

## HYDRAENIDAE SPECIES DIVERSITY OF SOUTH MARMARA REGION IN TURKEY (COLEOPTERA)

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ABSTRACT: 5194 samples from 78 localities were collected between 2004 and 2006 to investigate the Hydraenidae (Coleoptera) fauna of South Marmara Region in Turkey. 31 species and 1 subspecies belonging to 3 genera were determined. Of identified species *L. (s.str.) rubropiceus*, *Ochthebius (s.str.) difficilis*, *O. (s.str.) fausti*, *O. (s.str.) inconspicuus*, *O. (s.str.) lividipennis*, *O. (s.str.) meridionalis*, *O. (s.str.) ragusae*, *O. (s.str.) uskubensis*, *O. (Asiobates) minimus*, *H. (s.str.) falcata*, *H. (s.str.) grandis*, *H. (s.str.) grata*, *H. (s.str.) lapissectilis*, *H. (s.str.) ancyrae*, *H. (s.str.) anatolica*, *H. (s.str.) paganettii* were recorded from the research area for the first time. The aim of this study is to reveal information about Hydraenidae fauna of South Marmara Region which is transition area between Europe and Anatolia since the glacial age.

KEY WORDS: Coleoptera, fauna, Hydraenidae, South Marmara Region, Turkey.

Genera *Hydraena*, *Ochthebius* and *Limnebius* of Hydraenidae show quite wide distribution in Palaearctic region of the world. In Turkey, 107 *Hydraena*, 72 *Ochthebius* and 19 *Limnebius* species have been reported so far (Audisio et al., 1993; Jäch, 1984; 1985; 1988a; 1988b; 1989a; 1989b; 1989c; 1990a; 1990b; 1991; 1992a; 1992c; 1992d; 1993b; 1993c; 1994; 1997a; 1997b; 1997c; 1997d; Jäch et al., 2003; Jäch and Diaz, 2001; Jäch and Kasapođlu, 2006; Jäch and Delgado, 2008; Kasapođlu, 2002; Kasapođlu and Erman, 2002; Kasapođlu et al., 2004; 2006). However, fauna of aquatic Coleoptera in Turkey has not fully been introduced. Therefore, the primary focus of this paper is to reveal information about Hydraenidae fauna of South Marmara Region which is transition area between Europe and Anatolia since the glacial age.

### MATERIALS AND METHODS

Totally, 5194 adult specimens from 78 different freshwater localities were collected around Balıkesir, Bilecik, Bursa, Çanakkale, Kocaeli and Sakarya provinces between 2004 and 2006 (Figure 1, Table 1). Aedeagus of collected specimens were stored in 30% lactic acid solution during 24 hours to clean and make them transparency. Audisio et al. (1993); Jäch (1984; 1987b; 1988a; 1988b; 1989a; 1989c; 1990a; 1991; 1992a; 1992b; 1992c; 1993a; 1995; 1998; 1999); Jäch and Diaz (2001); Kasapođlu (2002) were used during identification studies as the main sources.

### RESULTS

31 species and 1 subspecies belonging to 3 genera were determined during the present study. Localities of these species in Turkey and their distributions in the world are given below.

**FAMILY: HYDRAENIDAE****Genus: *Limnebius*** Leach, 1815**Subgenus: *Limnebius*** Leach, 1815***Limnebius (s.str.) claviger*** Jäch, 1993

Materials examined: 03.07.2004, 3 male (31); 09.07.2005, 1 male, 4 female (52); 24.08.2004, 19 male, 66 female (56); 08.07.2004, 2 male, 2 female; 03.08.2006, 6 male, 5 female (59).

Distribution in the world: Turkey (Jäch, 2004).

Distribution in Turkey: Balıkesir (Jäch, 1993a).

Remark: First record for the provinces of Bilecik, Bursa and Çanakkale.

***Limnebius (s.str.) stagnalis*** Guillebeau, 1890

Materials examined: 30.07.2004, 3 male, 24 female; 09.08.2006, 1 male, 2 female (32); 30.07.2004, 12 male, 4 female; 13.08.2005, 1 male, 7 female (34); 13.08.2005, 1 male, 4 female (37); 09.08.2006, 1 male (38); 09.08.2006, 2 male, 1 female (39); 05.07.2004, 1 male, 4 female; 05.07.2005, 9 male, 16 female; 01.08.2006, 6 male, 6 female (42); 06.07.2005, 1 male, 1 female; 02.08.2006, 1 male (48); 02.08.2006, 2 male, 1 female (49); 15.08.2006, 2 male, 2 female (55); 08.07.2004, 2 male, 1 female (58); 03.08.2006, 2 male, 29 female (59).

Distribution in the world: Albania, Austria, Bosnia Herzegovina, Bulgaria, Croatia, Czech Republic, Greece, Hungary, Macedonia, Romania, Slovakia, Slovenia, Turkey, Ukraine, Yugoslavia (Serbia, Montenegro) (Jäch, 2004).

Distribution in Turkey: Artvin, Erzurum (Kasapoğlu, 2002); Balıkesir, Bitlis, Bolu, Bursa, Çanakkale, Diyarbakır, Edirne, Erzincan, Gümüşhane, İstanbul, Kars, Kirklareli, Ordu, Rize, Sinop, Sivas, Tekirdağ, Van (Jäch, 1993a).

Remark: First record for the province of Bilecik.

***Limnebius (s.str.) rubropiceus*** Kuwert, 1890

Material examined: 30.07.2004, 5 male, 1 female (32).

Distribution in the world: Armenia, Greece, Macedonia, Turkey (Jäch, 2004).

Distribution in Turkey: Artvin, Erzurum (Kasapoğlu, 2002); Bolu, Edirne, İstanbul, Kars, Kayseri, Rize, Tekirdağ (Jäch, 1993a).

Remark: First record for the province of Bilecik.

**Subgenus: *Bilimneus*** Leach, 1883***Limnebius (Bilimneus) corfidius*** d'Orchymont, 1945

Materials examined: 08.07.2005, 1 male, 5 female (15); 09.07.2005, 2 male (16); 13.08.2005, 1 male (34); 09.08.2006, 1 male (39); 08.07.2005, 1 male (60); 08.07.2005, 1 male, 2 female (70); 03.08.2006, 1 male (71).

Distribution in the world: Turkey (Jäch, 2004).

Distribution in Turkey: Balıkesir, Bursa, Çanakkale, İstanbul, Muğla (Jäch, 1993a).

Remark: First record for the province of Bilecik.

