

## A CONTRIBUTION ON ZOOGEOGRAPHICAL DISTRIBUTION OF HYDROPHILIDAE SPECIES IN TURKEY

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**ABSTRACT:** This study was conducted out as a final project in order to determine Hydrophilidae species of Hatay and Hakkari provinces of Turkey. In the research areas totally, 11 species and one subspecies belonging to Hydrophilidae have been determined. The distributions of these species in Turkey are presented.

**KEY WORDS:** Coleoptera, Mediterranean, Southeastern Anatolia, Hatay, Hakkari, Turkey.

The Hydrophilidae is a large family, represented in all parts of the world and consisting of 172 genera and about 2716 known species. Of the four subfamilies recognized only two (Hydrophilinae, Sphaeridiinae) are recorded from the Palearctic region. Representatives of the subfamily Hydrophilinae, comprising more than 1784 described species, are mostly aquatic. In contrast, Sphaeridiinae, comprising more than 929 described species, are mostly terrestrial and aquatic species are found only in the tribe Coleostomatini and in the Megasternine genus *Cercyon* Leach, 1817 (Fikáček, 2006). A total number of 34 genera of aquatic Hydrophilidae is known from the Palearctic region. So far, 19 genera and 99 species of Hydrophilidae have been recorded from Turkey (Gentili & Chiesa, 1975; Wooldridge, 1978; Hansen, 1987, 1999, 2004; Schödl, 1991, 1993, 1997, 1998; Hebauer, 1994, 2004; Hebauer & Klausnitzer, 1998; Gentili, 1974, 1979, 1981, 1988, 1991, 2000; Gentili & Whitehead, 2000; Incekara et al., 2003, 2005, 2009, 2010; Darılmaz & Kiyak, 2006; Kiyak et al., 2006; Mart, 2009; Mart et al., 2006, 2009, 2010; Darılmaz & Incekara, 2011).

### MATERIAL AND METHODS

In summer seasons between 2012 and 2013, specimens of Hydrophilidae were collected by means of a sieve, ladle and net with 1 mm pores from the shallow areas of various springs, streams, lakes and ponds in Hatay and Hakkari provinces of Turkey. Firstly collected samples were killed by ethyl acetate in the research area and then aedeagophores of the beetles were dissected under a stereo microscope in the laboratory. Photographs of the main diagnostic characters were made using a Olympus SZX16 microscope. All samples have been deposited in the Zoological Museum, Bingöl University, Science and Arts Faculty, Department of Biology, Bingöl, Turkey.

### RESULTS

In the freshwater habitat of Hakkari and Hatay provinces, 11 aquatic beetle species and one subspecies belonging to Hydrophilidae were recorded. One of these species has been recorded in both the Mediterranean and Southeast Anatolia regions. And one of them, too, has been recorded only in the Mediterranean region for the first time. Four out of the rest of them covered in the study have been recorded in Hatay province and Southeastern Anatolia region,

and the five species remained in the study, have only been recorded in Hatay province for the first time.

### Subfamily Hydrophilinae

#### *Anacaena rufipes* (Guillebeau, 1896)

**Material examined:** Hatay-Yayladağ: 2♂♂ 4♀♀, Yaylıca dam pond, 36°10'06K 36°01'38D, 197m, 04.IX.2012, leg. Aydoğan. Yayladağ dam, 3♂♂, 35°57'09K 36°03'05D, 485m, 05.VII.2012, leg. Aydoğan. Hakkari-Şemdinli: 2♂♂ 1♀, Çalıışkanlar, 37°15'28N 44°38'12E, 1488m, 13.05.2013, leg. Fırat.

**Distribution in Turkey:** Bayburt, Bingöl, Bitlis, Giresun, Gümüşhane, Isparta, İstanbul, Muş, Ordu, Samsun, Sivas, Tokat, Trabzon and Van (Mart, 2009; Polat et al., 2010; Darılmaz & Incekara, 2011; Aydoğan, 2011; Bayram, 2011; Türken, 2011; Yılmaz, 2011).

