

Contribution to the knowledge of darkling beetles  
(Coleoptera: Tenebrionidae) from the cotton fields of Iran

Materiały do poznania czarnuchowatych (Coleoptera:  
Tenebrionidae) występujących na polach bawełny w Iranie

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**ABSTRACT.** The fauna of Tenebrionidae (Coleoptera) from the cotton fields of some regions of Iran is studied. In total 24 species of 21 genera including *Adelostoma* DUPONCHEL, *Amnodeis* MILLER, *Haemerophygus* BAUDI, *Pachyscelis* SOLIER, *Pimelia* FABRICIUS, *Stenosis* HERBST, *Dailognatha* ESCHSCHOLTZ, *Tentyria* LATREILLE, *Dendarus* DEJEAN, *Gonocephalum* SOLIER, *Opatrum* FABRICIUS, *Cabirutus* STRAND, *Pedinus* LATREILLE, *Alphitobius* STEPHENS, *Blaps* FABRICIUS, *Entomogonus* SOLIER, *Odocnemis* ALLARD, *Nalassus* MULSANT, *Pseudoprobaticus* NABOZHENKO, *Raibosceles* ALLARD and *Tenebrio* LINNAEUS, and 3 subfamilies (Pimeliinae, Opatrinae and Tenebrioninae) were collected. Nine species were recorded for the first time in Iran.

**KEY WORDS:** Coleoptera, Tenebrionidae, cotton fields, fauna, Iran.

### Introduction

Tenebrionidae are mostly rather large, flightless beetles, although several species living in rotten wood and stored products are small. With more than 15 000 known species darkling beetles are one of the most common members of the beetle community (SOLDATI & SOLDATI 2003). Darkling beetles can be found in desert or semi-desert regions all over the

world. They burrow under stones, bark and leaf litter. Some species even move through sand, "swimming" with their legs. The darkling beetles that inhabit the most torrid deserts can withstand temperatures of 50°C. They have long legs that keep their bodies at a safe distance from the burning sand and enable them to move at a top speed. Many are excellent burrowers and can bury themselves in the sand immediately to escape from the heat (SCHAWALLER 1996, BOUCHARD et al. 2005). Dark beetles are probably useful as indicators of environmental quality, as their presence signifies that the localities in question are relatively undisturbed. A significant majority of these insects are scavengers. In the wild they are quite content to feed on dried or rotting plant residue, however, in man-shaped environments darkling beetles moved to grain storage places (WATT 1974, SCHAWALLER op. cit.).

Cotton is an important economic and fiber crop, grown in more than 60 countries of the world. This crop is of great commercial importance as it sustains livelihood of a large number of rural people through cultivation, picking and numerous jobs in both small and large scale industrial units. Over 180 million people are associated with the fiber industry that produces 20 to 30 billion dollars' worth of raw cotton. It is one of the most important cash crops, which play a significant role in national economy. Insect pest management by chemical pesticides obviously has caused considerable protection to crop yields over the past five decades. Unfortunately extensive and very often indiscriminate use of chemical pesticides has resulted in environmental degradation, adverse effects on human health and other organisms, eradication of beneficial insects (RUDE 1984, WILLIAMS et al. 2000).

The fauna of Iranian Tenebrionidae has been poorly studied so far (MODARRES AWAL 1997, GHAHARI et al. 2010a, 2010b). The aim of this paper, which deals with the faunistic data on the darkling beetle's from different regions of Iran, is partial determining of Iranian Tenebrionidae.

### **Materials and methods**

The specimens were collected under stones and on the ground by hand and knock down, sweeping of vegetation and pitfall trap methods from different regions of Iran. In addition to collecting the materials, some specimens of different insect collections were studied. Subfamilies and tribes were given in phylogenetic order and species were listed alphabetically within each tribe. The information concerning specific

name, describer and description date, synonyms, distribution, locality and date of collection, number of species, place / plant on which the species were collected are given. Classification and nomenclature of darkling beetles suggested by LAWRENCE & NEWTON (1995), IWAN (2001), SOLDATI & SOLDATI (op. cit.) have been followed.

