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Biodiversity and zoogeography of water beetles from the Kemaliye, Northern Turkey

(Coleoptera)

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Water beetles collected in 2006/2007 in the Kemaliye District (Erzincan Province, northern Turkey) are listed and their habitats described. Nine families, 29 genera, and 76 species are listed. Zoogeographic complexes and elements are determined for the unambiguously identified species. *Nebrioporus lanceolatus* (Walker, 1871) is reported for the first time from Turkey.

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Introduction

In this study, aquatic beetles of the families Gyrinidae, Haliplidae, Noteridae, Dytiscidae, Hydrochidae, Helophoridae, Hydrophilidae, Hydraenidae, and Dryopidae were sampled in the Kemaliye District (formerly Eğin) in eastern Anatolia in 2006 and 2007.

Kemaliye District comprises 1168 square kilometers. It is one of the nine districts of Erzincan Province in the north-eastern part of Anatolia (Fig. 1). Its capital city Kemaliye is an important cultural center located in the Karasu (Western Euphrates) Valley between Mount Munzur and the Sarıçicek Plateau.

The climate of Kemaliye deviates from most parts of north-eastern Anatolia. In Kemaliye, the summers are hot and the winters mild. Due to Keban Dam the climate is similar to that along the Black Sea coastline (Alı 2011).

Materials and methods

Samples were collected from various water bodies (cool streams and a lake) with a sieve, a ladle and a net having a mesh size of one millimetre. The specimens were preserved with 70 % alcohol, and in the laboratory they were cleaned off from clayey and muddy substances with a small paintbrush.

Data concerning the general zoogeographical distribution are taken mainly from Vigna Taglianti et al. (1999). The zoogeographical categories used and their abbreviations are as follows:

WS	Widely spread
E	European complex
M	Mediterranean complex
EN	Endemic or distributed from Balkan to Turanian
PAL	Palaearctic
W-PAL	W-Palaearctic
ASF	Asiatic-European
SIE	Siberian-European
TEM	Turanian-European-Mediterranean
TUE	Turanian-European
TUM	Turanian-Mediterranean

SWA	SW-Asian
EUR	European
MED	Mediterranean
ANAT	Anatolian endemic
ANCA	Anatolo-Caucasian
BALTUR	Balkano-Turanian
BALAN	Balkano-Anatolian
IRAN	Irano-Anatolian

dae, Hydrochidae, Helophoridae, Hydrophilidae, Hydraenidae, and Dryopidae collected in the Kemal-iye district (northern Turkey) are here recorded. The list of the species with their data is given below.

Species list

The list of localities is shown in Table 1. All specimens were collected by M. C. Darilmaz. Hydraenidae were identified by the second and third author, the remaining beetles were identified by the first author. Also, R. Angus (Helophoridae) and H. Fery (*Hydroporus*) have identified some specimens listed below.

Results

Totally 76 species belonging to 29 genera of the families Gyrinidae, Haliplidae, Noteridae, Dytisci-

Gyrinidae

Gyrinus distinctus Aubé, 1838

Material examined: K16, 4 ex. 14.09.2007.

Zoogeographical element: W-PAL

Gyrinus substriatus Stephens, 1828

Material examined: K1, 17 ex. 04.07.2006; K5, 3 ex. 06.07.2006; K7, 3 ex. 07.07.2006; K14, 33 ex. 06.07.2006, 4 ex. 03.07.2007; K16, 17 ex. 25.09.2006.

Zoogeographical element: EUR

Table 1. Location and characteristics of the sampling sites where water beetles were found.