**Remark:** Newly recorded from Hatay province and the Southeast Anatolia Region.

#### *Berosus* (s.str.) *signaticollis* (Charpentier, 1825)

**Material examined:** Hatay-Yayladağ: 2♂♂ 10♀♀, Yaylıca dam pond, 36°10'06N 36°01'38E, 197m, 01.VIII.2012, leg. Aydoğan; 2♂♂ 2♀♀, Yayladağ dam, 35°57'09N 36°03'05E, 485m, 05.VII.2012, leg. Aydoğan.

**Distribution in Turkey:** Amasya, Antalya, Aydın, Bayburt, Bingöl, Erzincan, Isparta, İzmir, Kars, Kastamonu, Kayseri, Ordu, Samsun and Sivas (Incekara et al., 2003, 2009, 2010; Mart, 2009; Polat et al., 2010; Darılmaz & Incekara, 2011; Bayram, 2011; Yılmaz, 2011).

**Remark:** Newly recorded from Hatay province.

#### *Enochrus* (*Lumetus*) *politus* (Küster, 1849)

**Material examined:** Hatay-Merkez: 2♂♂ 8♀♀, Alaattin, 36°14'58N 36°14'16E, 85m, 05.VIII.2012, leg. Aydoğan. Hatay-Kırkhan: 2♂♂ 7♀♀, Madenli, 36°28'48N 35°59'53E, 22m, 05.VII.2012, leg. Aydoğan. Hatay-Samandağ: 4♂♂ 2♀♀, Samandağ road, 36°09'08N 36°05'52E, 46m, 04.IX.2012, leg. Aydoğan.

**Distribution in Turkey:** Bitlis, Muş, Uşak and Van (Darılmaz & Kiyak, 2009; Darılmaz & Incekara, 2011; Aydoğan, 2011; Türken, 2011).

**Remark:** Newly recorded from the Mediterranean region.

#### *Enochrus* (*Lumetus*) *fuscipennis* (Thomson, 1884)

**Material examined:** Hatay-Yayladağ: 21♂♂ 13♀♀ Yaylıca dam pond, 36°10'06N 36°01'38E, 197m, 03.VII.2012, leg. Aydoğan. Hatay-Kırkhan: 2♂♂ 13♀♀, Madenli, 36°28'48N 35°59'53E, 22m, 04.VII.2012, leg. Aydoğan. Hatay-Yayladağ: 12♂♂ 10♀♀, Yaylıca dam pond, 36°10'06N 36°01'38E, 197m, 04.IX.2012, leg. Aydoğan. Hakkari-Merkez: 5♂♂, 1♀, 37°34'27N 43°44'32E, 1700m, 09.08.2012; 1♀, 37°34'02N 43°43'28E, 1773 m, 10.07.2012, leg. Fırat.

**Distribution in Turkey:** Artvin, Aksaray, Ankara, Bayburt, Bingöl, Bitlis, Bursa, Çanakkale, Çorum, Denizli, Erzincan, Erzurum, Giresun, Gümüşhane, Isparta, İzmir, Kayseri, Kütahya, Muş, Ordu, Rize, Sivas and Van (Incekara et al., 2005; Kiyak et al., 2006; Darılmaz & Kiyak, 2006b; Ertoran & Tanatmış 2009; Hızarcıoğlu et al., 2010; Darılmaz, et al., 2010; Darılmaz & Incekara, 2011; Aydoğan, 2011; Bayram, 2011; Türken, 2011; Yılmaz, 2011).

**Remark:** Newly recorded from Hatay province and the Southeast Anatolia Region.

#### *Helochaeres lividus* (Forster, 1771)

**Material examined:** Hatay-Altınözü: 7♂♂ 9♀♀, Yarseli dam, 36°11'39N 36°18'56E, 135m, 02.VII.2012, leg. Aydoğan. Hatay-Yayladağ: 4♂♂ 4♂♂, Yaylıca dam pond 36°10'06N 36°01'38E, 197m 04.IX.2012, leg. Aydoğan.