### **Results and discussion**

In this study, 24 species of 21 genera belonging to 3 subfamilies of Tenebrionidae were collected from different regions of Iran especially around the cotton fields. The list of species is given below.

#### **Family: TENEBRIONIDAE LATREILLE, 1802**

##### **Subfamily: Pimeliinae LATREILLE, 1802**

##### **Tribe: Adelostomini SOLIER, 1836**

##### **Genus: *Adelostoma* DUPONCHEL, 1827**

##### ***Adelostoma (Adelostoma) subtile subtile* REITTER, 1900**

Distribution: Israel, Syria, Jordan, Turkey, Iran.

Examined material: Kordestan prov., Sanandaj, VI 2004, 1 ex, on the ground.

##### **Tribe: Ceratanisini GEBIEN, 1937**

##### **Genus: *Haemerophygus* BAUDI, 1876**

##### ***Haemerophygus mucoreus* (WALTL, 1838)**

Distribution: Greece, Turkey.

Examined material: Golestan prov., Gorgan, VII 2003, 1 ex, on animal dung.

Remarks: New for Iranian fauna.

##### **Tribe: Erodiini BILLBERG, 1820**

##### **Genus: *Amnodeis* MILLER, 1858**

##### ***Amnodeis grandis* MILLER, 1858**

Distribution: Syria, Turkey, Iran, Iraq.

Examined material: Khorasan prov., Kashmar, X 2004, 1 ex, under stone.

##### **Tribe: Pimeliini LATREILLE, 1802**

##### **Genus: *Pachyscelis* SOLIER, 1836**

##### ***Pachyscelis (Parapachyscelis) villosa* DRAPIEZ, 1820**

Synonyms: *crinita* SOLIER, 1836; *granulosa* SOLIER, 1836; *hirtella* SOLIER, 1836; *tenebrosa* SOLIER, 1836; *wettsteini* SCHUSTER, 1936.

Distribution: Greece, Turkey, Iran, Iraq, Syria, Israel, Egypt.

Examined material: Tehran prov., Damavand, IX 2006, 1 ex, under stone.

**Genus: *Pimelia* FABRICIUS, 1775**

***Pimelia (Camphonota) akbesiana akbesiana* FAIRMAIRE, 1834**

Distribution: Turkey, Syria, Iran.

Examined material: Golestan prov., Kordkoy, VII 2005, 1 ex, on *Rubus hyrcanus* (Rosaceae).

**Tribe: Stenosini LACORDAIRE, 1859**

**Genus: *Stenosis* HERBST, 1799**

***Stenosis (Stenosis) orientalis orientalis* BRULLÉ, 1832**

Distribution: Albania, Greece, Turkey, Iran.

Examined material: Ardabil prov., Moghan, IX 2002, 2 exx., under stone.

**Tribe: Tentyriini ESCHSCHOLTZ, 1829**

**Genus: *Dailognatha* ESCHSCHOLTZ, 1829**

***Dailognatha caraboides* (ESCHSCHOLTZ, 1831)**

Synonyms: *audiuini* SOLIER, 1835; *caucasica* DESBROCHERS, 1881.

Distribution: Bulgaria, Greece, Turkey, Syria, Armenia, Georgia, Azerbaijan, Iran, Iraq.

Examined material: Tehran prov., Shahre Rey, IX 2002, 3 exx., on the ground.

**Genus: *Tentyria* LATREILLE, 1802**

***Tentyria (Tentyria) rotundata winkleri* KOCH, 1936**

Distribution: Turkey, Iran.

Examined material: Semnan prov., Garmsar, IX 2005, 2 exx., on the ground.

**Subfamily: Opatrinae BRULLÉ, 1832**

**Tribe: Dendarini ESPAÑOL, 1945**

**Genus: *Dendarus* DEJEAN, 1821**

***Dendarus (Pandarinus) crenulatus* MÈNETRIES, 1832**

Synonyms: *cribratus* WALTZ, 1838; *dardanus* FALDERMANN, 1837.

