

CONTRIBUTIONS TO THE KNOWLEDGE OF IRANIAN AQUATIC COLEOPTERA FAUNA (DYTISCIDAE, GYRINIDAE, HELOPHORIDAE AND HYDROPHILIDAE) WITH NEW RECORDS AND NOTES ON THE RARE SPECIES *COLEOSTOMA TRANSCASPICUM* REITTER, 1906

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Abstract

In this study, between 2005-2007 fifteen aquatic coleopteran species belonging to four families (Dytiscidae, Gyrinidae, Helophoridae and Hydrophilidae) collected from the north of Tehran province (Iran) were established faunistically. Two diving beetle species: *Agabus dilatatus* (Brullé) and *Hydroporus angustatus* Sturm, were recorded in Iran for the first time. The Turkish and Iranian populations of the rare species *Coleostoma transcaspicum* Reitter, 1906 are morphologically compared.

KEY WORDS: Aquatic beetles, Coleoptera, Faunistics, Tehran province, Iran.

Introduction

There is still much unknown about the aquatic beetle fauna of Iran. HOSSEINEI (1992a, 1992b, 1994, 1995a, 1995b) studied the fauna of the aquatic beetles of Fars, Guilan, Mazandaran and Khuzestan provinces. OSTOVAN & NIAKAN (2004) studied the diversity, abundance and biology of aquatic insects, including the aquatic

beetles, in Ardabil and Fars provinces. Recently, faunistic studies on the Iranian aquatic Coleopteran fauna have been generally focused on the Markazi province (VAFAEI *et al.*, 2007, 2008).

Materials and Methods

In 2005-2007 fauna of the water beetles from the various sampling sites were studied. The Tehran province, where sampling was done, is located to the north of the central plateau of Iran, and covers an area of 18,909 km². This province shares a border with the Mazandaran province to the north, Qom province to the south, Semnan province to the east and Qazvin province to the west. The climate of Tehran province is moderately warm in the southern area, but in the vicinity of the mountains it is cold. The hottest months of the year are from mid-July to mid-September when temperatures range from 28-30°C and the coldest months experience -10°C around December - January. The average rainfall is 400 mm/year. In the north of Tehran there are two permanent rivers, Karaj and Jajrud, and many small streams.

Sweeping the water with a metal sieve or net was the main method used for collecting aquatic beetles; in some cases, a drag-type net and light trap were used. All captured samples were separated by forceps. Sorting was performed wet or dry in a flat white tray. The beetles were initially preserved in 95% alcohol, which was replaced by a 75% alcohol and 5% glycerin mix after 24 hours.

A list of localities is given. For each species the detailed locality records contain sampling locations, date of sampling and total number of individuals. All specimens were collected by Edwin NAZARI, Reza VAFAEI and Norair PIAZAK.

The figures of the aedeagi were drawn using a Nikon type 104 microscope.

Areas have been coded as follows:

E - Europe: AB - Azerbaijan, AL - Albania, AN - Andorra, AR - Armenia, AU - Austria, AZ - Azores, BE - Belgium, BH - Bosnia and Herzegovina, BU - Bulgaria, BY - Belarus, CR - Croatia, CZ - Czech Republic, DE - Denmark, EN - Estonia, FA - Faeroe Islands, FI - Finland, FR - France, GB - Great Britain, GE - Germany, GG - Georgia, GR - Greece, HU - Hungary, IC - Iceland, IR - Ireland, IT - Italy, KZ - Kazakhstan, LA - Latvia, LS - Liechtenstein, LT - Lithuania, LU - Luxembourg, MC - Macedonia, NL - The Netherlands, NR - Norway, PL - Poland, PO - Portugal, RO - Romania, RU - Russia (CT - Central European territory, NT - North European territory, ST - South European territory), SE - Serbia, SK - Slovakia, SL - Slovenia, SP - Spain, SV - Sweden, SZ - Switzerland, TC - Transcaucasia, TR - Turkey, UK - Ukraine. **N** - North Africa: AG - Algeria, CI - Canary Islands, EG - Egypt (except Sinai), LB - Libya, MO - Morocco, TU - Tunisia. **A** - Asia: AF - Afghanistan, ZHE - Zhejiang, XIN - Xinjiang, QIN - Qinghai, XIZ - Xizang, CY - Cyprus, HP - Himachal Pradesh, IN - Iran, IQ - Iraq, IS - Israel, JO - Jordan, KA - Kashmir, KI - Kyrgyzstan, KU - Kuwait, KZ - Kazakhstan, LE - Lebanon, MC - Manchuria, MG - Mongolia, ON - Oman, PA - Pakistan, SA - Saudi Arabia, WS - West Siberia, SC - South Korea, SI - Sinai (Egyptian part), SY - Syria, TD - Tajikistan, TM - Turkmenistan, UZ - Uzbekistan. **AFR** - Afrotropical region.