***Limnebius (Bilimneus) atomus*** (Duftschmid, 1805)

Materials examined: 02.08.2006, 3 male, 1 female (9), 02.08.2006, 1 male (23); 01.08.2006, 1 male, 4 female (42); 06.07.2004, 1 male (45); 02.08.2006, 1 male, 2 female (46); 03.07.2004, 1 male, 1 female, 21.08.2004, 1 male (78).

Distribution in the world: Albania, Austria, Belarus, Bosnia Herzegovina, Bulgaria, Croatia, Czech Republic, Finland, France, Great Britain, Greece, Hungary, Italy, Macedonia, Norway, Poland, Romania, Russia, Russia: West Siberia, Slovakia, Switzerland, The Netherlands, Turkey, Ukraine, Yugoslavia (Serbia, Montenegro),. (Jäch, 2004).

Distribution in Turkey: Bursa, Kirklareli, Samsun (Jäch, 1993a).

Remark: First record for the provinces of Bilecik and Sakarya.

***Limnebius (Bilimneus) corybus*** d'Orchymont, 1945

Materials examined: 09.07.2005, 2 male, 05.08.2006, 1 male (17), 09.07.2005, 1 male (19); 08.07.2004, 1 male (59); 07.07.2005, 1 male, 1 female (65), 16.08.2005, 2 male, 3 female (67); 04.08.2006, 8 male, 6 female (70), 05.08.2006, 1 male, 1 female (76).

Distribution in the world: Greece, Turkey (Jäch, 2004).

Distribution in Turkey: Balıkesir, Bitlis, Bursa, Çanakkale, Gümüşhane, Muğla, Ordu (Jäch, 1993a); Erzurum (Kasapoğlu, 2002).

***Limnebius (Bilimneus) myrmidon*** Rey, 1883

Materials examined: 09.07.2005, 1 male (16), 31.08.2005, 3 male (17); 30.07.2004, 2 male, 6 female, 13.08.2005, 1 male, 1 female (34); 09.08.2006, 9 male, 18 female (39); 07.07.2004, 1 male, 1 female, 24.08.2004, 14 male, 7 female (56); 24.08.2004, 1 male, 1 female, 15.08.2005, 3 male (64).

Distribution in the world: Austria, Bosnia Herzegovina, Bulgaria, Croatia, France, Greece, Italy, Poland, Slovenia, Spain, Turkey, Yugoslavia (Serbia, Montenegro) (Jäch, 2004).

Distribution in Turkey: Artvin, Erzurum (Kasapoğlu, 2002); Balıkesir, Bitlis, Bursa, Çanakkale, İstanbul, Muğla, Ordu (Jäch, 1993a).

Remark: First record for the province of Bilecik.

***Limnebius (Bilimneus) perparvulus*** Rey, 1884

Materials examined: 23.08.2004, 25 male, 23 female (1); 06.07.2004, 12 male, 10 female, 23.08.2004, 10 male, 44 female (3); 07.07.2004, 36 male, 48 female (5); 24.08.2004, 25 male, 10 female, 07.07.2005, 14 male, 89 female, 02.08.2006, 18 male, 24 female (7); 08.07.2005, 4 male, 5 female (15); 09.07.2005, 34 male, 28 female, 05.08.2006, 24 male, 26 female (16); 31.08.2005, 24 male, 19 female (17); 05.08.2006, 31 male, 19 female (18); 31.08.2005, 11 male, 9 female (19); 15.08.2005, 15 male, 27 female (20); 15.08.2005, 1 male, 2 female (21); 03.08.2006, 18 male, 39 female (24); 05.08.2006, 19 male, 47 female (25); 05.08.2006, 3 male, 2 female (26); 05.08.2006, 5 male, 16 female (27); 27.08.2004, 4 male, 11 female (35); 27.08.2004, 4 male (36); 13.08.2005, 10 male, 35 female, 09.08.2006, 30 male, 41 female (38); 09.08.2006, 1 male (39); 24.08.2004, 1 male, 2 female, 05.07.2005, 1 male, 3 female (41); 23.08.2004, 1 male (47); 23.08.2004, 1 male, 4 female (48); 06.07.2004, 8 male, 2 female, 23.08.2004, 21 male, 19 female, 02.08.2006, 4 male, 24 female (49); 09.07.2005, 2 male, 2 female (52); 17.08.2005, 6 male, 5 female (53); 15.08.2006, 32 male, 47 female (54); 15.08.2006, 9 male, 29 female (55); 07.07.2004, 29 male, 33 female, 24.08.2004, 8 male, 15 female (56); 08.07.2004, 2 male, 2 female (58); 08.07.2004, 7 male, 14 female (59); 08.07.2004, 1 male, 1 female, 08.07.2005, 15 male, 29 female (60); 07.07.2005, 4 male, 11 female, 16.08.2005, 15 male, 14 female, 03.08.2006, 13 male, 21 female (61); 08.07.2004, 25 male, 7 female (62); 15.08.2005, 58 male, 74 female (64); 07.07.2005, 16 male, 21 female (65); 16.08.2005, 74 male, 47 female (67); 04.08.2006, 36 male, 58 female (68); 08.07.2005, 1 male, 3 female (69); 04.08.2006, 9 male, 27 female (70); 03.08.2006, 2 male, 9 female (71); 03.08.2006, 15 male, 13 female (72); 03.08.2006, 1 male, 3 female (73); 04.08.2006, 13 male, 46 female (74); 04.08.2006, 25 male, 53 female (75); 21.08.2004, 17 male, 38 female (77).

Distribution in the world: Albania, Algeria, Bosnia Herzegovina, France, Greece, Israel, Italy, Lebanon, Morocco, Tunisia, Turkey (Jäch, 2004).

Distribution in Turkey: Erzurum (Kasapoğlu 2002); Ankara, Antalya, Balıkesir, Çanakkale, Diyarbakır, Hatay, İzmir, Kocaeli, Mersin, Muğla, Tekirdağ (Jäch, 1993a).

Remark: First record for the provinces of Bilecik, Bursa and Kocaeli.

**Genus: *Ochthebius*** Leach, 1815**Subgenus: *Ochthebius*** Leach, 1815***Ochthebius (s.str.) metallescens metallescens*** Rosenhauer, 1847

Materials examined: 13.08.2005, 1 male, 5 female (37); 06.07.2004, 1 male, 1 female; 23.08.2004, 1 male (49); 15.08.2006, 1 male (55).

Distribution in the world: Albania, Austria, Bosnia Herzegovina, Bulgaria, Croatia, Czech Republic, France, Great Britain, Greece, Italy, Macedonia, Poland, Romania, Slovakia,

Slovenia, Spain, Switzerland, The Netherlands, Turkey, Ukraine, Yugoslavia (Serbia, Montenegro) (Jäch, 2004).