**Distribution in Turkey:** Adana, Afyon, Aksaray, Ankara, Bingöl, Bitlis, Çorum, Denizli, Erzurum, Edirne, Isparta, İzmir, Kütahya, Muş, Ordu, Samsun, Sivas, Tokat and Trabzon (Mart, 2009; Darılmaz & Kiyak, 2006a; Karaman et al., 2008; Topkara & Balık, 2008; Hızarcıoğlu et al., 2010; Mart et al., 2010; Polat et al., 2010; Darılmaz et al., 2010; Darılmaz & Incekara, 2011; Aydoğan, 2011; Bayram, 2011; Yılmaz, 2011).

**Remark:** Newly recorded from Hatay province.

#### *Helochaeres* (s.str.) *obscurus* (Müller, 1776)

**Material examined:** Hatay-Merkez: Alaattin, 3♂♂ 9♀♀, 36°14'58K 36°14'16D, 85m, 04.IX. 2012, leg. Aydoğan. Hatay-Yayladağ: 1♂, Yaylıca dam pond, 36°10'06N 36°01'38E,

197m, 05.VII.2012, leg. Aydođan.

**Distribution in Turkey:** Adana, Ankara, Balıkesir, Bayburt, Bingöl, Bursa, Canakkale, Giresun, Gümüşhane, İzmir, Isparta, Kayseri, Sakarya, Samsun, Sivas and Ordu (Mart, 2009; Ertoran & Tanatmış, 2009; Incekara, et al., 2009, 2010; Hızarcıođlu et al., 2010; Mart et al., 2010; Darılmaz & Incekara, 2011; Bayram, 2011; Yılmaz, 2011).

**Remark:** Newly recorded from Hatay province.

### *Hydrobius fuscipes* (Linnaeus, 1758)

**Material examined:** Hatay-Kırıkhan: 1♂ 2♀♀, Madenli, 36°28'48N 35°59'53E, 22m, 04.VII.2012, leg. Aydođan. Hatay-Reyhanlı: 1♂, Göktepe, 31°17'01N 36°29'34E, 95m, 02.VII.2012, leg. Aydođan. Hatay-Samandađ: 1♂, Samandađ road, 36°09'08N 36°05'52E, 46m, 03.VII.2012, leg. Aydođan. Hakkari-Şemdinli: 1♀, Üçgöze, 37°16'29N 44°36'42E 1396m, 13.05.2013, leg. Fırat.

**Distribution in Turkey:** Afyon, Artvin, Ankara, Bayburt, Bilecik, Bingöl, Bitlis, Çorum, Denizli, Erzincan, Erzurum, Giresun, Gümüşhane, Isparta, İçel, İzmir, Konya, Kütahya, Muş, Ordu, Rize, Samsun, Sivas, Tokat, Trabzon and Van (Incekara et al., 2003, 2009, 2010; Mart, 2009; Topkara & Balık, 2008; Polat et al., 2010; Darılmaz & Incekara, 2011; Aydođan, 2011; Bayram, 2011; Türken, 2011; Yılmaz, 2011).

**Remark:** Newly recorded from Hatay province and the Southeast Anatolia Region.

### *Hydrochara dichroma* (Fairmaire, 1982)

**Material examined:** Hatay-Samandađ: 1♂ 15♀♀, Samandađ road, 36°09'08N 36°05'52E, 46m, 03.VII.2012, leg. Aydođan. Hatay-Kırıkhan: 1♂ 3♀♀, Madenli, 36°28'48N 35°59'53E, 22m, 6.VIII.2012, leg. Aydođan. Hatay-Reyhanlı: 1♂ 3♀♀, Göktepe, 31°17'01N 36°29'34E, 95m, 01.IX.2012, leg. Aydođan. Hatay-Altınözü: 11♂♂ 2♀♀, Yarseli dam, 36°11'39N 36°18'56E, 135m, 01.IX.2012, leg. Aydođan. Hakkari-Şemdinli: 1♂, Korgan, 37°23'47N, 44°29'36 E, 1724 m, 11.05.2013, leg. Fırat.

**Distribution in Turkey:** Adana, Ankara, Amasya, Balıkesir, Bayburt, Bingöl, Çanakkale, Erzincan, Erzurum, Giresun, Gümüşhane, İstanbul, İzmir, Kayseri, Muş, Ordu, Rize, Samsun, Sivas, Tokat, Trabzon and Van (Incekara et al., 2003, 2009; Mart, 2009; Darılmaz & Incekara, 2011; Bayram, 2011; Türken, 2011).

