

Checklist of Heteroceridae (Coleoptera) of Turkey

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Abstract.- The Heteroceridae (Coleoptera) specimens that were collected from Turkey by various researchers in various museums and private collections have been evaluated. The first precise locality data of 7 Heteroceridae species were given from Turkey with this study (*Augyles flavidus* (P. Rossi, 1794), *Augyles hispidulus* (Kiesenwetter, 1843), *Augyles maritimus* (Guérin-Méneville, 1844), *Augyles marmota* (Kiesenwetter, 1850), *Augyles turanicus* (Reitter, 1887), *Heterocerus fossor* Kiesenwetter, 1843, *Heterocerus holosericeus* Rosenhauer, 1856). And also new locality data belongs to 5 Heteroceridae species were presented (*Augyles pruinosus* (Kiesenwetter, 1851), *Heterocerus fenestratus* (Thunberg, 1784), *Heterocerus flexuosus* Stephens, 1828, *Heterocerus fuscus* Kiesenwetter, 1843, *Heterocerus obsoletus* Curtis, 1828). This study is the first checklist about Heterocerids from Turkey.

Key words: Heteroceridae, Coleoptera, mud-loving beetles.

INTRODUCTION

Heteroceridae or variegated mud-loving beetles are widespread, occurring on every continent except Antarctica (King and Lago, 2012). Ninety five species belong to three genera (*Augyles* Schiödt, 1866; *Heterocerus* Fabricius, 1792; *Micilus* Mulsant and Rey, 1872) are known from The Palaearctic Region (Mascagni, 2006). *Augyles pruinosus* (Kiesenwetter, 1851), *Heterocerus fenestratus* (Thunberg, 1784), *Heterocerus fossor* Kiesenwetter, 1843 and *Heterocerus holosericeus* Rosenhauer, 1856 were reported first from Turkey by Mascagni (1991), while *Heterocerus flexuosus* Stephens, 1828 and *Heterocerus obsoletus* Curtis, 1828 were reported from Turkey by Mascagni and Gardini (2005).

This study is the first checklist about Heterocerids from Turkey. A total of 286 specimen belonging to 13 Heteroceridae species were listed from Turkey. Distributional maps of Heteroceridae of Turkey are presented in Figures 1 and 2. The purpose of this study is to give first precise locality data of 7 Heteroceridae species that were not published until today. It also contains new collecting data of 5 Heteroceridae spp.

MATERIALS AND METHODS

The specimens were collected from different freshwater habitats of Turkey with sieves having 3,15x1 mm mesh size. The beetles were killed with ethyl alcohol (96%) and stored in small bottles until identification. Specimens were cleaned with brush before identification. Aedeagophore of collected specimens were dissected under a stereo microscope in the laboratory. The studying materials are deposited in the following museums and private collections; CEZ, Coll. E. Ezer, Zlin, Czech Republic; CMS, Coll. A. Mascagni, Scandicci (Firenze), Italy; CSU, Coll. S. Skalický, Ustín ad Orlicí, Czech Republic; CTA, Coll. G. E. Taşar, Adiyaman, Turkey; CVZ, Coll. J. Vávra, Zlin, Czech Republic; MCNV, Museo Civico di Storia Naturale di Venezia, Italy; MHNG, Muséum d'Histoire Naturelle, Genève, Switzerland; MSNB, Museo di Scienze Naturali "E. Caffi", Bergamo, Italy; MSNG, Museo Civico di Storia Naturale "G. Doria", Genova, Italy; MSNV, Museo Civico di Storia Naturale di Verona, Italy; MZUR, Museo di Zoologia dell'Università di Roma, Italy; NME, Naturkundemuseum Erfurt, Germany; NMW, Naturhistorisches Museum Wien, Austria; and SMNS, Swedish Museum of Natural History, Stockholm, Sweden;