Distribution in Turkey: Bursa, Erzincan, Kahramanmaraş, Toros dağları (Jäch, 1999).

Remark: First record for the provinces of Bilecik.

***Ochthebius (s.str.) difficilis* Mulsant, 1844**

Materials examined: 23.08.2004, 1 male (3); 08.07.2005, 10 male, 8 female (5); 08.07.2004, 1 male, 3 female (58); 08.07.2004, 7 male, 3 female (59); 08.07.2004, 1 male, 07.07.2005, 1 male, 1 female (61).

Distribution in the world: Albania, Algeria, Armenia, Bosnia Herzegovina, Cyprus, France, Georgia, Greece, Iran, Israel, Italy, Lebanon, Morocco, Spain, Syria, Tunisia, Turkey (Jäch, 2004).

Distribution in Turkey: Artvin, Erzurum (Kasapoğlu, 2002); Adıyaman, Antalya, Bayburt, Bitlis, Gaziantep, Gümüşhane, İzmir, Kars, Kilis, Konya, Malatya, Manisa, Mersin, Muğla, Muş, Siirt, Ordu, Tekirdağ, Van (Jäch, 1992b).

Remark: First record for the provinces of Balıkesir and Çanakkale.

***Ochthebius (s.str.) fausti* Sharp, 1887**

Materials examined: 06.07.2005, 17 male, 17 female (11); 09.07.2005, 4 male, 1 female (18); 31.08.2005, 28 male, 38 female (19); 09.07.2005, 1 male (52); 03.08.2006, 5 male (71).

Distribution in the world: Bulgaria, Greece, Iran, Russia: South European Territory, Turkey, Turkmenistan (Jäch, 2004).

Distribution in Turkey: Erzurum (Kasapoğlu, 2002); Ankara, Gaziantep, İzmir, Manisa, Sivas (Jäch, 1991).

Remark: First record for the provinces of Balıkesir, Bursa and Çanakkale.

***Ochthebius (s.str.) foveolatus* Germar, 1824**

Materials examined: 23.08.2004, 13 male, 29 female, 15.08.2005, 15 male, 19 female (1); 06.07.2004, 4 male, 7 female, 23.08.2004, 5 male, 7 female (3); 24.08.2004, 6 male, 2 female, 07.07.2005, 15 male, 9 female, 02.08.2006, 3 male, 5 female (7); 08.07.2005, 2 male, 4 female (15); 09.07.2005, 1 male, 1 female (16); 09.07.2005, 5 male, 10 female, 05.08.2006, 11 male, 25 female (18); 09.08.2006, 4 male, 10 female (38); 05.07.2005, 1 male (41); 23.08.2004, 3 male, 2 female, 02.08.2006, 1 male, 1 female (49); 17.08.2005, 34 male, 36 female (53), 15.08.2006, 12 male, 19 female (54), 15.08.2006, 14 male, 19 female (55); 15.08.2005, 16 male, 8 female (64); 24.08.2004, 1 male, 07.07.2005, 1 male, 1 female (65).

Distribution in the world: Austria, Bosnia Herzegovina, Bulgaria, Croatia, Cyprus, Czech Republic, France, Great Britain, Italy, Poland, Romania, Slovakia, Yugoslavia (Serbia, Montenegro), Turkey (Jäch, 2004).

Distribution in Turkey: Ankara, Balıkesir, Erzurum, İzmir, İzmit, Ordu, Sivas (Jäch, 1991; Kasapoğlu, 2002).

Remark: First record for the provinces of Bilecik, Bursa and Çanakkale.

***Ochthebius (s.str.) inconspicuus* Jäch, 1991**

Materials examined: 07.07.2004, 5 male, 2 female (5), 08.07.2004, 40 male, 20 female (59).

Distribution in the world: Turkey (Jäch, 2004).

Distribution in Turkey: Erzurum (Kasapoğlu, 2002); Sinop (Jäch, 1991).

Remark: First record for the provinces of Balıkesir and Çanakkale.

***Ochthebius (s.str.) lividipennis* Peyron, 1858**

Materials examined: 06.07.2004, 15 male, 12 female, 23.08.2004, 1 male (1); 09.07.2005, 20 male, 36 female (2); 08.07.2005, 1 male, 1 female (4); 07.07.2004, 5 male, 2 female, 08.07.2005, 1 male (5); 24.08.2004, 2 male, 6 female, 07.07.2005, 1 male, 02.08.2006, 14 male, 9 female (7); 24.07.2004, 11 male, 13 female (8); 06.07.2005, 9 male, 18 female, 02.08.2006, 21 male, 26 female (9); 06.07.2005, 5 male, 7 female (10), 06.07.2005, 1 male, 1 female (11); 09.07.2005, 1 male, 3 female (16); 05.08.2006, 1 male, 1 female (19); 15.08.2005, 10 male, 17 female (20); 15.08.2005, 1 male (22); 02.08.2006, 5 male, 9 female (23); 03.08.2006, 2 male, 5 female (24); 01.08.2006, 1 male (42); 06.07.2004, 1 male (45);

9 male, 15 female (46); 23.08.2004, 7 male, 4 female, 06.07.2005, 2 male, 8 female, 16.08.2005, 11 male, 9 female (47); 06.07.2004, 3 male, 4 female, 23.08.2004, 2 male, 1 female, 06.07.2005, 1 male, 1 female, 02.08.2006, 2 male, 3 female (48); 02.08.2006, 2 male, 8 female (49); 17.08.2005, 5 male (53); 08.07.2004, 1 male, 1 female (57); 08.07.2004, 1 male, 5 female (58); 08.07.2004, 3 male, 03.08.2006, 1 male, 1 female (59); 03.08.2006, 5 male (61); 08.07.2004, 1 male, 24.08.2004, 21 male, 31 female (63); 24.08.2004, 14 male, 17 female (65); 07.07.2005, 9 male (66); 08.07.2005, 1 male (69); 04.08.2006, 1 male (70); 03.08.2006, 18 male, 25 female (71); 03.08.2006, 1 male, 1 female (72); 03.08.2006, 3 male, 8 female (73); 04.08.2006, 1 male (76).

Distribution in the world: Azerbaijan, Austria, Bulgaria, Croatia, Cyprus, Czech Republic, Egypt, Greece, Hungary, Iran, Israel, Italy, Poland, Romania, Slovakia, Syria, Turkey, Yugoslavia (Serbia, Montenegro) (Jäch, 2004).