Abbreviation	Sampling site	Coordinates	Altitude (m)	Habitat type
K1	Çevlik river	39°14'47"N 38°30'07"E	866	stream
K2	Barasar river (Station 1)	39°13'31"N 38°50'44"E	1283	stream
K3	Barasar river (Station 2)	39°12'20"N 38°44'51"E	1043	stream
K4	Anak river (Station 1)	39°06'52"N 38°33'30"E	1007	stream
K5	Anak river (Station 2)	39°08'46"N 38°27'27"E	1264	stream
K6	Sarıççek plateau (Subatan)	39°11'27"N 38°24'31"E	1867	spring, puddle
K7	Mazman spring	39°12'23"N 38°26'91"E	1658	spring
K8	Karasu river (Western Euphrates)	39°26'65"N 38°50'23"E	845	stream
K9	Kırgöz spring	39°14'76"N 38°31'88"E	1184	spring
K10	Teştin spring	39°19'23"N 38°28'34"E	1539	spring
K11	Ulaş spring	39°19'00"N 38°29'12"E	1353	spring
K12	Salihli river	39°21'58"N 38°27'28"E	1495	stream
K13	Hayrat spring	39°18'14"N 38°28'10"E	912	spring
K14	Rabat river	39°09'39"N 38°45'58"E	859	stream
K15	Dilli river	39°18'53"N 38°26'23"E	891	stream
K16	Venk river	39°18'46"N 38°33'40"E	1400	stream
K17	Çanakçı spring	39°07'58"N 38°22'55"E	1520	spring
K18	Kumlu yazı river	39°20'46"N 38°28'18"E	1360	stream
K19	Subaşı river	39°27'35"N 38°65'02"E	1290	stream
K20	Geşo river	39°26'21"N 38°24'42"E	1210	stream
K21	Doymuş hill	39°27'00"N 38°98'70"E	1720	puddle
K22	Sorak spring	39°35'72"N 38°84'28"E	1050	spring
K23	Bizmişen river	39°12'34"N 38°22'23"E	1560	spring
K24	Yeniköy spring	39°12'01"N 38°20'08"E	1659	spring
K25	Sülüklü lake	39°13'15"N 38°20'32"E	1724	pond
K26	Handere river	39°13'59"N 38°16'22"E	1063	stream
K27	Subaşı river	39°26'85"N 38°65'88"E	1510	stream
K28	Taş Road	39°29'45"N 38°47'84"E	850	spring
K29	Ergu spring	39°22'28"N 38°55'14"E	835	spring
K30	Ermenis hill	39°26'22"N 38°54'24"E	1430	puddle

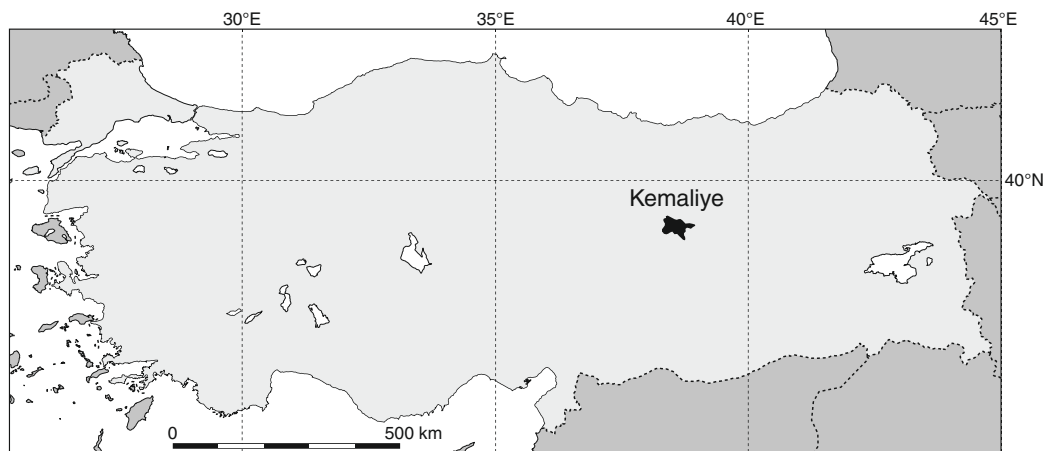


Fig. 1. Research area.

Halipidae

Halipus obliquus (Fabricius, 1787)

Material examined: K25, 5 ex. 15.09.2007.

Zoogeographical element: W-PAL

Halipus heydeni Wehncke, 1875

Material examined: K25, 18 ex. 15.09.2007.

Zoogeographical element: EUR

Halipus lineatocollis (Marshall, 1802)

Material examined: K7, 22 ex. 07.07.2006, 1 ex. 04.07.2007; K12, 5 ex. 09.07.2006.

Zoogeographical element: W-PAL

Pelodytes caesus (Duftschmid, 1805)

Material examined: K7, 1 ex. 04.07.2007, 2 ex. 15.09.2007; K25, 3 ex. 15.09.2007.

