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# Studies on Turkish Hydrophilidae (Coleoptera) I. Genus *Enochrus* Thomson, 1859

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**Abstract:** Two newly recorded *Enochrus* Thomson, 1859 (Coleoptera, Hydrophilidae) species for the Turkish fauna, *E. (E.) melanocephalus* (Olivier, 1792) and *E. (L.) fuscipennis* (Thomson, 1884), are described, and their distribution in Turkey and worldwide is presented. A key to Turkish *Enochrus* species is provided and *E. (L.) segmentinotatus* treated under the "bicolor species complex".

**Key Words:** Coleoptera, Hydrophilidae, *Enochrus*, Systematics, Turkey

## Türkiye Hydrophilidae Familyası (Coleoptera) Üzerine Çalışmalar I. Cins: *Enochrus* Thomson, 1859

**Özet:** Türkiye faunası için yeni kayıt olan, *E. (E.) melanocephalus* (Olivier, 1792) ve *E. (L.) fuscipennis* (Thomson, 1884)'in tanımları örneklerimiz üzerinden gözden geçirilmiş, Türkiye ve dünyadaki dağılımları verilmiştir. Türkiye'den bilinen *Enochrus* türleri için tür teşhis anahtarı düzenlenmiş ve *E. (L.) segmentinotatus* (Kuwert, 1888) "bicolor" tür gurubu içerisinde değerlendirilmiştir.

**Anahtar Sözcükler:** Coleoptera, Hydrophilidae, *Enochrus*, Sistematik, Türkiye

### Introduction

*Enochrus* is a large genus of Hydrophilid beetles containing 189 species (Komarek, 2003) in all zoogeographical regions. They are particularly abundant in warmer climates. Most *Enochrus* species occur in many kinds of vegetated, stagnant and slow-running bodies of water. Although they are frequently collected and presented in most larger beetle collections, both their taxonomy and phylogenetic relationships are still insufficiently known. The status of numerous taxa is unresolved, particularly for the Palearctic and Oriental realms, and it is obvious that there are fewer valid species than have been described in the past (Hansen, 1991; Schödl, 1998).

Many entomologists have studied the genus *Enochrus* independently in various parts of the world but nobody has ever made a taxonomic revision that includes type materials. Stefan Schödl (Wien) started to do such an extensive revision several years ago but he failed without achieving final results because very little type material was available (personal communication). However, he

made good progress although countless synonyms still remained. He used the term "bicolor complex" in his paper (1998). That paper merely considered a tentative working hypothesis, lacking phylogenetic observations. Schödl treated 5 subgenus *Lumetus* species under the useful term "bicolor complex": *E. bicolor*, *E. segmentinotatus*, *E. falcarius*, *E. sinuatus* and *E. turanicus*.

So far, 5 *Enochrus* species, (*E. (M.) nigrinus* (Sharp, 1872), *E. (L.) ater* (Kuwert, 1888), *E. (L.) bicolor* (Fabricius, 1792), *E. (L.) salmonis* (Shalberg, 1900) and *E. (L.) segmentinotatus* Kuwert, 1888) have been recorded in Turkey (Incekara et al., 2003). This study adds 2 new records to the Turkish fauna that belong to the subgenus *Lumetus* and *Enochrus* s.str.

### Materials and Methods

Specimens of aquatic Coleoptera were collected in various parts of Turkey in different surveys from 1998. The beetles were killed using ethyl acetate or in 70%

alcohol solution. Aedeagophores of the beetles, cleaned with brushes were dissected under a stereo microscope and left in 10% KOH solution for 1-2 h. The figure of the aedeagophore was drawn using a Nikon type 104 microscope.

## Systematics

### *E. (L.) bicolor* complex

This species group consists of medium-sized, generally pale to brown species (occasionally dark brown or even black morphs occur) without distinctly demarcated dark or black areas on head and/or pronotum, although indistinct infuscations may occur. The maxillary palpi always uniformly pale.

### Key to Species of the Turkish *Enochrus*

1. Terminal segment of maxillary palpi as long as penultimate (Figure 1a)  
.....*E. (E.) melanocephalus* (Olivier, 1792)
- Terminal segment of maxillary palpi distinctly shorter than penultimate (Figure 1b).....2
2. Posterior margin of last visible abdominal sternite with a small semicircular emargination (Figure 1c).....*E. (M.) nigritus* (Sharp, 1872)
- Posterior margin of last visible abdominal sternite entire (Figure 1d).....3
3. Pronotum and elytra with faint sparse punctuation.....4
- Pronotum and elytra with coarser and denser punctuation..... (*bicolor* species complex)
4. Aedeagophore large, struts long, apex of parameres relatively short  
.....*E. (L.) ater* (Kuwert, 1888)
- Aedeagophore small, struts short, apex of parameres relatively long  
.....*E. (L.) salmonis* (Sahlberg, 1900)
5. Inner face of parameres distinctly angulated, apex of parameres slightly swollen  
.....*E. (L.) segmentinotatus* (Kuwert, 1888)
- Inner face of parameres not angulated, apex of parameres not swollen  
.....*E. (L.) bicolor* (Fabricius, 1792)