RESULTS

Order Coleoptera Linnaeus, 1758

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Superfamily Byrrhoidea Latreille, 1804
 Family Heteroceridae MacLeay, 1825
 Genus *AUGYLES* Schiödte, 1866

1. *Augyles flavidus* (P. Rossi, 1794)

Synonyms

Heterocerus albipennis Kuwert, 1890;
Heterocerus campestris Motschulsky, 1854;
Heterocerus flavescens Schaufuss, 1861;
Heterocerus minimus Kiesenwetter, 1843;
Heterocerus minutes Kiesenwetter, 1835;
Heterocerus pallescens Schaufuss, 1861

Material examined

Antalya: Alanya, Türkler, 05.IV.1996, leg. A. Kopetz, 2 ex. (NME); 05.IV.1996, leg. A. Weigel, 1 ex. (NME); Erzurum: Pazaryolu, 01.VI.1989, leg. Schöumann and Schillhammer, Jäch, 10 ex. (NMW); Mardin: 30.V.1987, leg. M. Jäch, 1 ex. (NMW); Şırnak: Cizre, 30.V.1987, leg. Schöumann and Schillhammer, 1 ex. (NMW).

Remark

These localities were given for the first time from Turkey.

Chorotype

Centralasiatic-Europeo-Mediterranean.

2. *Augyles hispidulus* (Kiesenwetter, 1843)

Material examined

Çanakkale: Ezine, 17.V.1991, leg. Schöumann and Schillhammer, 1 ex. (NMW); Edirne: (date is not clear).VI.1894, leg. Flach, 1 ex. (CSU).

Remark

These localities were given for the first time from Turkey.

Chorotype

Turano-European.

3. *Augyles maritimus* (Guérin-Méneville, 1844)

Synonyms

Heterocerus basalis Mamitza, 1929;
Heterocerus britannicus Kuwert, 1890; *Heterocerus*

burchanensis Schneider, 1896; *Heterocerus nanus* Gene, 1836

Material examined

Erzurum: 01.VI.1989, leg. M. Jäch, 2 ex. (NMW), Olur, 09.VI.1989, leg. Schöumann and Schillhammer, 1 ex. (NMW).

Remark

These localities were given for the first time from Turkey.

Chorotype

European.

4. *Augyles marmota* (Kiesenwetter, 1850)

Synonyms

Heterocerus funebris Schaufuss, 1863;
Heterocerus maritimus Kuwert, 1890; *Heterocerus unicolor* Dufour, 1851

Material examined

Çankırı: Çerkeş, (date is not clear).VIII.1987, leg. Werner, 1 ex. (NMW); Kayseri: İncesu, 16.VIII.1980, leg. Bianchi, Moretti and Valle, 2 ex. (MSNB).

Remark

These localities were given for the first time from Turkey.

Chorotype

Centralasiatic-Europeo-Mediterranean.

5. *Augyles obliteratedus* (Kiesenwetter, 1843)

Distribution in Turkey

There is no detailed locality data from Turkey (Mascagni, 2006, 2014).

Chorotype

Centralasiatic-European.

6. *Augyles pruinosus* (Kiesenwetter, 1851)

Material examined

Adana: Yumurtalık, Deveciüşağı, 25.V.1993, leg. Šárovec, 1 ex. (CSU); Ankara: 28.V.1961, leg.