Distribution in Turkey: Erzurum (Kasapoğlu, 2002); Adana, Antalya, Diyarbakır, Edirne, Gaziantep, Hatay, Iğdır, İzmir, Kars, Kırklareli, Kilis, Mersin, Sivas, Şanlıurfa (Jäch, 1992c).

Remark: First record for the provinces of Balıkesir, Bursa and Çanakkale.

### ***Ochthebius (s.str.) mediterraneus*** (Ienistea, 1988)

Materials examined: 09.07.2005, 2 male, 1 female (16), 05.08.2006, 4 male (18); 09.07.2005, 2 male, 1 female (19); 03.08.2006, 2 male, 8 female (24); 05.08.2006, 3 male, 1 female (27); 02.08.2006, 1 male (49); 09.07.2005, 1 male (52); 15.08.2006, 1 male (54); 08.07.2004, 40 male, 20 female (59); 07.07.2005, 1 male, 2 female, 03.08.2006, 28 male, 20 female (61); 16.08.2005, 4 male, 2 female (67); 08.07.2005, 18 male, 26 female, 04.08.2006, 11 male, 19 female (68); 09.08.2006, 9 male, 9 female (77).

Distribution in the world: Albania, Algeria, Azerbaijan, Bosnia Herzegovina, Bulgaria, France, Greece, Italy, Morocco, Spain, Turkey (Jäch, 2004).

Distribution in Turkey: Artvin (Kasapoğlu, 2002); Ankara, Balıkesir, Çanakkale, İzmir, İzmit, Sivas, Trabzon (Jäch, 1991).

Remark: First record for the province of Bursa.

### ***Ochthebius (s.str.) meridionalis*** Rey, 1885

Materials examined: 07.07.2005, 1 male, 3 female (13), 06.07.2004, 1 male, 2 female (49).

Distribution in the world: Armenia, Austria, Azerbaijan, Bulgaria, Croatia, Czech Republic, Egypt, France, Greece, Hungary, Iran, Iraq, Israel, Italy, Morocco, Poland, Romania, Russia: South European Territory, Saudi Arabia, Slovakia, Spain, Switzerland, Tunisia, Turkey, Turkmenistan, Ukraine, Yugoslavia (Serbia, Montenegro) (Jäch, 2004).

Distribution in Turkey: Erzurum (Kasapoğlu, 2002); Burdur, Çorum, Kars, Konya, Samsun, Van (Jäch, 1992c).

Remark: First record for the provinces of Balıkesir and Bursa.

### ***Ochthebius (s.str.) ragusae*** Kuwert, 1887

Materials examined: 06.07.2004, 1 male, 3 female (3).

Distribution in the world: Afghanistan, Albania, Azerbaijan, Cyprus, Egypt: Sinai, France, Georgia, Greece, Iran, Israel, Italy, Lebanon, Macedonia, Saudi Arabia, Tajikistan, Turkey, Turkmenistan, Uzbekistan (Jäch, 2004).

Distribution in Turkey: Ankara, Bitlis, Burdur, Erzincan, Erzurum, Gümüşhane, Mersin, Niğde, Van (Jäch, 1989a; Kasapoğlu, 2002).

Remark: First record for the province of Balıkesir.

### ***Ochthebius (s.str.) uskubensis*** Hebauer, 1986

Materials examined: 09.07.2005, 3 male, 2 female, 05.08.2006, 17 male, 23 female (18); 09.07.2005, 8 male, 12 female, 31.08.2005, 8 male, 13 female (19); 05.08.2006, 35 male, 32 female (27); 06.07.2005, 1 male, 1 female (48); 23.08.2004, 5 male, 8 female, 02.08.2006, 6 male, 12 female (49); 09.07.2005, 1 male, 2 female (52).

Distribution in the world: Albania, Bulgaria, Caucasus, Macedonia, Turkey (Jäch, 2004).

Distribution in Turkey: Erzurum (Kasapoğlu, 2002); Sivas (Jäch, 1992c).

Remark: First record for the provinces of Balıkesir and Bursa.

***Ochthebius (s. str.) pusillus*** Stephens, 1835

Materials examined: 09.07.2005, 9 male, 6 female (2); 07.07.2004, 20 male, 34 female (6); 07.07.2005, 1 male, 1 female, 02.08.2006, 1 male (7); 07.07.2005, 4 male, 21 female (8); 06.07.2005, 16 male, 13 female, 02.08.2006, 8 male, 13 female (9); 06.07.2005, 1 male (10); 07.07.2005, 4 male, 5 female (12); 09.07.2005, 2 male, 1 female, 05.08.2006, 33 male, 36 female (19); 15.08.2005, 8 male, 10 female (20); 15.08.2005, 7 male, 8 female (21); 02.08.2006, 1 male (23); 03.08.2006, 1 male, 1 female (24); 05.08.2006, 1 male (27); 03.07.2004, 2 male, 2 female (29); 01.08.2006, 3 male, 2 female (42); 06.07.2004, 4 male, 2 female (45); 21.08.2004, 1 male, 02.08.2006, 7 male, 16 female (46); 23.08.2004, 5 male, 7 female, 16.08.2005, 3 male, 2 female (47); 23.08.2004, 1 male, 1 female, 02.08.2006, 3 male (48); 02.08.2006, 1 male, 3 female (49); 16.08.2005, 1 male (61); 07.07.2005, 1 male, 03.08.2006, 3 male, 2 female (66); 03.08.2006, 1 male (72); 23.08.2004, 1 male (78).

Distribution in the world: Albania, Austria, Bosnia Herzegovina, Bulgaria, Croatia, Czech Republic, France, Germany, Great Britain, Greece, Hungary, Italy, Lithuania, Luxembourg, Moldavia, Poland, Romania, Russia, Slovakia, Slovenia, Switzerland, The Netherlands, Turkey, Ukraine, Yugoslavia (Serbia, Montenegro) (Jäch, 2004).

Distribution in Turkey: Balıkesir, Edirne, İstanbul, Kastamonu, Kırklareli, Samsun (Jäch, 1992c).

Remark: First record for the provinces of Bilecik, Bursa, Çanakkale and Sakarya.

