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Contributions to the knowledge of Iranian Aquatic Adephaga

(Coleoptera)

Mustafa C. Darilmaz, Ümit Incekara & Reza Vafaei

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The species of the families Dytiscidae, Haliplidae, Noteridae and Gyrinidae (Coleoptera: Adephaga) from Alborz, Gilan, Mazandaran, Qazvin, and Tehran provinces are listed. These provinces are located in northern Iran. 27 species and subspecies belonging to 17 genera are here reported. *Bidessus nasutus* Sharp, 1887 and *Haliplus maculatus* Motschulsky, 1860 are recorded from Iran for the first time.

Mustafa C. Darilmaz (corresponding author), Aksaray University, Faculty of Arts and Science, Department of Biology, 68100 Aksaray, Turkey; e-mail: mdarilmaz@yahoo.com

Ümit Incekara, Atatürk University, Faculty of Science, Department of Biology, 25240 Erzurum, Turkey

Reza Vafaei, Entomology Department, Islamic Azad University, Science and Research Branch, Tehran, Iran

Introduction

The aquatic beetle fauna of Iran is partly known. Hosseinie (1978, 1992a,b, 1994, 1995a,b) studied the aquatic beetle fauna of the provinces Fars, Gilan, Mazandaran, and Khuzestan. Ostovan & Niakan (2004) described the diversity, abundance, and biology of aquatic insects, including aquatic beetles, in the provinces of Ardabil and Fars. Cox & Cox (1982) studied water beetles of the families Dytiscidae, Hydrophilidae, Gyrinidae, and Haliplidae in Amir-Kolayeh and a part of Anzali. Zahiri (1995) studied beetles of Haliplidae and Noteridae from the Fars and Khuzestan provinces. Atamehr (2002) and Atamehr et al. (2004) reported 51 species of water beetles from the Tabriz province.

Recently, aquatic beetles (Coleoptera: Adephaga) from the Markazi province were studied by Vafei et al. (2008). In this study, 33 diving beetle species belonging to 18 genera, collected in the Markazi province in the central part of Iran between 2001–2005, have been established faunistically. Seven species and two genera were recorded from Iran

for the first time. Vafei et al. (2009) reported two new species records of the water beetles from Iran in their latest study.

Materials and methods

In 2008–2009, the water beetle fauna from different sampling sites (Alborz, Gilan, Mazandaran, Qazvin, and Tehran) was studied. Research provinces (where the sampling was done) are located in North and North-West Iran. For collecting aquatic beetles, removing the water with a metal sieve or net was the main method; in some cases, a drag-type net or light trap was used. The beetles were preserved in 95 % alcohol, which was subsequently replaced by a mixture of 75 % alcohol and 5 % glycerin after 24 hours. Slide-mounted specimens and material preserved in fluid are stored (tentatively) in collections of the Department of Biology of Atatürk University. The date of sampling and total number of individuals are also noted.

Herein we present these data in full detail, based on material collected for study by our colleagues (see Acknowledgements).

Species new for Iran are marked with an asterisk.

Results

Totally 27 species and subspecies belonging to 17 genera of the families Gyrinidae, Halipilidae, Noteridae and Dytiscidae, collected in the study area are here recorded. The list of the species with their data is given below.

Species list

Gyrinidae

Gyrinus distinctus Aubé, 1838

Material examined: Kumeleh, Hadikelaye, 37°9.255' N 50°10.178' E, 20.VIII.2008, 11 specimens.

Orectochilus villosus villosus (O. F. Müller, 1776)

Material examined: Mazandaran: Amol, Keleri, 36° 27.583' N 52°21.512' E, 15.IX.2008, 1 specimen.

Halipilidae

Halipilus lineatocollis (Marshall, 1802)

Material examined: Alborz: Taleghan, Nesa, 36°10.544' N 50°36.666' E, 1940 m, 24.XI.2008, 4 specimens.

**Halipilus maculatus* Motschulsky, 1860

Material examined: Mazandaran: Amol, Tork kola, 36°25.706' N 52°21.522' E, 30.IX.2008, 1 specimen.

General distribution: Distributed from central and south-eastern Europe, and southern Russia to Turkmenistan and Afghanistan, and southwards to Syria and Israel (Vondel 2003).

Pelodytes caesus (Duftschmid, 1805)

Material examined: Mazandaran: Gaemshahr, Bala Lamuk, 36°29.515' N 52°53.551' E, 23.V.2008, 1 specimen; Amol, Tork kola, 36°25.706' N 52°21.522' E, 30.IX.2008, 3 specimens.