### *E. (E.) melanocephalus* (Olivier, 1792)

Body 4.5 mm in length. Head black, with a large preocular spot on each side. Labrum entirely black. Maxillary palpi only slightly longer than half the width of the head, brown or reddish yellow, its terminal segment as long as penultimate and apex of terminal segment dark brown (Figure 1a). Antennae 9-segmented, brown or reddish yellow with darker club. Pronotum and elytra uniformly reddish brown. Pronotum distinctly narrowed anteriorly, the posterior margin finely margined, with 4 small punctual spots arranged in a square. Elytra (besides the sutural stria) with rudiments of striae posteriorly. Ventral surface dark brown to blackish. Abdomen with 5 visible sternites, posterior margin of last visible sternite entire. Mesosternum strongly ridged in the middle and narrowly raised to form an acute dentiform process. Appendages blackish, all tarsi 5-segmented, claws angularly curved in middle, especially on protarsi with strong basal tooth.

**Material examined:** Mollaköy, 29.V.2003, 2 ♀♀, Erzincan.

**Distribution:** Algeria, Austria, Bosnia-Herzegovina, Britain, Croatia, Denmark, Estonia, Finland, France, Germany, Hungary, Ireland, Israel, Italy, Latvia, Lithuania, Netherlands, Norway, Poland, Portugal, Russia, Spain, Sweden, Switzerland and Yugoslavia) (Balfour-Browne, 1958; Endrödy-Younga, 1967; Ienistea, 1978; Pisisinu, 1981; Hansen, 1987, 1999; Hebauer, 1994, 1998).

### *E. (L.) fuscipennis* (Thomson, 1884)

Body 5.4-5.6 mm in length. Head and ventral surface black, head generally with a pair of distinctly yellowish preocular spots. Labrum entirely black. Maxillary palpi markedly infuscate, terminal segment markedly shorter than penultimate (Figure 1b) and apex of terminal segment darker. Antennae 9-segmented, brown to dark brown, club darker. Pronotum brown to reddish or dark brown, with a large variable blackish median spot. Pronotum rather strongly narrowed anteriorly, the posterior margin finely margined. Median spot of pronotum almost fills up the field between the 4 small punctual black spots and sometimes reaches posterior margin. Elytra shining, reddish brown to blackish, often with a small humeral black spot. Sutural stria reaching from apex anteriorly to well before middle. Mesosternum strongly ridged in the middle and narrowly raised to form

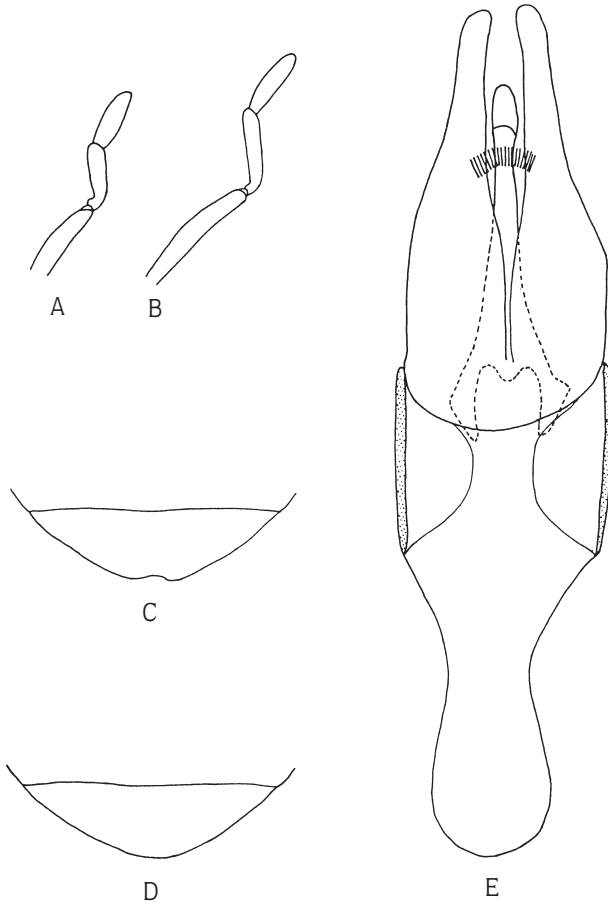


Figure. Maxillary palpi; a) *E. (E.) melanocephalus*, b) *E. (L.) fuscipennis*. Last visible abdominal sternite; c) *E. (M.) nigrinus*, d) *E. (L.)* spp. e) *E. (L.) fuscipennis*, aedeagophore, dorsal.

an acute dentiform process. Abdomen with 5 visible sternites, posterior margin of last visible sternite entire. Appendages yellowish red to brown, all tarsi 5-segmented, claws angularly curved in middle, especially on protarsi with strong basal tooth. Aedeagophore 1.5 mm in length (Figure 1e).