Fig. 1. Provinces of Turkey

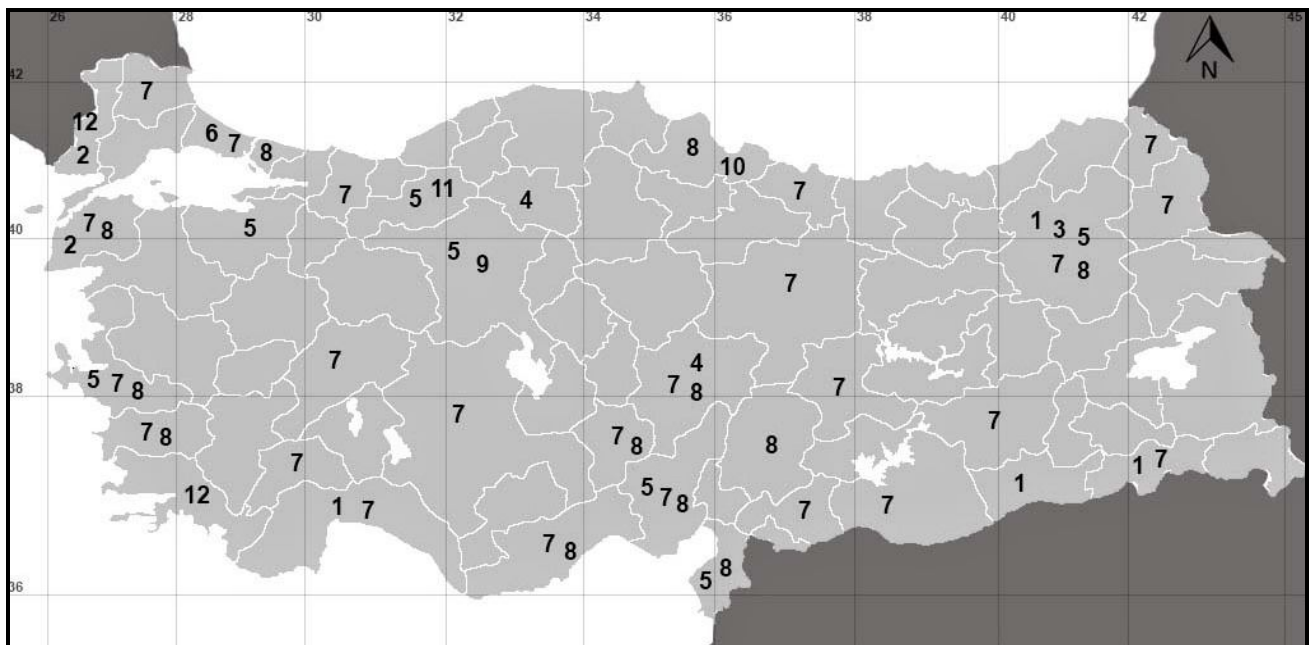


Fig. 2. Distributinal map of Heteroceridae of Turkey. 1, *Augyles flavidus*; 2, *A. hispidulus*; 3, *A. maritimus*; 4, *A. marmota*; 5, *A. purinosus*; 6, *A. turanicus*; 7, *Heterocerus fenestratus*; 8, *H. flexuosus*; 9, *H. fossor*; 10, *H. fuscus*; 11, *H. holosericeus*; 12, *H. obsoletus*.

G. Cadamuro, 2 ex. (MCNV); 80 km from Ankara, 28.V.1961, leg. A. Giordani Soika, 1 ex. (MCNV), river near Beypazar, 28.V.1961, leg. A. Perissinotto,

2 ex. (MSNG); Bolu: Ömerler, 800 m., 21.V.1976, leg. Besuchet and Löbl, 2 ex. (MHNG); Bursa: Uludağ, 31.VII.1988, leg. M. Jäch, 1 ex. (NMW);

Erzurum: Tortum-Narman, 09.VI.1989, leg. Schöumann and Schillhammer, 5 ex. (NMW); Hatay: Karaçay, Asi Nehri, 07.V.2005, leg. J. Vávra, 2 ex. (CEZ); İzmir: 13.VII.1975, leg. Colonnelli and Sacco, 8 ex. (MZUR), Bahçeliköy, 16.VII.1969, leg. C. Besuchet, 3 ex. (MHNG).

Distribution in Turkey

Ankara (Mascagni and Giardini, 2005).

Chorotype

European.

7. *Augyles turanicus* (Reitter, 1887)

Synonyms

Heterocerus ahngeri J. R. Sahlberg, 1900

Material examined

İstanbul: Rumelihisarı, 24.V.1967, leg. Radda, Aspöck and Pretzmann, 1 ex. (NMW).