**Subgenus: *Asiobates*** Thomson, 1859***Ochthebius (Asiobates) minimus*** (Fabricius, 1792)

Materials examined: 06.07.2004, 1 male, 2 female, 15.08.2005, 1 male, 2 female (1); 24.08.2004, 1 male, 2 female, 02.08.2006, 3 male, 2 female (7); 24.07.2004, 1 male, 1 female (8); 06.07.2005, 28 male, 18 female, 02.08.2006, 5 male, 13 female (9); 06.07.2005, 2 male, 1 female (10); 15.08.2005, 6 male, 5 female (20); 02.08.2006, 1 male, 2 female (23); 03.07.2004, 9 male, 5 female (29); 09.08.2006, 1 male, 1 female (39); 06.07.2005, 3 male (46); 23.08.2004, 7 male, 9 female, 06.07.2005, 1 male, 1 female, 16.08.2005, 1 male, 2 female (47); 15.08.2006, 45 male, 40 female (55).

Distribution in the world: Austria, Belarus, Belgium, Bosnia Herzegovina, Croatia, Czech Republic, Denmark, Estonia, Finland, France, Germany, Great Britain, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Macedonia, Norway, Poland, Romania, Russia, Slovakia, Slovenia, Spain, Sweden, Switzerland, The Netherlands, Turkey, Ukraine, Yugoslavia (Serbia, Montenegro) (Jäch, 2004).

Distribution in Turkey: Samsun (Jäch, 1990a).

Remark: First record for the provinces of Balıkesir, Bilecik and Bursa.

***Ochthebius (Asiobates) striatus*** (Laporte, 1840)

Materials examined: 08.07.2005, 1 male (14); 01.08.2006, 1 male, 5 female (42); 06.07.2004, 2 male (48).

Distribution in the world: Albania, Croatia, Cyprus, Greece, Hungary, Israel, Lebanon, Russia: South European Territory, Turkey, Yugoslavia (Serbia, Montenegro) (Jäch, 2004).

Distribution in Turkey: Artvin, Balıkesir, Bitlis, Çanakkale, Diyarbakır, Gaziantep, Hakkari, Hatay, İstanbul, İzmir, Kastamonu, Mersin, Siirt, Tekirdağ (Jäch, 1990a).

Remark: First record for the province of Bursa.

**Genus: *Hydraena*** Kugelann, 1794**Subgenus: *Hydraena*** Kugelann, 1794***Hydraena (s.str.) bodemeyeri*** Jäch & Diaz, 2001

Materials examined: 30.07.2004, 1 male, 22 female (34); 01.08.2006, 1 male (42); 13.08.2005, 1 male, 3 female, 01.08.2006, 1 male (50); 21.08.2004, 1 male, 5 female (77).

Distribution in the world: Turkey (Jäch, 2004).

Distribution in Turkey: Bursa (Jäch and Diaz, 2001).

Remark: First record for the provinces of Bilecik and Kocaeli.

***Hydraena (s.str.) ancyræ*** Jäch, 1992

Materials examined: 30.07.2004, 10 male, 26 female (32); 30.07.2004, 3 male, 26 female (33); 13.08.2005, 4 male, 5 female(34); 27.08.2004, 1 male (36); 01.08.2006, 1 male (42); 21.08.2004, 1 male, 09.08.2006, 1 male (77).

Distribution in the world: Turkey (Jäch, 2004).

Distribution in Turkey: Amasya, Ankara, Artvin, Çankırı, Erzurum, İzmit, Kars, Kastamonu, Ordu, Rize, Trabzon (Jäch, 1992a).

Remark: First record for the provinces of Bilecik and Bursa.

***Hydraena (s.str.) falcata*** Jäch, 1992

Materials examined: 09.08.2006, 2 male, 4 female (32); 13.08.2005, 1 male (34); 27.08.2004, 1 male (36); 04.07.2004, 4 male, 2 female (40); 24.07.2004, 2 male, 13.08.2005, 6 male, 01.08.2006, 3 male (50); 24.07.2004, 1 male, 4 female (51).

Distribution in the world: Turkey (Jäch, 2004).

Distribution in Turkey: Kastamonu, Sinop (Jäch, 1992c).

Remark: First record for the provinces of Bilecik and Bursa.

***Hydraena (s.str.) grandis*** Reitter, 1885

Materials examined: 08.07.2004, 1 male (59).

Distribution in the world: Bosnia-Herzegovina, Bulgaria, Greece, Macedonia, Romania, Turkey, Yugoslavia (Jäch, 2004).

Distribution in Turkey: Artvin, Erzurum (Kasapoğlu, 2002); Diyarbakır (Jäch, 1988b).

Remark: First record for the province of Çanakkale.

***Hydraena (s.str.) lapissectilis*** Jäch, 1992

Materials examined: 05.08.2006, 1 male, 1 female (28); 06.07.2004, 1 male, 2 female (48); 08.07.2004, 1 male, 2 female (59); 04.08.2006, 1 male, 1 female (76).

Distribution in the world: Turkey (Jäch, 2004).

Distribution in Turkey: Muğla (Jäch, 1992a).

Remark: First record for the provinces of Balıkesir, Bursa and Çanakkale.

***Hydraena (s.str.) prusensis*** Jäch, 1992

Materials examined: 24.07.2004, 3 male, 13.08.2005, 4 male, 3 female, 01.08.2006, 3 male (50).

Distribution in the world: Turkey (Jäch, 2004).

Distribution in Turkey: Bursa (Jäch, 1992a).

***Hydraena (s.str.) helena*** d'Orchymont, 1929

Materials examined: 08.07.2005, 1 male (15); 03.07.2004, 1 male, 2 female (30); 09.08.2006, 22 male, 37 female (32); 30.07.2004, 5 male, 14 female, 13.08.2005, 7 male, 10 female (34); 27.08.2004, 4 male, 7female (35); 27.08.2004, 6 male, 2 female (36); 13.08.2005, 10 male, 29 female (37); 13.08.2005, 1 male (38); 09.08.2006, 8 male, 9 female (39); 05.07.2005, 1 male, 2 female (41); 05.07.2005, 22 male, 25 female, 01.08.2006, 5 male, 12 female (42); 05.07.2004, 2 male, 1 female (43); 05.07.2004, 2 male (44); 06.07.2004, 7 male, 16 female, 06.07.2005, 1 male, 2 female (48); 02.08.2006, 1 male, 2 female (49); 13.08.2005, 1 male, 3 female (50); 03.08.2006, 1 male (59); 08.07.2004, 1 male (60); 24.08.2004, 3 male (65); 04.08.2006, 3 male, (74); 21.08.2004, 2 male, 09.08.2006, 1 male (77).

Distribution in the world: Bulgaria, Greece, Macedonia, Turkey, Yugoslavia (Serbia, Montenegro) (Jäch, 2004).

Distribution in Turkey: Antakya, Bitlis, Çanakkale, Diyarbakır (Jach, 1988a; 1988b); Artvin, Erzurum (Kasapoğlu, 2002).