Noteridae

Noterus clavicornis (De Geer, 1774)

Material examined: Mazandaran: Pol-e-Sefid, Shoor-mast, 36°5.255' N 53°2.769' E, 07.IX.2008, 2 specimens; Mazandaran: Sheikh mahalleh, 36°27.576' N 52°36.061' E, 01.VIII.2008, 2 specimen; Qazvin: Jazinan, 36°12.172' N 50°46.911' E, 24.XI.2008, 11 specimens.

Dytiscidae

Agabus biguttatus (Olivier, 1795)

Material examined: Gilan: Amlash, Morabu, 36°52.679' N 50°2.164' E, 11.VIII.2008, 1 specimen. Alborz: Taleghan, Nesa, 36°10.544' N 50°36.666' E, 1940 m, 13.VIII.2009, 4 specimens. Mazandaran: Pol-e-Sefid, Shoor-mast, 36°5.255' N 53°2.769' E, 14.IX.2008, 1 specimen; Tehran: Sekhavat, 35°40.110' N 51°3.406' E, 30.IX.2008, 2 specimens; Mazandaran: Do Ab, 36°0.981' N 53°3.005' E, 07.IX.2008, 3 specimens. Tehran: Damavand, 35°42.554' N 52°4.033' E, 15.IX.2008, 3 specimens; Tehran: Atashan,

35°35.244' N 52°36.593' E, 01.X.2008, 1 specimen. Alborz: Karaj, Jalangedar, 35°49.833' N 50°58.570' E, 11.IX.2008, 1 specimen.

Agabus bipustulatus (Linnaeus, 1767)

Material examined: Mazandaran: Pol-e-Sefid, Shoor-mast, 36°5.255' N 53°2.769' E, 14.IX.2008, 3 specimens; 36°5.255' N 53°2.769' E, 24.IX.2008, 1 specimen. Tehran: Damavand, 35°42.554' N 52°4.033' E, 10.IX.2008, 1 specimen; Tehran: Firouzkouh, 35°45.014' N 52°46.103' E, 10.X.2008, 1 specimen.

Agabus conspersus (Marshall, 1802)

Material examined: Tehran: Firouzkouh, 35°45.014' N 52°46.103' E, 10.X.2008, 1 specimen.

Bidessus calabricus Guignot, 1957

Material examined: Alborz: Karaj, Khovars, 35°57.756' N 50°59.900' E, 29.XI.2008, 4 specimens.

**Bidessus nasutus* Sharp, 1887

Material examined: Mazandaran: Babol, Mozirag, 36° 32.200' N 52°46.598' E, 25.IX.2008, 1 specimen.

General distribution: A Pontic species, occurring from Austria and East Europe, the Ukraine, and southern Russia to Turkey, Kazakhstan, and Israel (Nilsson 2003).

Cybister tripunctatus lateralis (Fabricius, 1798)

Material examined: Mazandaran: Qaemshahr, Bijikola, 36°26.295' N 52°48.232' E, 30.IX.2008, 1 specimen.

Herophydrus musicus (Klug, 1834)

Material examined: Mazandaran: Gazanak, 35°54.158' N 52°13.430' E, 15.IX.2008, 4 specimens; Qaemshahr, Bala Lamuk, 36°29.515' N 52°53.551' E, 02.VII.2008, 3 specimens.

Hydroglyphus geminus (Fabricius, 1792)

Material examined: Mazandaran: Khoshroud Pey, Dolat rod-bar, 36°22.914' N 52°33.799' E, 08.V.2008, 2 specimens. Tehran: Khojir abad River, 35°39.987' N 51°43.786' E, 197 m, 9.XI.2008, 20 specimens. Mazandaran: Gazanak, Vana, 35°54.399' N 52°14.000' E, 13.IX.2008, 6 specimens.

Hydroporus palustris (Linnaeus, 1761)

Material examined: Gilan: Amlash, Khalifmahalle, 37°6.027' N 50°11.049' E, 21.VIII.2008, 5 specimens.

Hydroporus pubescens (Gyllenhal, 1808)

Material examined: Mazandaran: Do Ab, 36°0.981' N 53°3.005' E, 17.IX.2008, 1 specimen.

Hydrovatus cuspidatus (Kunze, 1818)

Material examined: Gilan: Amlash, Khalifmahalle, 37°6.027' N 50°11.049' E, 21.VIII.2008, 1 specimen. Tehran: Firouzkouh, 35°45.014' N 52°46.103' E, 08.X.2008, 3 specimens.

Laccophilus hyalinus (De Geer, 1774)

Material examined: Alborz: Karaj, Jalangedar, 35° 49.833' N 50°58.570' E, 11.IX.2008, 3 specimens; Khovars, 35°57.756' N 50°59.900' E, 1812 m, 25.VII.2009,

1 specimen. Gilan: Amlash, Khalifmahalle, 37°6.027' N 50°11.049' E, 21.VIII.2008, 8 specimens.