Remark

This locality was given for the first time from Turkey.

Chorotype

Turano-Mediterranean.

Genus *HETERO CERUS* Fabricius, 1792

1. *Heterocerus fenestratus* (Thunberg, 1784)

Synonyms

Heterocerus asiaticus Nomura, 1958; *Heterocerus beckeri* Kuwert, 1892; *Heterocerus completus* Hatch, 1965; *Heterocerus confinis* Rey, 1890; *Heterocerus corsicus* Kuwert, 1890; *Heterocerus croaticus* Kuwert, 1890; *Heterocerus laevigatus* Panzer, 1794; *Heterocerus lanatus* Rey, 1890; *Heterocerus latus* Grouvelle, 1915; *Heterocerus marshami* Stephens, 1829; *Heterocerus moelleri* Varenus, 1891; *Heterocerus obscurus* Rey, 1890; *Heterocerus pusillus* Walzl, 1839; *Heterocerus multimaculatus* Motschulsky, 1854; *Heterocerus siculus* Kuwert, 1890; *Heterocerus tonkinensis* Grouvelle, 1896; *Heterocerus tristis* Mannerheim, 1853

Material examined

Adana: 12.VIII.1966, leg. V. Sbordonni, 2 ex. (MZUR); 3 ex. (CSU), Karatas, 09.VI.1991, leg. Vanata, 1 ex. (CSU), Pozanti, Olukkoyağı, 20.V.2005, leg. J. Vávra, 1 ex. (CVZ), Yumurtalık, Deveciüşağı, 25.V.1993, leg. M. Šárovec, 8 ex. (CSU); Adapazarı: Yeniçağa, 1000 m., 01.VIII.1990, leg. A. Weigel, 5 ex. (NME); Afyon: Lake Eber, 1000 m., 26.IV.1982, leg. G. Dellacasa, 2 ex. (MSNG); Antalya: 25 km N from Aksu, 09.V.1978, leg. Besuchet and Löbl, 1 ex. (MHNG), Side, 25.VIII.1987, leg. T.-E. Leiler, 2 ex. (SMNS); Ardahan: 06.VI.1989, leg. Schöumann and Schillhammer, 7 ex. (NMW); Aydın: Milet, Menderes delta, 29.V.1991, leg. Schöumann and Schillhammer, 1 ex. (NMW); 21 km SE from Burdur: 1200 m., 05.V.1975, leg. Besuchet and Löbl, 1 ex. (MHNG), Çerçin, 870 m., 06.V.1975, leg. Besuchet and Löbl, 4 ex. (MHNG); Çanakkale: Ezine, 17.V.1991, leg. Schöumann and Schillhammer, 11 ex. (NMW); Diyarbakır: Karaçadağ, 28.V.1987, leg. M. Jäch, 3 ex. (NMW); Erzurum: Pazaryolu, 01.VI.1989, leg. Schöumann and Schillhammer, 1 ex. (NMW); 80 km W from İstanbul, 30.VII. (year is not clear), leg. M. Jäch, 1 ex. (NMW); İstanbul: Kilyos, beach beginning vegetation, 29.VI.1962, leg. A. Giordani Soika, 1 ex. (MCNV); İzmir: Seferihisar, 22.VII.1990, leg. Schödl, 1 ex. (NMW); Gaziantep: Fevzipaşa, 03.VI.1981, leg. G. Sama, 1 ex. (CMS), İslahiye, 3/4.VI.1981, leg. G. Sama, 1 ex. (MZUR); Kars: Digor, 1650 m., 15.VI.1986, leg. Besuchet, Löbl and Burckhardt, 1 ex. (MHNG), Lake Çıldır, 07.VI.1989, leg. Schöumann and Schillhammer, 5 ex. (NMW), Lake Kuyucuk, 07.VI.1989, leg. M. Jäch, 3 ex. (NMW); Kayseri: İncesu, 16.VIII.1980, leg. Bianchi, Moretti and Valle, 23 ex. (MSNB); Konya: Beyşehir, leg. Petrovitz and Ressi, 1 ex. (NMW), Lake Beyşehir, 1000 m., 6/7.VIII.1990, leg. A. Weigel, 2 ex. (NME); 20 km from Kırklareli, 28.VII.1988, leg. M. Jäch, 1 ex. (NMW); Malatya: 06.VI.1971, leg. B. and C. Argano, 1 ex. (MZUR), Sürgü, 37°58'37"N / 38°02'32"E, 1372 m., 04.VI.2013, leg. G. Erhan Taşar, 9 ex. (CTA); Mersin: Çamlıyayla, 1300 m., 06.VI.1984, leg. G. Sama, 5 ex. (MSNV), Susanoğlu, 28/29.V.1981, leg. G. Sama, 1 ex. (MZUR); Niğde: 1250 m., leg. Petrovitz and Ressi, 1 ex. (NMW), Orhaniye,