Remark: First record for the provinces of Balıkesir, Bilecik, Bursa and İzmit.

***Hydraena (s.str.) grata*** d'Orchymont, 1944

Materials examined: 09.08.2006, 3 male (32); 30.07.2004, 5 male, 3 female (33); 30.07.2004, 9 male; 13.08.2005, 6 male (34); 13.08.2005, 4 male, 2 female (37);

09.08.2006, 2 male, 3 female (39); 05.07.2004, 1 male; 05.07.2005, 3 male, 6 female (42); 13.08.2005, 2 male, 2 female (50); 08.07.2004, 1 male (58).

Distribution in the world: Greece, Turkey (Jäch, 2004).

Distribution in Turkey: İstanbul, İzmir, Manisa (d'Orchymont A., 1944).

Remark: First record for the provinces of Bilecik, Bursa and Çanakkale.

***Hydraena (s.str.) anatolica*** Janssens, 1963

Materials examined: 30.07.2004, 1 male, 2 female (34).

Distribution in the world: Azerbaijan, Turkey (Jäch, 2004).

Distribution in Turkey: Artvin (Kasapoğlu, 2002); Bitlis, Bolu, Erzincan, Erzurum, Gümüşhane, Hakkari, İstanbul, Kars (Jach, 1995).

Remark: First record for the province of Bilecik.

***Hydraena (s.str.) plastica*** d'Orchymont, 1943

Materials examined: 24.07.2004, 1 male, 01.08.2006, 1 male (50).

Distribution in the world: Turkey (Jäch, 2004).

Distribution in Turkey: Bursa (Jäch, 1992a).

***Hydraena (s.str.) paganettii*** Ganglbauer, 1901

Materials examined: 09.07.2005, 1 male, 2 female (16), 15.08.2006, 1 male, 1 female (55), 21.08.2004, 7 male, 11 female (77).

Distribution in the world: Austria, Azerbaijan, Bosnia Herzegovina, Croatia, Czech Republic, Greece, Hungary, Israel, Italy, Lebanon, Macedonia, Romania, Slovakia, Turkey, Yugoslavia (Serbia, Montenegro) (Jäch, 2004).

Distribution in Turkey: Erzurum (Kasapoğlu, 2002); Afyon, Mersin (Jäch, 1988a).

Remark: First record for the provinces of Balıkesir, Bursa and İzmit.

## CONCLUSION AND DISCUSSION

A total of 5194 specimens belonging to 3 genera of Hydraenidae family were determined during the present study. The most abundant species were *L. perparvulus* (40.2%), *O. lividipennis* (10.8%), *O. foveolatus* (7.3%), *O. pusillus* (6.5%) and *H. helena* (5.6%). Sample numbers of these species form 70.4% of total samples (Figure 2).

This study is hoped to contribute the information about the Hydraenidae fauna of Turkey.

It is assumed that the Hydraenidae species might have wider distribution areas because of South Marmara Region (Turkey) is important part of migration way between Europe and Anatolia since glacial age.

The Hydraenidae species which is new record for the provinces of South Marmara Region (Turkey) are given in table 2.

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Table 1. Numbers for the map refer to sampling sites listed in Figure 1

Locality	Provinces	Exact locality, types of water sources	Coordinates	Altitudes
1	Balıkesir	Susurluk-Balıkesir road 4.km.	N: 39.53.826 E: 028.09.603	46 m
2	Balıkesir	Balıkesir-Kepsut road 5.km, Üzümcü stream	N: 39.40.988 E: 027.57.745	116 m
3	Balıkesir	Kepsut, Üzümcü stream	N: 39.41.076 E: 028.08.895	86 m
4	Balıkesir	Balıkesir-Bigadiç road, 5km to Bigadiç, Simav stream	N: 39.24.893 E: 028.06.028	86 m
5	Balıkesir	Gölcük-Balıkesir road, Üzümcü stream	N: 39.21.028 E: 027.57.996	271 m
6	Balıkesir	Gölcük-Balıkesir road, 20km to Balıkesir, Pamukçu village	N: 39.27.360 E: 027.54.819	186 m
7	Balıkesir	Gönen-Manyas road, Kayacaköy, Koca stream	N: 40.04.419 E: 027.57.866	32 m
8	Balıkesir	Gönen-Manyas road 5.km, Çarpeş bridge	N: 40.06.189 E: 027.41.078	46 m
9	Balıkesir	Karacabey-Bandırma road 3. km, Karadere bridge	N: 40.13.633 E: 028.19.900	14 m
10	Balıkesir	Karacabey-Bandırma road 7. km, Ağadeğirmeni bridge	N: 40.14.260 E: 028.17.675	23 m
11	Balıkesir	Bandırma-Gönen road, 10 km to Gönen, Çerpeş stream	N: 40.09.144 E: 027.41.136	41 m
12	Balıkesir	Gönen-Manyas road 15. km, Şevketiye village	N: 40.06.555 E: 027.42.848	74 m
13	Balıkesir	Gönen-Biga road 10. km, Sarıdere-1 bridge	N: 40.11.998 E: 027.36.433	34 m
14	Balıkesir	Balıkesir-Bigadiç road, 7 km to Bigadiç, Simav stream	N:39.24.785 E: 028.06.030	85 m
15	Balıkesir	Gölcük, Üzümcü stream	N: 39.13.443 E: 28.07.413	249 m
16	Balıkesir	Kepsut-Harmançık road 6. km, Değirmençay bridge	N: 39.39.082 E: 028.12.748	164 m
17	Balıkesir	Dursunbey-Harmançık road 6. km, Balat stream	N: 39.36.990 E: 028.39.157	607 m
18	Balıkesir	Dursunbey-Harmançık road 25. km, Emet stream	N: 39.37.565 E: 028.47.644	320 m
19	Balıkesir	Dursunbey-Harmançık road 40. km, Emet stream	N: 39.37.300 E: 028.56.166	347 m
20	Balıkesir	Susurluk-Manyas road, Çamlıköy bridge	N: 40.03.335 E: 028.03.435	27 m
21	Balıkesir	Susurluk-Manyas road, Tellibağ village	N: 40.03.576 E: 028.02.137	26 m
22	Balıkesir	Gönen-Balya road, 10 km to Balya, Koca stream	N: 39.46.207 E: 027.36.137	130 m
23	Balıkesir	Bandırma-Manyas road, Kuş lake	N: 40.07.368 E: 028.03.397	16 m
24	Balıkesir	Gönen-Biga road 8. km, Keçidere bridge	N: 40.11.240 E: 027.36.596	31 m
25	Balıkesir	Havran-Balıkesir road 10. km, Gelinderesi-8 bridge	N: 39.34.080 E: 027.14.142	324 m
26	Balıkesir	Havran-Balıkesir road 30. km, Dedeler bridge	N: 39.36.143 E: 027.31.539	187 m