Zoogeographical element: W-PAL

Noteridae

Noterus clavicornis (De Geer, 1774)

Material examined: K6, 9 ex. 07.07.2006, 14 ex. 15.09.2007; K25, 3 ex. 15.09.2007.

Zoogeographical element: SIE

Dytiscidae

Agabus biguttatus (Olivier, 1795)

Material examined: K7, 8 ex. 07.07.2006.

Zoogeographical element: W-PAL

Agabus bipustulatus (Linnaeus, 1767)

Material examined: K1, 9 ex. 04.07.2006; K2, 5 ex. 06.07.2006; K4, 1 ex. 06.07.2006; K6, 1 ex. 02.06.2007, 11 ex.

15.09.2007; K7, 3 ex. 07.07.2006; K11, 4 ex. 09.07.2006; K12, 3 ex. 09.07.2006.

Zoogeographical element: SIE

Agabus conspersus (Marshall, 1802)

Material examined: K6, 5 ex. 02.06.2007; K17, 2 ex. 03.06.2007; K21, 2 ex. 04.06.2007.

Zoogeographical element: SIE

Agabus nebulosus (Forster, 1771)

Material examined: K7, 1 ex. 07.07.2006, 3 ex., 02.06.2007.

Zoogeographical element: W-PAL

Agabus paludosus (Fabricius, 1801)

Material examined: K7, 6 ex. 07.07.2006.

Zoogeographical element: EUR

Ilybius chalconatus (Panzer, 1796)

Material examined: K14, 7 ex. 09.07.2006.

Zoogeographical element: W-PAL

Ilybius fuliginosus (Fabricius, 1792)

Material examined: K4, 1 ex. 06.07.2006; K7, 8 ex. 07.07.2006; K12, 2 ex. 09.07.2006.

Zoogeographical element: SIE

Platambus lunulatus (Fischer von Waldheim, 1829)

Material examined: K1, 7 ex. 04.07.2006; K2, 12 ex. 06.07.2006; K3, 3 ex. 06.07.2006; K4, 2 ex. 06.07.2006; K7, 1 ex. 07.07.2006; K8, 1 ex. 14.09.2007; K12, 1 ex. 09.07.2006; K15, 4 ex. 03.06.2007; K16, 9 ex. 12.07.2006, 1 ex. 03.06.2007.

Zoogeographical element: TUM

***Colymbetes fuscus* (Linnaeus, 1758)**

Material examined: K6, 1 ex. 15.09.2007; K7, 1 ex. 07.07.2006.

Zoogeographical element: W-PAL

***Dytiscus circumflexus* Fabricius, 1801 / *thianshanicus* (Gschwendtner, 1923)**

Material examined: K7, 1 ex. 07.07.2006.

The taxonomy of *Dytiscus circumflexus* / *thianshanicus* has not been resolved satisfactorily. Both species have been recorded from Turkey by various authors in the past. However, based on the study of more material variation in penis shape should be analysed. Molecular data would also help to elucidate the relationships between *D. circumflexus* and *D. thianshanicus* (A. Nilsson, pers. comm.).

***Hydroglyphus geminus* (Fabricius, 1787)**

Material examined: K4, 1 ex. 06.07.2006; K7, 1 ex. 04.07.2007; K8, 1 ex. 08.07.2006; K14, 4 ex. 10.07.2006.

Zoogeographical element: PAL

***Deronectes parvicollis* (Schaum, 1864)**

Material examined: K10, 3 ex. 09.07.2006; K12, 12 ex. 06.07.2006; K16, 2 ex. 12.07.2006.

Zoogeographical element: ANCA

***Graptodytes veterator behningi* Zaitzev, 1927**

Material examined: K6, 14 ex. 15.09.2007, 9 ex. 07.07.2006; K25, 3 ex. 15.09.2007.

Zoogeographical element: ANAT

***Hydroporus bodemeyeri* Ganglbauer, 1900**

Material examined: K1, 1 ex. 04.07.2006; K28, 1 ex. 03.06.2007

Zoogeographical element: BALAN

***Hydroporus kozlovskii* Zaitzev, 1927**

Material examined: K5, 2 ex. 06.07.2006; K7, 2 ex. 07.07.2006.