Distribution: SW Russia, Georgia, Armenia, Azerbaijan, Iran, Turkey.

Examined material: West Azarbayjan prov., Ourmieh, IX 2006, 1 ex, on the ground.

***Dendarus (Pandarinus) moesiacus* MULSANT et REY, 1854**

Distribution: Balkans, Turkey.

Examined material: Kerman prov., Jiroft, IV 2002, 1 ex, on the ground.

Remarks: New for Iranian fauna.

**Tribe: Opatrini ESPAÑOL, 1945****Genus: *Gonocephalum* SOLIER, 1834*****Gonocephalum (Gonocephalum) costatum* (BRULLÉ, 1832)**

Synonym: *lineare* KÜSTER, 1849.

Distribution: South Europe, Cyprus, Iran, Israel, Syria, Turkey.

Examined material: Sistan & Baluchestan prov., Zahedan, IX 2002, 1 ex, on the ground.

***Gonocephalum (Gonocephalum) granulatum pusillum* (FABRICIUS, 1791)**

Synonyms: *interstitiale* KÜSTER, 1849; *muricatum* BRULLÉ, 1832; *nitidulum* KÜSTER, 1849; *parvulum* LUCAS, 1846; *pruinatum* FISCHER, 1844; *ragusanum* KÜSTER, 1849; *subnodosum* REY, 1892; *viennense* DUFTSCHMID, 1812.

Distribution: Central & South Europe, Morocco, Syria, Turkey, Iran, Central Asia, China.

Examined material: Kerman prov., Kahnooj, VI 1999, 2 exx., on the ground.

**Genus *Opatrum* FABRICIUS, 1775*****Opatrum (Opatrum) obesum* OLIVIER, 1811**

Synonyms: *curium* MILLER, 1861; *dardanum* STEVEN, 1829; *elevatum* BRULLÉ, 1832; *gibbum* BESSER, 1832; *messeniaceum* ROTTENBERG, 1871; *sulcatum* KÜSTER, 1849.

Distribution: Italy, Greece, Turkey, Iraq, Syria.

Examined material: Sistan & Baluchestan prov., Zahedan, IX 2002, 2 exx., on the ground.

Remarks: New for Iranian fauna.

***Opatrum (Opatrum) verrucosum* GERMAR, 1817**

Synonyms: *graniger* BRULLÉ, 1832; *granigerum* BESSER, 1832; *hispidosum* BRULLÉ, 1832; *trilobatum* BAUDI, 1875; *verrucosum* WALTZ, 1835.

Distribution: the Balkans, Turkey.

Examined material: Kerman prov., Kahnooj, VI 2004, 1 ex, on the ground.

Remarks: New for Iranian fauna.

**Tribe: Pedinini ESCHSCHOLTZ, 1829****Genus: *Cabirutus* STRAND, 1929*****Cabirutus (Cabirutus) gracilis* (REITTER, 1904)**

Distribution: Syria, Turkey.

Examined material: Kerman prov., Kerman, VII 2004, 2 exx., on the ground.

Remarks: New for Iranian fauna.

**Genus: *Pedinus* LATREILLE, 1796*****Pedinus (Pedinus) marani* KASZAB, 1960**

Distribution: Turkey.

Examined material: West Azerbaijan prov., Ourmieh, IX 2001, 1 ex, under a stone.

Remarks: New for Iranian fauna.

**Subfamily: Tenebrioninae LATREILLE, 1802****Tribe: Alphitobiini REITTER, 1917****Genus: *Alphitobius* STEPHENS, 1829*****Alphitobius laevigatus* (FABRICIUS, 1781)**

Synonyms: *granivorus* MULSANT et GODART, 1868; *mauritanicus* FABRICIUS, 1792; *piceus* OLIVIER, 1795; *picipes* PANZER, 1794; *ruficolor* PIC, 1925; *rufipes* MAC LEAY, 1869; *viator* MULSANT et GODART, 1868.