27	Balıkesir	Balıkesir-Harmançık road, 28 km to Harmançık, Emet stream	N: 39.37.146 E: 028.54.040	192 m
28	Balıkesir	Dursunbey-Harmançık road, 5 km to Harmançık, Emet stream	N: 39.40.288 E: 029.06.171	624 m
29	Bilecik	Bozüyük-Bilecik road 12 km. Karaköy	N: 39.56.547 E: 030.01.299	219 m
30	Bilecik	Bozüyük-Bilecik road 22. km. Karasu stream	N: 40.03.831 E: 030.00.922	202 m
31	Bilecik	Bilecik-Osmaneli road, 10. km from Osmaneli, Sakarya stream	N: 40.23.443 E: 029.59.299	106 m
32	Bilecik	Bozüyük-Bursa road, Aksutekke village, Mezit stream	N: 39.54.291 E: 029.49.102	793 m
33	Bilecik	Bozüyük-Bursa road 18. km, Mezit stream	N: 39.54.407 E: 029.48.485	791 m
34	Bilecik	Bozüyük-Bursa road 20. km, Mezit stream	N: 39.55.122 E: 029.46.361	500 m
35	Bilecik	İnegöl-Eskişehir road, Mezit stream, Mezit-2 bridge	N: 39.59.277 E: 029.39.078	680 m
36	Bilecik	İnegöl-Eskişehir road, Mezit stream, Mezit-11 bridge	N: 39.55.111 E: 029.46.374	735 m
37	Bilecik	Bozüyük-Bursa road 30. km, Mezit stream	N: 39.56.115 E: 029.43.017	540 m
38	Bilecik	Bozüyük-Bursa road 35. km, Mezit stream	N: 39.59.187 E: 029.39.139	393 m
39	Bilecik	Bozüyük-Bursa road 25. km, Mezit stream	N: 39.55.410 E: 029.44.181	622 m
40	Bursa	Uludağ-Sarıalan area	N: 40.07.830 E: 029.06.858	1636 m
41	Bursa	Bursa- Keles road, Misi village, Misi stream	N: 40.10.776 E: 028.58.422	156 m
42	Bursa	Misi village, Misi dam	N: 40.08.319 E: 028.56.657	490 m
43	Bursa	Bursa-Keles road, 30 km to Keles, Orhaneli stream	N: 40.04.886 E: 029.00.105	350 m
44	Bursa	Bursa-Orhaneli road, Orhaneli stream	N: 40.05.211 E: 028.55.994	361 m
45	Bursa	Bursa-Karacabey road, 10 km to Karacabey, Simav stream	N: 40.12.854 E: 028.28.766	16 m
46	Bursa	Bursa-Karacabey road, Uluabat bridge	N: 40.12.851 E: 028.26.768	19 m
47	Bursa	Bursa-Karacabey, Canbolu stream	N: 40.11.749 E: 028.21.182	13 m
48	Bursa	Mustafakemalpaşa-Çaltılıbük road, Hacıali stream	N: 39.58.293 E: 028.31.111	45 m
49	Bursa	Mustafakemalpaşa-Çaltılıbük road, Aliova stream	N: 39.58.289 E: 028.31.119	43 m
50	Bursa	Kestel, Seyitabat fall	N: 40.08.540 E: 029.13.348	556 m
51	Bursa	Seyitabat fall-Bursa road 5. km	N:40.08.510, E: 029. 13. 341	542 m
52	Bursa	Orhaneli-Bursa road, Kocasu bridge, Orhaneli stream	N: 39.55.949 E: 028.58.292	362 m
53	Bursa	İnegöl-Yenişehir road 10. km, Hamzabey bridge	N: 40.08.128 E: 029.31.015	270 m
54	Bursa	İnegöl-Oylat road, Gündüzlü bridge	N: 39.58.599 E: 029.36.416	361 m
55	Bursa	İnegöl-Domaniç road 11. km, Göksu stream	N: 39.58.577 E: 029.36.444	360 m

56	Çanakkale	Balya-Yenice road 38. km, Gönen stream	N: 39.50.053 E: 027.19.890	179 m
57	Çanakkale	Yenice-Çan road, Çan stream	N: 40.01.528 E: 027.03.120	73 m
58	Çanakkale	Çan-Bayramiç road, 10 km to Bayramiç	N: 39.52.725 E: 026.40.577	152 m
59	Çanakkale	Bayramiç-Yiğitler road, Küçükmandereres stream	N: 39.50.095 E: 026.36.336	75 m
60	Çanakkale	Ayvacık-Behramkale road, Tuzla stream	N: 39.29.959 E: 026.19.964	109 m
61	Çanakkale	Çanakkale-Çan road 10. km, Atıkhisar dam	N: 40.07.778 E: 026.30.642	54 m
62	Çanakkale	Biga-Gönen road, Biga stream	N: 40.07.784 E: 026.30.644	54 m
63	Çanakkale	Biga-Gönen road, Gönen stream,	N: 40.06.671 E: 027.38.828	51 m
64	Çanakkale	Balya-Yenice road, Müstecap stream	N: 39.45.080 E: 027.31.541	209 m
65	Çanakkale	Çan-Biga road 15. km, Çan stream	N: 40.07.055 E: 027.11.256	51 m
66	Çanakkale	Gündoğdu-Beyçayı road, Gündoğdu bridge	N: 40.15.768 E: 027.05.293	38 m
67	Çanakkale	Çanakkale-Çan road, Serçeler village, Çanakkale stream	N: 40.03.373 E: 026.35.628	105 m
68	Çanakkale	Bayramiç-Ezine road, Harharik bridge	N: 39.46.368 E: 026.25.604	50 m
69	Çanakkale	Ezine-Ayvacık road, Bahçeli bridge	N: 39.41.346 E: 026.23.455	91 m
70	Çanakkale	Ayvacık-Behramkale road, Avçay bridge	N: 39.35.224 E: 026.23.814	263 m
71	Çanakkale	Biga-Bakacak road 10. km, Biga stream	N: 40.12.493 E: 027.07.356	27 m
72	Çanakkale	Çanakkale-Çan road, Şerbetli bridge	N: 40.00.462 E: 026.51.454	129 m
73	Çanakkale	Çanakkale-Çan road, Ahlatlıburun bridge	N: 40.00.430 E: 026.52.127	135 m
74	Çanakkale	Bayramiç-Evciler road 10. km, Küçükmandereres stream	N: 39.46.320 E: 026.41.307	160 m
75	Çanakkale	Bayramiç-Evciler road, 30. km Küçükmandereres stream	N: 39.47.213 E: 026.43.034	162 m
76	Çanakkale	Evciler-Ayazma road, Kaz mountain	N: 39.45.134 E: 026.48.360	340 m
77	Kocaeli	Karamürsel-İzmit road 20. km, Yalakdere village	N: 40.34.599 E: 029.31.423	121 m
78	Sakarya	Bilecik-Adapazarı road, Derbent village, Sapanca lake	N: 40.42.150 E: 030.18.556	34 m