Zoogeographical element: SWA

***Hydroporus longulus*-group**

Material examined: K7, 1 ex. 07.07.2006; K7, 1 ex. 02.06.2007

More material must be examined for unambiguous identification.

***Hydroporus palustris* (Linnaeus, 1761)**

Material examined: K25, 11 ex. 15.09.2007.

Zoogeographical element: SIE

***Hydroporus planus* (Fabricius, 1782)**

Material examined: K6, 1 ex. 02.06.2007; K17, 1 ex. 02.06.2007

Zoogeographical element: W-PAL

***Hydroporus pubescens* (Gyllenhal, 1808)**

Material examined: K7, 1 ex. 02.06.2007; K21, 1 ex. 04.06.2007

Zoogeographical element: W-PAL

***Hydroporus tessellatus* (Drapiez, 1819)**

Material examined: K1, 1 ex. 04.07.2006; K6, 1 ex. 02.06.2007

Zoogeographical element: TEM

***Hydroporus transgrediens* Gschwendtner, 1923**

Material examined: K1, 1 ex. 04.07.2006; K4, 1 ex. 06.07.2006; K7, 5 ex. 07.07.2006; K10, 6 ex. 09.07.2006; K11, 2 ex. 09.07.2006; K12, 6 ex. 09.07.2006; K29, 1 ex. 04.06.2007; K30, 3 ex. 12.07.2006.

Zoogeographical element: BALTUR

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

Material examined: K25, 5 ex. 15.09.2007.

Zoogeographical element: SWA

***Nebrioporus stearinus suavis* (Sharp, 1882)**

Material examined: K4, 2 ex. 06.07.2006; K7, 2 ex. 07.07.2006; K7, 1 ex. 02.06.2007; K10, 6 ex. 09.07.2006; K17, 2 ex. 02.06.2007; K24, 1 ex. 15.09.2007.

Zoogeographical element: BALAN

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

Material examined: K5, 1 ex. 06.07.2006.

Zoogeographical element: TEM

***Hygrotus confluens* (Fabricius, 1787)**

Material examined: K25, 2 ex. 15.09.2007.

Zoogeographical element: W-PAL

***Hygrotus impressopunctatus* (Schaller, 1783)**

Material examined: K6, 2 ex. 07.07.2006.

Zoogeographical element: ASF

***Hygrotus parallellogrammus* (Ahrens, 1812)**

Material examined: K6, 11 ex. 02.06.2007, 24 ex. 15.09.2007.

Zoogeographical element: SIE

***Hygrotus inaequalis* (Fabricius, 1777)**

Material examined: K6, 17 ex. 15.09.2007.

Zoogeographical element: PAL

***Laccophilus hyalinus* (De Geer, 1774)**

Material examined: K7, 1 ex. 02.06.2007, 1 ex. 04.07.2007.

Zoogeographical element: SIE

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

Material examined: K6, 6 ex. 15.09.2007; K25, 2 ex. 15.09.2007.

Zoogeographical element: SIE

Helophoridae

***Helophorus syriacus* Kuwert, 1885**

Material examined: K21, 14 ex. 04.06.2007.

Zoogeographical element: SWA

***Helophorus aquaticus* (Linnaeus, 1758)**

Material examined: K6, 1 ex. 07.07.2006; K12, 1 ex. 09.07.2006; K13, 10 ex. 04.06.2007; K20, 1 ex. 04.06.2007; K21, 1 ex. 04.06.2007.

Zoogeographical element: EUR

***Helophorus daedalus* Orchymont, 1932**

Material examined: K12, 16 ex. 09.07.2006.

Zoogeographical element: IRAN

***Helophorus discrepans* Rey, 1885**

Material examined: K4, 5 ex. 06.07.2006; K5, 3 ex. 06.07.2006; K6, 8 ex. 07.07.2006, 11 ex. 07.07.2006; K7, 15 ex. 04.07.2007.

Zoogeographical element: EUR

***Helophorus faustianus* (Sharp, 1916)**

Material examined: K6, 5 ex. 02.06.2007; K21, 6 ex. 04.06.2007.

Zoogeographical element: ANCA

***Helophorus lewisi* Angus, 1985**

Material examined: K6, 20 ex. 02.06.2007.