**Remark:** Newly recorded from Hatay province and the Southeast Anatolia Region.

### *Laccobius (Dimorpholaccobius) simulatrix* d'Orchymont, 1932

**Material examined:** Hatay-Yayladađ: 10♂♂ 17♀♀, Yayladađ dam, 35°57'09N 36°03'05E, 485m, 04.VII.2012, leg. Aydođan.

**Distribution in Turkey:** Adana, Afyon, Ağrı, Aksaray, Ankara, Antalya, Artvin, Aydın, Balıkesir, Bayburt, Bingöl, Bitlis, Bolu, Bursa, Çanakkale, Çorum, Denizli, Edirne, Erzincan, Erzurum, Giresun, Gümüşhane, Hakkari, Isparta, İçel, İstanbul, İzmir, Kahramanmaraş, Kars, Kayseri, Kırklareli, Kırşehir, Kütahya, Manisa, Muğla, Muş, Niğde, Ordu, Osmaniye, Samsun, Sivas, Trabzon, Toros dađları, Uşak, Van, and Yozgat (Incekara et al., 2003; Darılmaz & Kıyak 2006; Karaman et al., 2008; Mart, 2009; Ertoran & Tanatmış 2009; Hızarcıođlu et al., 2010; Polat et al., 2010; Darılmaz et al., 2010; Darılmaz & Incekara, 2011; Aydođan, 2011; Bayram, 2011).

**Remark:** Newly recorded from Hatay province.

### *Laccobius (Dimorpholaccobius) syriacus* Guillebeau, 1896

**Material examined:** Hatay-Reyhanlı: 4♂♂ 9♀♀, Göktepe, 31°17'01N 36°29'34E, 95m, 02.VII.2012, leg. Aydođan. Hatay-Samandađ: 11♂♂ 4♀♀, Samandađ road, 36°09'08N 36°05'52E, 46m, 03.VII.2012, leg. Aydođan. Hatay-Yayladađ: 2♂♂ 2♀♀, Yaylıca dam pond, 36°10'06N 36°01'38E, 197m, 04.IX.2012, leg. Aydođan. Hakkari-Merkez: 2♂♂ 1♀, Merzan, 37°34'02N, 43°43'28E, 1773m, 20.09.2012, leg. Fırat. Hakkari-Yüksekova: 3♂♂ 4♀♀, Vezirli, 37°31'36N, 44°15'21E, 1854m, 13.07.2012, leg. Fırat. Hakkari-Şemdinli: 5♂♂ 3♀♀, Çatalca, 37°23'36N, 44°34'43E, 175m, 05.07.2012, leg. Fırat. 2♂♂ 2♀♀, Karşıyaka, 37°18'12N, 44°34'32E, 1379m, 20.09.2012, leg. Fırat. 4♂♂ 4♀♀, Güzelkonak, 37°25'00N, 44°29'15E, 1691 m, 07.07.2012, leg. Fırat. 10♂♂ 10♀♀, Güvenli, 37°23'35N, 44°35'17E, 1782m, 07.07.2012, leg. Fırat. 4♂♂ 5♀♀, Korgan, 37°23'47N, 44°29'36E, 1838m, 08.08.2012, leg. Fırat. 6♂♂ 8♀♀, Çalışkanlar, 37°15'28N, 44°38'12E, 1488 m, 13.05.2013, leg. Fırat. Hakkari-Çukurca: 5♂♂ 5♀♀, Geçimli, 37°23'35N, 43°32'02E, 1441 m, 11.05.2013, leg. Fırat.