Results and Discussion

Family Dytiscidae

Agabus biguttatus (Olivier, 1795)

Material examined: Lar Mahal, 25.04.2006, 1♀; Chalus (Ilka) 05.06.2006, 1♂, 1♀; Niknam Deh (9 Km East of Lavasan, 35°49'N 51°43'E), 18.07.2006, 5♂, 6♀; Garmabrud, 09.07.2006, 2♂, 5♀.

Distribution in the world: **E:** AB, AL, AR, AU, BE, BH, BU, BY, CR, CT, CZ, FR, GB, GE, GG, GR, HU, IR, IT, LS, LU, MC, NL, PL, PT, RO, SK, SL, SP, ST, SZ, UK, YU, SE; **N:** AG, CI, EG, LB, MO, TU; **A:** AF, CY, HP, IN, IO, IS, JO, KA, KI, LE, PA, SA, SC, SI, SY, TM, TR, UZ, WS, XIN.

Agabus bipustulatus (Linnaeus, 1767)

Material examined: Polur (14 Km East of Rudehen, 35°51'N 52°3'E), 23.09.2006, 1♂.

Distribution in the world: **E:** AB, AL, AN, AR, AU, AZ, BE, BH, BU, BY, CR, CT, CZ, DE, EN, FA, FI, FR, GB, GE, GG, GR, HU, IC, IR, IT, LA, LS, LT, LU, MC, NL, NR, NT, PL, PT, RO, SK, SL, SP, ST, SV, SZ, TR, UK, SE; **N:** AG, LB, MO, TU; **A:** AF, CY, IN, IS, KI, KZ, LE, SY, TD, TR, UZ, WS, XIN, MC; **AFR.**

Agabus conspersus (Marsham, 1802)

Material examined: Jajrud (Emamzadeh), 24.04.2006, 2♂, 3♀.

Distribution in the world: **E:** AB, AL, AR, BE, BU, CR, DE, FR, GB, GE, GG, GR, HU, IR, IT, MC, NL, PL, PT, SP, ST, SV, UK, SE; **N:** AG, CI, EG, LB, MO, TU; **A:** AF, CY, HP, IN, IQ, JO, KA, KI, KU, KZ, LE, PA, QIN, SI, SY, TD, TM, TR, UZ, WS, XIN, XIZ, ZHE.

Agabus dilatatus (Brullé, 1832)

Material examined: Chalus (Ilka), 05.06.2006, 1♀; Polur (14 km east of Rudehen, 35°51'N 52°3'E), 03.09.2006, 1♂, 2♀; Jajrud (Emamzadeh), 24.04.2006, 1♂; Garmabrud, 09.07.2006, 4♂, 4♀.

Distribution in the world: **E:** BU, GG, GR, IT, MC, RU (ST), TR, UK; **N:** AG, EG, MO, TU; **A:** CY, IQ, IS, KI, LE, SI, SY, TR, UZ.

Remark: This species is recorded in Iran for the first time.

Hydroporus angustatus Sturm, 1835

Material examined: Hardorud (Jajrud, 36°1'N 51°29'E), 09.09.2006, 1♂.

Distribution in the world: **E:** AR, AU, BE, BH, BU, BY, CR, CT, CZ, DE, EN, FI, FR, GB, GE, GG, HU, IR, IT, LA, LS, LT, NL, NR, NT, PL, SK, SL, ST, SY, SZ, UK; **A:** ES, KZ, TR, WS.

Remark: this species is recorded in Iran for the first time.

Platambus lunulatus (Fischer von Waldheim, 1829)

Material examined: Niknam Deh (9 km east of Lavasan, 35°49'N 51°43'E), 18.07.2006, 1♂, 2♀; Polur (14 km east of Rudehen, 35°51'N 52°3'E), 23.09.2006, 3♂, 3♀; Chalus (Ilka), 05.06.2006, 2♂, 3♀; Garmabrud, 09.07.2006, 2♂, 3♀.