***Laccophilus minutus* (Linnaeus, 1758)**

Material examined: Alborz: Karaj, Jalangedar, 35°49.833' N 50°58.570' E, 11.IX.2008, 8 specimens.

***Laccophilus poecilus* Klug, 1834**

Material examined: Mazandaran: Amol, Tork kola, 36°25.706' N 52°21.522' E, 30.IX.2008, 7 specimens; Babol, Pol mohamad hasan khan, 36°32.880' N 52°41.826' E, 04.VII.2008, 2 specimens. Tehran: Jajrood, 35°45.397' N 51°44.088' E, 28.IX.2008, 3 specimens.

***Liopterus haemorrhoidalis* (Fabricius, 1787)**

Material examined: Tehran: Atashan, 35°35.244' N 52°36.593' E, 10.X.2008, 1 specimen.

***Nebrioporus airumilus* (Kolenati, 1845)**

Material examined: Alborz: Karaj, Khovars, 35°57.756' N 50°59.900' E, 28.VII.2009, 1 specimen. Qazvin: Fashand, 36°1.771' N 50°45.266' E, 25.VII.2009, 3 specimens. Tehran: Absard, Hasarbon, 35°37.391' N 52°8.283' E, 08.X.2008, 4 specimens.

***Nebrioporus lanceolatus* (Walker, 1871)**

Material examined: Alborz: Karaj, Khovars, 35°57.756' N 50°59.900' E, 29.XI.2008, 6 specimens; Hosein abad Bridge, Marun, 36°27.952' N 50°16.567' E, 301 m, 01.V.2009, 1 specimen. Mazandaran: Do Ab, 36°0.981' N 53°3.005' E, 07.IX.2008, 1 specimen. Tehran: Emamzadeh davood, 35°52.856' N 51°20.536' E, 08.IX.2008, 2 specimens.

***Nebrioporus stearinus stearinus* (Kolenati, 1845)**

Material examined: Alborz: Kordan, 35°55.733' N 50°49.380' E, 1426 m, 15.VIII.2009, 1 specimen.

***Platambus lunulatus* (Fischer von Waldheim, 1829)**

Material examined: Tehran: Emamzadeh Hashem, 35°47.059' N 52°2.929' E, 29.IX.2008, 3 specimens.

***Platambus maculatus* (Linnaeus, 1758)**

Material examined: Qazvin: Jazinan, 36°12.172' N 50°46.911' E, 24.XI.2008, 1 specimen. Tehran: Atashan, 35°35.244' N 52°36.593' E, 10.X.2008, 3 specimens.

***Scarodytes halensis* (Fabricius, 1787)**

Material examined: Alborz: Taleghan, Nesa, 36°10.544' N 50°36.666' E, 1940 m, 24.XI.2008, 6 specimens. Qazvin: Bashar, 36°16.817' N 49°58.755' E, 1494 m, 25.VII.2009, 1 specimen.

Discussion

In freshwater habitats of five provinces (Alborz, Gilan, Mazandaran, Qazvin, and Tehran), 27 aquatic beetle species/subspecies belonging to 17 genera and four families (Dytiscidae, Gyrinidae, Haliplidae, and Noteridae) were recorded at different sites. Of these, the species *Bidessus nasutus* Sharp, 1887 and *Haliphus maculatus* Motschulsky, 1860 are recorded from Iran for the first time.

The total number of specimens of aquatic beetles collected in freshwater habitats of studied provinces amounts to 172. Seven species are dominant (>5 % of total abundance). In decreasing order, they are as follows (% of total abundance is given in parentheses): *Hydroglyphus geminus* (16.2 %), *Noterus clavicornis* (8.7 %), *Agabus biguttatus* (8.7 %), *Laccophilus hyalinus* and *L. poecilus* (6.9 %), *Gyrinus distinctus* (6.3 %), *Nebrioporus lanceolatus* (5.8 %). Ten species are subdominant (abundance of 2–5 %): *Laccophilus minutus* and *Nebrioporus airumilus* (4.6 %), *Herophydrus musicus* and *Scarodytes halensis* (4.1 %), *Agabus bipustulatus* (3.4 %), *Hydroporus palustris* (2.9 %), *Hydrovatus cuspidatus*, *Platambus maculatus*, *Peltodytes caesus* and *Haliphus lineatocollis* (2.3 %), the remaining 9 species have abundance of <2 %.

Further studies aiming to improve our knowledge on Iranian water beetles should focus on collecting in little known areas, revision of the still unstudied material from additional families and filling the large gaps in our knowledge regarding the diversity of water beetles in some specific habitats.

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Autor(en)/Author(s): Darilmaz Mustafa C., Incekara Ümit, Vafaei Reza

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