**Distribution in Turkey:** Adana, Afyon, Aksaray, Ankara, Antakya, Antalya, Artvin, Aydın, Balıkesir, Bayburt, Bingöl, Bilecik, Bitlis, Bolu, Burdur, Bursa, Çorum, Denizli, Diyarbakır, Edirne, Erzincan, Erzurum, Gaziantep, Giresun, Gümüşhane, Hakkâri, Hatay, Isparta,

İzmir, Kahramanmaraş, Kars, Kayseri, Kastamonu, Konya, Mardin, Mersin, Muğla, Muş, Ordu, Osmaniye, Rize, Sakarya, Samsun, Sinop, Sivas, Şanlıurfa, Tokat, Trabzon and Van (Mart, 2009; Darılmaz & Kıyak, 2006b; Ertorun & Tanatmış, 2009; Darılmaz et al., 2010; Polat et al., 2010; Darılmaz & Incekara, 2011; Aydoğan, 2011; Bayram, 2011; Türken, 2011; Yılmaz, 2011).

***Laccobius (Dimorpholaccobius) obscuratus* Rottenberg, 1874**

***Laccobius (Dimorpholaccobius) obscuratus aegaeus* Gentili, 1974**

**Material examined:** Hatay-Reyhanlı: 1♂ 1♀, Göktepe, 31°17'01N 36°29'34E, 95m, 05.VIII.2012, leg. Aydoğan. Hatay-Yayladağ: 2♂♂ Yayladağ dam, 35°57'09N 36°03' 05E, 485m, 05.VII.2012, leg. Aydoğan. 1♂, Yaylıca dam pond, 36°10'06N 36°01'38E, 197m, 04. IX.2012, leg. Aydoğan.

**Distribution in Turkey:** Adana, Afyon, Ankara, Antalya, Artvin, Aydın, Balıkesir, Bingöl, Bitlis, Bolu, Burdur, Bursa, Çanakkale, Çorum, Denizli, Erzincan, Erzurum, Gebze, Gümüşhane, Isparta, İstanbul, İzmir, İzmit, Kastamonu, Kırklareli, Konya, Kütahya, Manisa, Mersin, Muğla, Muş, Ordu, Osmaniye, Rize, Samsun, Sinop, Sivas, Tokat, Toros dağları, Trabzon, Uşak and Van (Incekara et al., 2003, 2010; Mart, 2009; Karaman et al., 2008; Ertorun & Tanatmış, 2009; Hızarcıoğlu et al., 2010; Polat et al., 2010; Darılmaz & Incekara, 2011; Aydoğan, 2011; Bayram, 2011; Türken, 2011; Yılmaz, 2011).

**Remark:** Newly recorded from Hatay province.

***Paracymus chaldeolus* (Solsky, 1874)**

**Material examined:** Hatay-Kırkhan: 2♂♂ 2♀♀, Madenli, 36°28'48N 35°59'53E, 22m, 08.IX. 2012, leg. Aydoğan. Hakkari-Şemdinli: 1♂ 1♀, Korgan, 37°23'47N 44°29'36E, 1838m, 08. 08.2012, leg. Fırat.

**Distribution in Turkey:** Bayburt, Bingöl, Bitlis, Muş and Van (Mart et al., 2006; Mart, 2009; Darılmaz & Incekara, 2011; Aydoğan, 2011; Türken, 2011).

**Remark:** Newly recorded from the Mediterranean and Southeast Anatolia region.

## DISCUSSION

In this study, totally 11 species and one subspecies of aquatic Coleoptera belonging to 8 genera of the Hydrophilidae were determined in Hatay and Hakkari province. Of these, *Paracymus chaldeolus* (Solsky, 1874) has been recorded in both the Mediterranean and Southeast Anatolia regions, and *Enochrus (Lumetus) politus* (Küster, 1849) has been recorded only in the Mediterranean region for the first time. *Hydrochara dichroma* (Fairmaire, 1982), *Enochrus (Lumetus) fuscipennis* (Thomson, 1884), *Hydrobius fuscipes* (Linnaeus, 1758) and *Anacaena rufipes* (Guillebeau, 1896) have been recorded in Hatay province and the Southeast Anatolia region for the first time. *Berosus* (s.str.) *signaticollis* (Charpentier, 1825), *Laccobius (D.) simulatrix* d'Orchymont, 1932, *Laccobius (D.) obscuratus aegaeus* Gentili, 1974, *Helochares lividus* (Forster, 1771) and *Helochares* (s.str.) *obscurus* (Müller, 1776) have only been recorded in Hatay province for the first time.

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