Distribution in the world: **E:** AB, AR, GG, GR, ST, TR; **N:** EG; **A:** IN, LE, TR.

Laccophilus hyalinus hyalinus (DeGeer, 1774)

Material examined: Hardorud (9 km west of Jajrud, 36°1'N 51°29'E), 19.08.2006, 1♂.

Distribution in the world: **E:** AB, AR, AU, BE, BH, BU, BY, CZ, DE, EN, FI, FR, GB, GE, GG, GR, HU, IR, IT, LA, LT, LU, MC, MD, NL, NR, NT, PL, SK, SL, SV, SZ, UK, SE; **A:** CY, ES, IN, IQ, IS, LE, SY, TM, TR, WS.

Family Gyrinidae

Gyrinus distinctus Aubé, 1838

Material examined: Hardorud (9 km west of Jajrud, 36°1'N 51°29'E), 19.08.2006, 4♂, 6♀; Garmabrud, 09.07.2006, 1♀.

Distribution in the world: **E:** AU, AZ, BE, BH, BU, BY, CR, CT, CZ, DE, FI, FR, GB, GE, GR, HU, IT, MC, NL, NR, NT, PL, PT, SK, SP, ST, SV, SZ, SE, TC; **N:** EG, LB; **A:** AF, CY, IN, IQ, IS, KA, KI, KZ, LE, MG, NMO, SY, TR, UZ, XIN, XIZ.

Family Helophoridae

Helophorus abaillei Guillebeau, 1896

Material examined: Chalus (Ilka), 05.06.2006, 2♂.

Distribution in the world: **E:** TR; **A:** AR, IN, IS, LE, SY.

Family Hydrophilidae

Laccobius (Dimorpholaccobius) hauserianus Knirsch, 1914

Material examined: Hardorud (9 km west of Jajrud, 36°1'N 51°29'E), 19.08.2006, 2♂.

Distribution in the world: **E:** TR; **A:** IN, IQ, TD.

Laccobius (Dimorpholaccobius) hindukuschi Chiesa, 1966

Material examined: Hardorud (Jajrud, 36°1'N 51°29'E), 09.09.2006, 1♂.

Distribution in the world: **E:** GG, TR; **A:** AR, AF, IN, IQ, PA, TD.

Laccobius (Dimorpholaccobius) obscuratus Rottenberg, 1874

Material examined: Lavasan (Naser Abad, 35°53'N 51°38'E), 24.07.2006, 2♂, 3♀; Dare Henza (6 km south of Latian, 35°51'N 51°42'E), 15.04.2006, 1♂; Fasham (35°55'N 51°32'E), 16.09.2006, 1♂; Hardorud (9 km west of Jajrud, 36°1'N 51°29'E), 19.08.2006, 3♂; Chalus (Lavasanat), 16.05.2006, 2♂.

Distribution in the world: **E:** AL, AR, AU, BE, BH, GB, BU, CZ, FR, GG, HU, GR, GE, IT, MC, NL, PL, RO, SK, SL, SP, SZ, TR, UK; **A:** IN, IS, TD, TM.

Laccobius (Microlaccobius) gracilis Motchoulsky, 1855

Material examined: Hardorud (Jajrud, 36°1'N 51°29'E), 09.09.2006, 2♂.

Distribution in the world: **E:** AL, AU, BE, BH, BU, CR, CZ, FR, GE, GR, GG, HU, IT, PO, RO, SK, SL, SP, SZ, UK, TR, SE; **A:** IN, IS, KZ, UZ; **N:** AG, LB, MO, TU.

Chaetarthria seminulum (Herbst, 1797)

Material examined: Lar Mahal, 25.04.2006, 2♂.

Distribution in the world: **E:** AU, GB, BH, CR, CZ, DE, EN, FI, FR, GE, GR, HU, IT, LA, LT, MC, NL, NR, PL, SL, SP, SV, SZ, TR, SE, UK; **A:** IN.

Coelostoma (Lachnocoelostoma) transcaspicum Reitter, 1906

Material examined: Iran: Chalus (Ilka), 05.06.2006, 2♂. Turkey: Bingöl, Kös (Hot Spring), 14.05.2003, 5♂, 4♀.

Distribution in the world: IN, ON, SA, TD, TR (HEBAUER, 1997, 2000; MART *et al.*, 2006; VAFAEI *et al.*, 2007).