Çamardı, Ala Dağlar, 1800-2200 m., 19.V.2005, leg. J. Vávra, 1 ex. (CVZ); Sivas: Koyulhisar, 10.VI.1991, leg. Skoupy, 7 ex. (CSU); Ordu: Mesudiye, 28.V.1989, leg. M. Jäch, 5 ex. (NMW); Şanlıurfa: Bozova, 37°25'23"N / 38°23'59"E, 525 m., 21.IX.2013, leg. G. Erhan Taşar, 7 ex. (CTA); Şırnak: Cizre, 30.V.1987, leg. Schöumann and Schillhammer, 2 ex. (NMW).

Distribution in Turkey

İstanbul, Kırklareli (Mascagni and Giardini, 2005).

Chorotype

Holarctic.

2. *Heterocerus flexuosus* Stephens, 1828

Synonyms

Heterocerus apfelbecki Kuwert, 1890; *Heterocerus arenarius* Kiesenwetter, 1851; *Heterocerus corsicus* Rey, 1890; *Heterocerus damryi* Kuwert, 1890; *Heterocerus dentifasciatus* Kuwert, 1890; *Heterocerus fausti* Reitter, 1880; *Heterocerus femoralis* Krynicki, 1832; *Heterocerus hamifer* Gene, 1836; *Heterocerus heydeni* Kuwert, 1890; *Heterocerus maculosus* Fairmaire, 1868; *Heterocerus reyi* Heyden, 1906; *Heterocerus senegalensis* Fairmaire, 1894; *Heterocerus syrticus* Peyerimhoff, 1924

Material examined

Adana: Karataş, 09.VI.1991, leg. Janata, 6 ex. (CSU), Yumurtalık, Deveciusağı, 25.V.1993, leg. M. Šárovec, 16 ex. (CSU); Aydın: Milet, Menderes delta, 29.V.1991, leg. Schöumann, Schillhammer and Schödl, 7 ex. (NMW); Çanakkale: Babadere, 21.VII.1990, leg. Schödl, 1 ex. (NMW); Erzurum: Pazaryolu, 01.VI.1989, leg. Schöumann, Schillhammer and Jäch, 2 ex. (NMW); Hatay: Samandağı, leg. Petrovitz and Ressi, 9 ex. (NMW); İstanbul: RumeliHisarı, 24.V.1967, leg. Radda, Aspöck and Pretzmann, 2 ex. (NMW); İzmir: Efes, 08.V.1975, leg. Besuchet and Löbl, 1 ex. (MHNG); Kahramanmaraş: leg. Petrovitz and Ressi, 1 ex. (NMW); Kayseri: İncesu, 16.VIII.1980, leg. Bianchi, Moretti and Valle, 38 ex. (MSNB); Mersin: Silifke, 1990, leg. Schödl, 1 ex. (NMW); Niğde: 1250 m., leg. Petrovitz and Ressi, 8 ex. (NMW);

Samsun: Terme, 27.V.1989, leg. M. Jäch, 4 ex. (NMW).