Distribution: cosmopolitan.

Examined material: Mazandaran prov., Kiakola, X 2001, 2 exx., on animal dung.

**Tribe: Blaptini LEACH, 1815****Genus: *Blaps* FABRICIUS, 1775*****Blaps (Blaps) gigas* (LINNAEUS, 1767)**

Synonyms: *avenae* SAHLBERG, 1903; *azorica* SEIDLITZ, 1893; *gages* LINNAEUS, 1767 (err.); *gigantea* PETAGNA, 1819; *obtusangula* REY, 1892; *occulata* SEIDLITZ, 1893; *producta* BRULLÉ, 1833.

Distribution: cosmopolitan.

Examined material: Semnan prov., Garmsar, IX 2005, 2 exx., under a stone.

**Tribe Helopini LATREILLE, 1802****Genus *Entomogonus* SOLIER, 1848*****Entomogonus (Delonurops) egregius* SEIDLITZ, 1893**

Distribution: Turkey.

Examined material: Khorasan prov., Neyshaboor, X 2004, 1 ex, on the ground.

Remarks: New for Iranian fauna.

**Genus: *Nalassus* MULSANT, 1854*****Nalassus (Nalassus) dryadophilus* (MULSANT, 1854)**

Distribution: South Europe, the Balkans, Turkey.

Examined material: Semnan prov., Shahrood, VII 2005, 2 exx., on the ground.

Remarks: New for Iranian fauna.

**Genus: *Odocnemis* ALLARD, 1876*****Odocnemis (Odocnemis) dasypus* (SEIDLITZ, 1896)**

Distribution: Turkey.

Examined material: Golestan prov., Bandar-Torkman, IX 2001, 2 exx., on *Corchorus capsularis* (Tilliaceae).

Remarks: New for Iranian fauna.

**Genus: *Pseudoprobaticus* NABOZHENKO, 2001*****Pseudoprobaticus granipennis* (ALLARD, 1876)**

Distribution: Turkey.

Examined material: Sistan & Baluchestan prov., Zahedan, IX 2002, 1 ex, on the ground.

Remarks: New for Iranian fauna.

**Genus: *Raibosceles* ALLARD, 1876*****Raibosceles syriacus syriacus* (REICHE, 1861)**

Distribution: Syria, Turkey.

Examined material: Fars prov., Darab, VII 2003, 2 exx., on the ground.

Remarks: New for Iranian fauna.

**Tribe: Tenebrionini LATREILLE, 1802****Genus: *Tenebrio* LINNAEUS, 1758*****Tenebrio obscurus* FABRICIUS, 1792**

Distribution: cosmopolitan.

Examined material: Golestan prov., Golestan National Park, X 2001, 1 ex, on the ground.

This research together with other works, especially by GHAHARI et al. (op. cit.), indicate that the fauna of Iranian Tenebrionidae is diverse and these insects are scattered in all the ecosystems of Iran. This faunistic survey is a partial study on the Tenebrionidae of some regions of Iran, especially cotton fields and around regions. However, Iran is a large country and certainly several other species (new country records and new species) remain to be discovered. In order to find new species and

distribution records, more faunistic studies should be conducted on the fauna of the Iranian Tenebrionidae.

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### STRESZCZENIE

Na podstawie materiału pozyskanego przy użyciu różnych metod entomologicznych na polach bawełny w Iranie wykazano występowanie w tym środowisku 24 gatunków czarnuchowatych (Tenebrionidae) należących do 21 rodzajów. Dla każdego gatunku podano podstawowe informacje faunistyczne oraz uwagi o jego rozmieszczeniu. W analizowanym materiale stwierdzono 9 gatunków nie podawanych wcześniej z obszaru Iranu. Z uwagi na słaby stan poznania entomofauny tego kraju postuluje się prowadzenie dalszych badań faunistyczno-ekologicznych.

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