Table 2. The Hydraenidae species which is new record for the provinces of South Marmara Region (Turkey)

Species	Balıkesir	Bilecik	Bursa	Çanakkale	Kocaeli	Sakarya
<i>Limnebius claviger</i>		X	X	X		
<i>Limnebius stagnalis</i>		X				
<i>Limnebius rubropiceus</i>		X				
<i>Limnebius corfidius</i>		X				
<i>Limnebius atomus</i>	X					X
<i>Limnebius myrmidon</i>		X				
<i>Limnebius perparvulus</i>		X	X		X	
<i>Ochthebius metallescens</i>		X				
<i>Ochthebius difficilis</i>	X			X		
<i>Ochthebius fausti</i>	X		X	X		
<i>Ochthebius foveolatus</i>		X	X	X		
<i>Ochthebius inconspicuus</i>	X			X		
<i>Ochthebius lividipennis</i>	X		X	X		
<i>Ochthebius mediterraneus</i>			X			
<i>Ochthebius meridionalis</i>	X		X			
<i>Ochthebius ragusae</i>	X					
<i>Ochthebius uskubensis</i>	X		X			
<i>Ochthebius pusillus</i>		X	X	X		X
<i>Ochthebius minimus</i>	X	X	X			
<i>Ochthebius striatus</i>			X			
<i>Hydraena bodemeyeri</i>		X			X	
<i>Hydraena ancyrae</i>		X	X			
<i>Hydraena falcata</i>		X	X			
<i>Hydraena grandis</i>				X		
<i>Hydraena lapissectilis</i>	X		X	X		
<i>Hydraena helena</i>	X	X	X		X	
<i>Hydraena grata</i>		X	X	X		
<i>Hydraena anatolica</i>		X				
<i>Hydraena paganettii</i>	X		X		X	

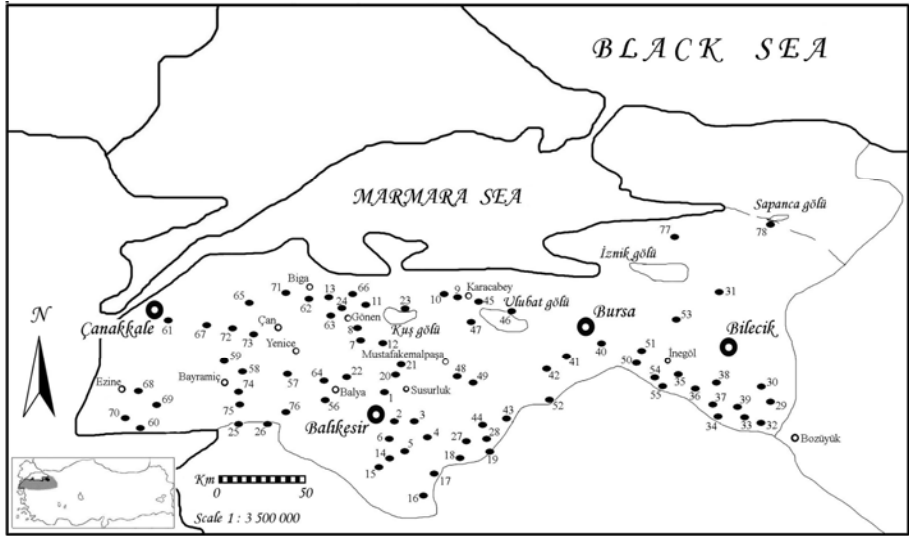


Figure 1. Localities studied in South Marmara Region (Turkey)

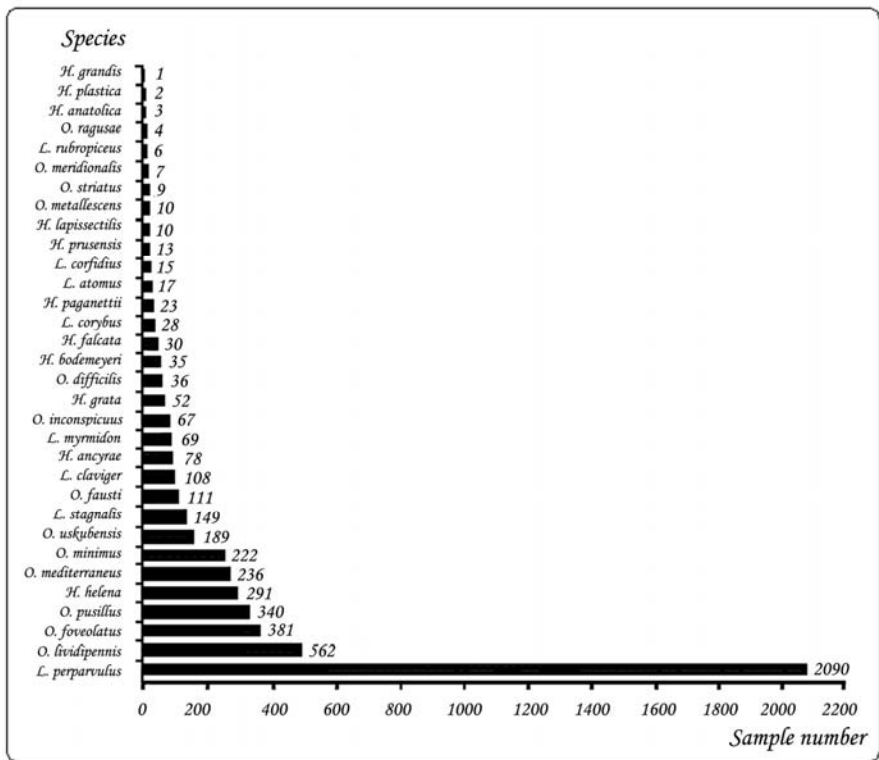


Figure 2. Number of specimens of Hydraenidae species sampled in 2004-2006.