Zoogeographical element: SWA

***Helophorus nubilus* (Fabricius, 1777)**

Material examined: K15, 16 ex. 03.06.2007.

Zoogeographical element: EUR

Hydrophilidae

***Anacaena limbata* (Fabricius, 1792)**

Material examined: K25, 13 ex. 15.09.2007.

Zoogeographical element: PAL

***Enochrus segmentinotatus* (Kuwert, 1888)**

Material examined: K1, 2 ex. 04.07.2006; K6, 21 ex. 07.07.2006, 14 ex. 04.07.2007, 13 ex. 15.09.2007; K7, 2 ex. 07.07.2006; K12, 1 ex. 09.07.2006.

Zoogeographical element: TEM

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

Material examined: K4, 1 ex. 06.07.2006; K6, 1 ex. 02.06.2007.

Zoogeographical element: SIE

***Hydrochara caraboides* (Linnaeus, 1758)**

Material examined: K6, 2 ex. 07.07.2006, 6 ex. 02.06.2007.

Zoogeographical element: SIE

***Laccobius bipunctatus* (Fabricius, 1775)**

Material examined: K1, 14 ex. 04.07.2006; K4, 5 ex. 06.07.2006; K5, 3 ex. 06.07.2006; K6, 3 ex. 07.07.2006, 4 ex. 02.06.2007; K7, 1 ex. 07.07.2006; K12, 9 ex. 09.07.2006; K14, 7 ex. 10.07.2006; K16, 4 ex. 12.07.2006.

Zoogeographical element: W-PAL

***Laccobius hindukuschi* Chiesa, 1966**

Material examined: K7, 3 ex. 02.06.2007, 5 ex. 04.07.2007; K15, 2 ex. 03.06.2007, 11 ex. 06.07.2007; K17, 3 ex. 02.06.2007; K20, 2 ex. 04.06.2007.

Zoogeographical element: SWA

***Laccobius obscuratus aegaeus* Gentili, 1974**

Material examined: K16, 4 ex. 14.09.2007; K20, 2 ex. 04.06.2007.

Zoogeographical element: BALTUR

***Laccobius sipylus* Orchymont, 1939**

Material examined: K15, 3 ex. 03.06.2007.

Zoogeographical element: SWA

***Laccobius syriacus* Guillebeau, 1896**

Material examined: K25, 6 ex. 15.09.2007.

Zoogeographical element: TEM

***Coelostoma orbiculare* (Fabricius, 1775)**

Material examined: K6, 2 ex. 02.06.2007; K7, 1 ex. 04.07.2007.

Zoogeographical element: SIE

This species is widely distributed in Turkey, where it has been recorded from 15 provinces: Ankara, Artvin, Bayburt, Bursa, Çanakkale, Çorum, Erzurum, Giresun, Gümüşhane, İçel, Kayseri, Ordu, Samsun, Tokat, Trabzon (Sahlberg 1913; Orchymont 1932; İncekara et al. 2003, 2009, 2010; İncekara 2009; Karaman et al. 2008; Mart 2009; Ertorun & Tanatmış, 2009; Polat et al. 2010, Darilmaz et al. 2010).

Remarkably, Turkey has not been included in the distribution lists compiled by Hansen (1999, 2004).

Hydrochidae

***Hydrochus flavipennis* Küster, 1852**

Material examined: K12, 5 ex. 09.07.2006.

Zoogeographical element: BALTUR

Hydraenidae

Hydraena abbasigili Jäch, 1988

Material examined: K7, 3 ex. 02.06.2007.

Zoogeographical element: ANAT

Hydraena assimilis Rey, 1885

Material examined: K15, 1 ex. 11.07.2006.

Zoogeographical element: EUR

Hydraena integra Pretner, 1931

Material examined: K4, 2 ex. 06.07.2006; K16, 6 ex. 04.06.2007; K19, 4 ex. 04.06.2007.

Zoogeographical element: ANCA

Hydraena sp. n. cf. *ligulipes* Jäch, 1988

Material examined: K13, 4 ex. 03.06.2007; K15, 1 ex. 03.06.2007.

This is a new species very closely related with *Hydraena ligulipes*, described from Şirnak Province, south-eastern Turkey.