Distribution in Turkey

Kahramanmaraş (Mascagni and Giardini, 2005).

Chorotype

Palaeartic.

3. *Heterocerus fossor* Kiesenwetter, 1843

Synonyms

Heterocerus bifasciatus Küster, 1849; *Heterocerus cincticollis* Rey, 1890; *Heterocerus rectus* G. W. Waterhouse, 1859

Material examined

Ankara: 28.V.1961, leg. G. Cadamuro, 1 ex. (MCNV).

Remark

This locality was given for the first time from Turkey.

Chorotype

Asiatic-European.

4. *Heterocerus fuscus* Kiesenwetter, 1843

Synonyms

Heterocerus oblongulus Kuwert, 1890; *Heterocerus opacus* Rey, 1890; *Heterocerus pulchellus* Kuwert, 1890; *Heterocerus similis* Kuwert, 1890

Material examined

Samsun: Çarşamba, 27.V.1989, leg. M. Jäch, 1 ex. (NMW).

Remark

This locality was given for the first time from Turkey.

Chorotype

Asiatic-European.

5. *Heterocerus holosericeus* Rosenhauer, 1856

Synonyms

Heterocerus fluviatilis A. Fiori, 1906;

Heterocerus lineatus Kuwert, 1890; *Heterocerus panormitanus* Kuwert, 1890; *Heterocerus pustulatus* Schilsky, 1890; *Heterocerus pustulatus* Schilsky 1892; *Heterocerus ragusae* Kuwert, 1890; *Heterocerus subfossor* A. Fiori, 1906; *Heterocerus villiger* A. Fiori, 1906

Material examined

Turkey, E. Ratti, 1 ex. (MCNV); Bolu: Lake Abant, 26.V.1967, leg. Aspöck and Radda, 1 ex. (NMW).

Distribution in Turkey

There is no detailed locality data from Turkey (Mascagni, 1991, Mascagni and Giardini, 2005).

Chorotype

Mediterranean.

6. *Heterocerus obsoletus* Curtis, 1828

Synonyms

Heterocerus quadrimaculatus Hochhuth, 1873

Material examined

Edirne: İpsala, 20.VIII.1967, leg. V. Sbordoni, 1 ex. (MZUR); Muğla: Fethiye, Dodurga, leg. Petrovitz, Ressi, 1 ex. (NMW).

Distribution in Turkey

Edirne (Mascagni and Giardini, 2005).

Chorotype

Asiatic-European.

DISCUSSION

The Heterocerids are poorly known from Turkey. There are a limited number of studies. The precise locality data of six Heteroceridae species have been given from Turkey by only two studies (Mascagni, 1991, Mascagni and Giardini, 2005) until now. In this checklist, 13 Heteroceridae species were listed from Turkey. The first precise locality data of seven Heteroceridae species that were not published until today, were given (*Augyles flavidus* (P. Rossi, 1794), *Augyles hispidulus*

(Kiesenwetter, 1843), *Augyles maritimus* (Guérin-Méneville, 1844), *Augyles marmota* (Kiesenwetter, 1850), *Augyles turanicus* (Reitter, 1887), *Heterocerus fossor* Kiesenwetter, 1843, *Heterocerus holosericeus* Rosenhauer, 1856). And new distributional data belongs to five Heteroceridae species were added (*Augyles pruinosus* (Kiesenwetter, 1851), *Heterocerus fenestratus* (Thunberg, 1784), *Heterocerus flexuosus* Stephens, 1828, *Heterocerus fuscus* Kiesenwetter, 1843, *Heterocerus obsoletus* Curtis, 1828). With this checklist, Turkish Heteroceridae fauna is better known. But more studies are needed to know the whole distributional data.

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