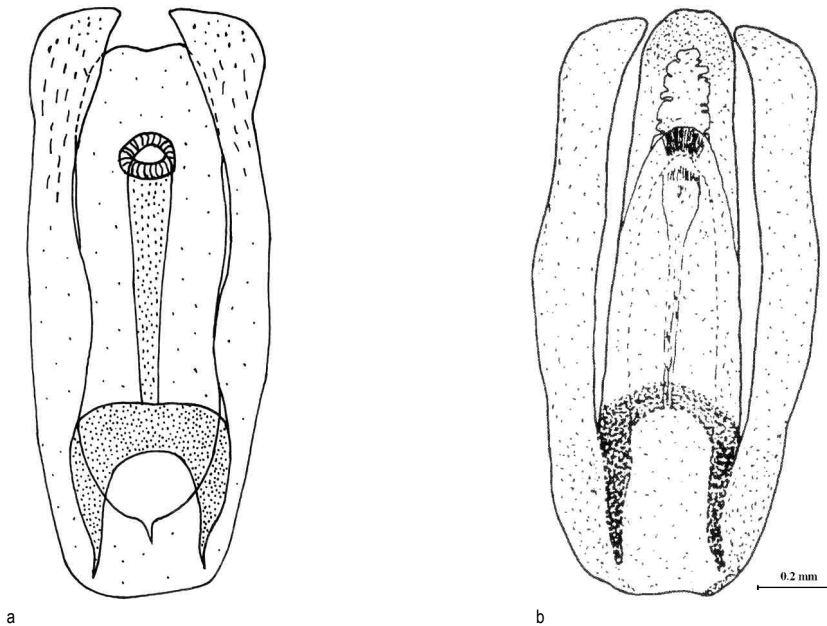


Figure 1. *Coelostoma transcaspicum*: from Iran (a) and Turkey (b).

The genus *Coelostoma* Brulle is widely distributed in the world (Palearctic, Ethiopian, Oriental and Australian regions, particularly in the warmer climates). However, the species *Coelostoma transcaspicum* Reitter is a very rare species of the Palearctic region. To date, it has been collected only in Iran, Oman, Saudi Arabia, Tajikistan and Turkey (HEBAUER, 1997; MART *et al.*, 2006; VAFAEI *et al.*, 2007). Until 2005, only one species of *Coelostoma* (*C. orbiculare* Fabricius) had been recorded in Turkey. The number of *Coelostoma* species has increased to two with the recording of the *C. transcaspicum* by MART *et al.* (2006). Similarly, both species (*C. transcaspicum* and *C. orbiculare*) were recorded in Iran in the very recent past (VAFAEI *et al.*, 2007).

C. transcaspicum is very similar to *C. orbiculare* externally, but is easily distinguishable by its body size and the shape of its aedeagus. As for a morphological comparison of the Turkish and the Iranian specimens of *C.*

transcaspicum, the colorations are very similar. The main differences are in the shape the aedeagus. Turkish specimens have a shorter median lobe than Iranian ones. In addition, Turkish specimens of *C. transcaspicum* have a narrower tube medially in the median lobe. The outer margins of the parameres bend abruptly outwards at the apex in Turkish specimens. Despite these differences, body and aedeagus lengths are the same (Figs. 1a & 1b).

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ПРИЛОЗИ ПОЗНАВАЊУ ФАУНЕ АКВАТИЧНИХ COLEOPTERA ИРАНА
(DYTISCIDAE, GYRINIDAE, HELOPHORIDAE И HYDROPHILIDAE)
СА НОВИМ НАЛАЗИМА И НАПОМЕНАМА О РЕТКОЈ ВРСТИ
COLEOSTOMA TRANSCASPICUM REITTER, 1906

РЕЗА ВАФЕИ, МУСТАФА КЕМАЛ ДАРИЛМАЗ, ЕДВИН НАЗАРИ, УМИТ ИНЦЕКАРА И НОРАИР ПИАЗАК

Извод

У овој студији фаунистички су обрађени налази 15 врста акватичних тврдокрилаца (сврстаних у подпородице Dytiscidae, Gyrinidae, Helophoridae и Hydrophilidae) који су сакупљени у северном делу провинције Тахеран (Иран) у периоду од 2005. до 2007. године. Присуство две врсте - *Agabus dilatatus* (Brullé) и *Hydroporus angustatus* Sturm, први пут је забележено на територији Ирана. У раду су дате и напомене о морфолошким разликама између јединки из иранских и турских популација ретке врсте *Coleostoma transcaspicum* Reitter, 1906.

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