Hydraena paganettii Ganglbauer, 1901

Material examined: K12, 2 ex. 09.07.2006.

Zoogeographical element: TUE

Hydraena schoenmanni Jäch, 1988

Material examined: K17, 1 ex. 02.06.2007.

Zoogeographical element: ANAT

Hydraena subgrandis Jäch, 1988

Material examined: K9, 1 ex. 08.07.2006; K15, 2 ex. 11.07.2006; K20, 3 ex. 04.06.2007.

Zoogeographical element: ANAT

Hydraena tekmanensis Jäch, Skale & Kasapoglu, 2011

Material examined: K13, 11 ex. 03.06.2007.

Zoogeographical element: ANAT

Limnebius rubropiceus Kuwert, 1890

Material examined: K1, 2 ex. 04.07.2006; K7, 3 ex. 07.07.2006; K12, 1 ex. 09.07.2006; K15, 1 ex. 06.07.2007; K16, 2 ex. 14.09.2007; K24, 2 ex. 15.09.2007.

Zoogeographical element: BALTUR

Limnebius papposus Mulsant, 1844

Material examined: K15, 4 ex. 06.07.2007.

Zoogeographical element: EUR

Limnebius perparvulus Rey, 1884

Material examined: K15, 6 ex. 03.06.2007; K26, 2 ex. 15.09.2007.

Zoogeographical element: MED

Limnebius stagnalis Guillebeau, 1890

Material examined: K15, 1 ex. 06.07.2007.

Zoogeographical element: BALAN

Ochthebius stygialis Orchymont, 1937

Material examined: K15, 16 ex. 03.06.2007; K16, 1 ex. 03.06.2007.

Zoogeographical element: ANAT

Ochthebius colveranus Ferro, 1979 species complex

Material examined: K27, 2 ex. 04.06.2007.

The *Ochthebius colveranus* species complex is currently under revision.

Ochthebius decianus Orchymont, 1942

Material examined: K16, 5 ex. 04.06.2007.

Zoogeographical element: ANAT

Ochthebius difficilis Mulsant, 1844

Material examined: K4, 1 ex. 06.07.2006.

Zoogeographical element: TUM

Ochthebius inconspicuus Jäch, 1991

Material examined: K14, 5 ex. 03.07.2007; K15, 2 ex. 03.06.2007, 8 ex. 06.07.2007.

Zoogeographical element: ANAT

Ochthebius cf. *mutatus* Jäch, 1991

Material examined: K15, 1 ex. 03.06.2007.

This might be a new species, closely related with *Ochthebius mutatus*. However, more material is needed to determine its status.

Ochthebius cf. *rectilobus* Jäch, 1989

Material examined: K16, 1 ex. 04.06.2007.

This might be a new species, closely related with *Ochthebius rectilobus*. However, more material is needed to determine its status.

Ochthebius scitulus Ferro, 1982

Material examined: K7, 1 ex. 02.06.2007; K15, 16 ex. 03.06.2007; K16, 37 ex. 04.06.2007; K20, 17 ex. 04.06.2007.

Zoogeographical element: IRAN

Dryopidae

Dryops nitidulus (Heer, 1841)

Material examined: K7, 8 ex. 04.07.2007; K10, 5 ex. 09.07.2006.

Zoogeographical element: EUR

Discussion

Among the studied beetle families the Dytiscidae represent the highest diversity with 30 species, Hydrophilidae – 20, Hydrophilidae – 10, Helophoridae – 7, Haliplidae – 4, Gyrinidae – 2. The Noteridae, Hydrochidae and Dryopidae are each represented by one species. One species, *Nebrioporus lanceolatus* (Dytiscidae), is here recorded for the first time from Turkey. The occurrence of this SW Asian species might be related to the Euphrates River Valley, through which it may have been able to invade Anatolia.

According to their current distribution, the 70 identified species known from Kemaliye District can be classified in 15 zoogeographical categories, grouped in four complexes (Figs 2–3).

Best represented is the complex of species widely distributed in the Holarctic region (WS) (PAL + W-PAL + ASF + SIE + TEM + TUE + TUM + SWA), represented by 40 species (57.1 %). Within the WS complex, W-Palearctic species are dominant (30 %), followed by SIE (27.5 %), SW-Asian (15 %) and TEM (10 %). The species of the remaining groups represent <10 %.