**Material examined:** Yukarı Koyunlu village, upper lake, 4.VII.2000, 2 ♂♂, 3 ♀♀, 21.VI.2001, 6 ♂♂, 3 ♀♀; 1 km before Meşeli village, 6.VII.1999, 3 ♂♂, 2 ♀♀, 8.VI.2001, 4 ♂♂, 3 ♀♀, Şavşat, Artvin. Ekşisu, 16.VIII.1999, 3 ♂♂, 2 ♀♀; Tercan, Mercan, 17.IX.1999, 3 ♂♂, 1 ♀, 02.VII.2003, 3 ♂♂, 5 ♀♀; Çayırılı, Başköy, 02.VII.2003, 9 ♂♂, 7 ♀♀; Gözeler-Çayırılı road, 5th km, 25.V.2003, 2 ♂♂, 2 ♀♀; City center, 27.VIII.2003, 1 ♂; Harmantepe village, 27.VIII.2003, 1 ♂, 7 ♀♀, 25.V.2003,

1 ♀; Karadayı village, 03.VII.2003, 1 ♀; Yaylakent village, 02.VII.2003, 4 ♂♂, 1 ♀; Kemah, Doğanbeyli village, 14.X.2003, 3 ♂♂, 1 ♀; Refahiye, Akçığdem village, 27.V.2003, 2 ♂♂, 6 ♂♂; Çatalçam road, 7th km, 27.V.2003, 1 ♀; Çamdibi village, 28.V.2003, 6 ♂♂, 2 ♀♀; Otlukbeli, 26.V.2003, 2 ♂♂, 3 ♀♀; Yeniköy fountain, 02.VII.2003, 4 ♂♂, 1 ♀; Tercan, Dallica village, 27.VIII.2003, 1 ♂, 1 ♀, Erzincan. Erzurum-Tortum road, 30th km, 10.V.2000, 20 ♂♂, 12 ♀♀; Erzurum-Çat road, 27th km, 11.VI.2000, 1 ♂, 45th km, 4 ♂♂, 4 ♀♀; İspir, Çoruh River, 19.VI.2000, 5 ♂♂, 2 ♀♀; Çayırözü stream, 20.VI.2000, 4 ♂♂, 2 ♀♀; Erzurum-İkizdere road, 10th km, 19.IX.2000, 4 ♂♂, 8 ♀♀; Tortum, Yedigöller, 20.6.2000, 2 ♂♂, 3 ♀♀; Oltu, Toprakkale stream, 20.6.2000, 5 ♂♂, 1 ♀; Tekman-Erzurum road, 15th km, 7.X.2000, 1 ♂, Erzurum. Ayder, 20.VI.2000, 3 ♂♂, Rize.

**Distribution:** Austria, Azerbaijan, Bosnia-Herzegovina, Britain, Bulgaria, Denmark, Finland, Germany, Hungary, Iran, Ireland, Italy, Latvia, Norway, Russia, Slovenia, Spain and Sweden) (Balfour-Browne, 1958; Endrödy-Younga, 1967; Hansen, 1987, 1999; Valladeres, 1995).

## Discussion

In contrast to Hansen (1987), *E. melanocephalus* samples were collected from the edge of running but temporary, poorly vegetated water with a clayed bottom. These samples are very rare in the research area (East Anatolian region). Since 1998, only 2 females have been collected. Therefore, it is not possible to provide any information about the habitat preference of *E. melanocephalus*.

*E. fuscipennis* was very abundant in the research area. In respect of morphological characters, our findings are in accordance with results obtained from previous studies, except for body length. Up to 2004, only 5 species of *Enochrus* have been recorded in Turkey (Hansen, 1987, 1999; Ribera et al., 1997; Schödl, 1998; Incekara et al., 2003). The number of *Enochrus* species, including 2 new records, has now increased to 7. In Turkey, with its various geographical regions and different climates, the number of *Enochrus* species is doubtless much higher than that recorded so far. New studies should therefore be conducted on this group of insects but, unless detailed revisional research also containing type materials

associated with the Palearctic region is performed, the taxonomic, systematic and ecological investigations on this genus will be limited.

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