khorasan prov., Neyshaboor, VI 2012, 2 exx.

Tribe Onthophagini BURMEISTER, 1846

Genus *Onthophagus* LATREILLE, 180214. *Onthophagus (Palaeonthophagus) coenobita*
(HERBST, 1783)

Distribution: ASIA: Israel, Turkey, Turkmenistan; EUROPE: Albania, Armenia, Austria, Belgium, Bosnia-Herzegovina, Bulgaria, Byelorussia, Croatia, Czech Republic, Denmark, France, Germany, Georgia, Great Britain, Greece, Hungary, Italy, Kosovo, Latvia, Lithuania, Luxembourg, Macedonia, Moldavia, Montenegro, Netherlands, Poland, Portugal, Romania, Russia, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey, Ukraine.

Material examined: Gilan prov., Talesh, IX 2013, 2 exx. This is the first record for Iran.

15. *Onthophagus (Palaeonthophagus) basipustulatus* HEYDEN, 1889

Distribution: ASIA: Afghanistan, Kyrgyzstan, Syria, Tadjikistan, Turkey, Uzbekistan, EUROPE: Armenia, Azerbaijan.

Material examined: Northern Khorasan prov., Farooj, V 2011, 3 exx. This is the first record for Iran.

Discussion

The result of the present research indicates that the fauna of Iranian Scarabaeidae is rich and on the other hand unknown. In this faunistic investigation, 16 species distributed in 13 provinces (Fig.) were identified. With attention to four new records and the new contribution (SAKENIN & al. 2018; SAMIN & al. 2018; NADERIAN & al. 2021), the total number of Iranian Scarabaeidae species reached to 522. Since Iran is a large country (1,623,779 km²) with various geographical regions and climates, so we expect much more new data in different regions after faunistic surveys systematically.

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STRESZCZENIE

Na podstawie analizy materiałów zgromadzonych w latach 2010-2016 w różnych prowincjach Iranu wykazano 16 gatunków Scarabaeidae należących do 10 rodzajów z 5 podrodziny: Aphodiinae, Cetoniinae, Melolonthinae, Rutelinae i Scarabaeinae. Cztery gatunki nie były do tej pory podawane z Iranu. Są to: *Bodilopsis sordida sordida* (FABRICIUS, 1775) i *Phalacrothous biguttatus* (GERMAR, 1824) z podrodziny Aphodiinae oraz *Onthophagus (Palaeonthophagus) basipustulatus* HEYDEN, 1889 i *Onthophagus (Palaeonthophagus) coenobita* (HERBST, 1783) z podrodziny Scarabaeinae. Zamieszczono mapkę przedstawiającą lokalizację stanowisk badawczych dla poszczególnych gatunków.

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