The European complex (E), more or less widely distributed in Europe, is represented by nine species (12.9 %).

The Mediterranean complex (M), species more or less widely distributed in the Mediterranean countries, is represented by one species (1.4 %).

The last complex comprises species endemic or distributed from the Balkan to Turanian (EN)

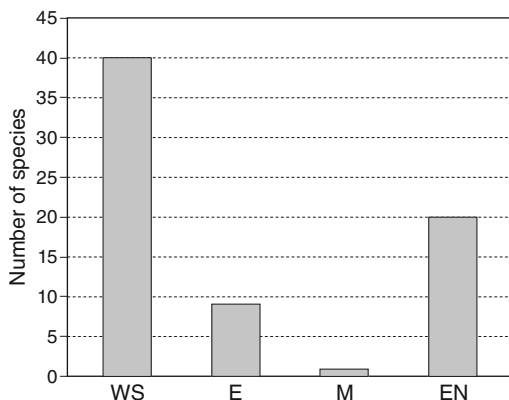


Fig. 2. The main zoogeographic complexes in the water beetles fauna in Kemaliye, showing the number of species represented in each. **WS**, Widespread; **E**, European; **M**, Mediterranean; **EN**, Endemic or distributed from Balkan to Turanian.

(ANAT + ANCA + BALTUR + BALAN + IRAN) and is the second largest group, with 20 species (28.6 %). Within it, the Anatolian endemic species are dominant (40 %); Balkano-Turanian (20 %), Balkano-Anatolian (15 %), Anatolo-Caucasian (15 %), and Irano-Anatolian (10 %).

In a zoogeographical respect, the widely distributed species (WS) are dominant. However, the most characteristic faunal elements are the Anatolian endemics (ANAT). Their number is high, and their faunistic composition reflects the local character of the fauna.

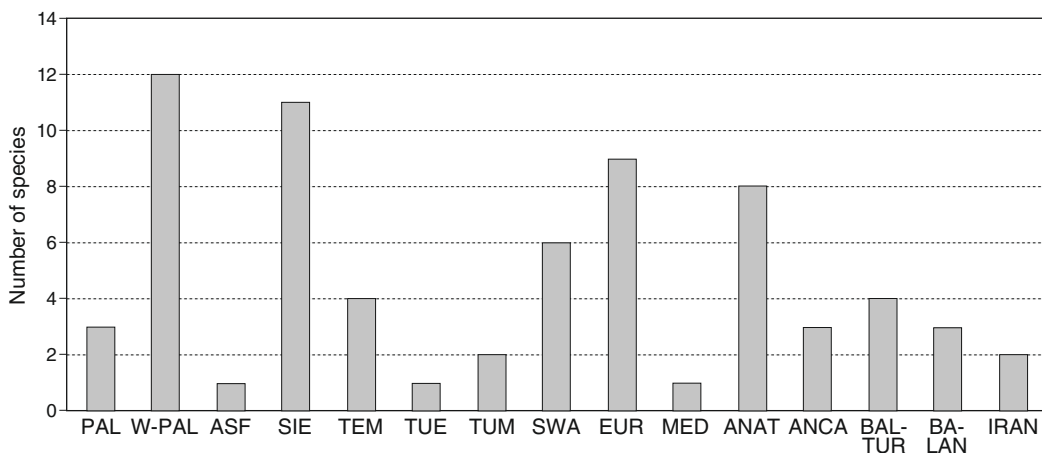


Fig. 3. Zoogeographical elements in the water beetles fauna in Kemaliye, showing the number of species represented in each. **PAL**, Palearctic; **W-PAL**, W-Palearctic; **ASF**, Asiatic-European; **SIE**, Siberio-European; **TEM**, Turano-European-Mediterranean; **TUE**, Turano-European; **TUM**, Turano-Mediterranean; **SWA**, SW-Asian; **EUR**, European; **MED**, Mediterranean; **ANAT**, Anatolian endemic; **ANCA**, Anatolo-Caucasian; **BALTUR**, Balkano-Turanian; **BALAN**, Balkano-Anatolian; **IRAN**, Irano-Anatolian.

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