

Orijinal araştırma (Original article)

**Studies on Turkish Hydrophilidae
(Coleoptera) IV. Genus *Berosus*
Leach, 1817 with description of a new
species: *Berosus dentalis* sp. n.¹**

Ümit İNCEKARA^{2*} Abdullah MART³ Ahmet POLAT² Zeynep AYDOĞAN²
Hicran TÜRKEN² Gani Erhan TAŞAR² Sinan BAYRAM²

Summary

A check list of *Berosus* spp. (Coleoptera: Hydrophilidae) known in Turkey are presented with their distributions in Turkey. 14 species of the genus are determined. Of these, *Berosus dentalis* sp. n. is described from Middle Anatolia (Kayseri). Descriptions of *Berosus (Enoplurus) guttatus* and *B. (Enoplurus) asiaticus*, newly recorded for the Turkish fauna, are reviewed. Figures of some diagnostic characters of these species are provided. The ecology of some species is shortly discussed. Distributional maps of each subgenus in Turkey are presented. A short identification key of Turkish species of the genus is also given.

Key words: Coleoptera, Hydrophilidae, *Berosus*, check list, distribution, new species, Turkey

Anahtar sözcükler: Coleoptera, Hydrophilidae, *Berosus*, kontrol listesi, dağılım, yeni tür, Türkiye

Introduction

The genus *Berosus* is represented in all major zoogeographical regions. 260 species of the genus known all over the world (Hansen, 1999; Löbl & Smetana, 2004). In Europe, 13 species has been recorded belong to two subgenera: *Berosus* Leach, 1817 and *Enoplurus* Hope, 1838 (Löbl & Smetana,

¹ This study is a part of Ahmet Polat's Ph. D.; Zeynep Aydoğan, Hicran Türken, Gani Erhan Taşar and Sinan Bayram's MS. Thesis.

² Atatürk University, Science Faculty, Biology Department, 25240 Erzurum, TURKEY

³ Bingöl University, Science Faculty, Biology Department, 12000 Bingöl, TURKEY

Sorumlu yazar (Corresponding author) e-mail: incekaraumit@gmail.com

Alınış (Received): 14.07.2010 Kabul edilmiş (Accepted): 14.10.2010

2004). The latest palearctic revision of the genus introduced to science by Schödl (1991, 1993). In his papers, 11 species of the genus has been recorded from Turkey of which six species were belong to subgenus *Berosus* s. str. (Schödl, 1993) and five species to subgenus *Enoplurus* (Schödl, 1993). These records were based on the limited provinces, and therefore the genus *Berosus* of Turkey is only partly known.

Some genera of Turkish Hydrophilids were studied with papers in series (İncekara et al., 2005, 2009b; Mart et al., 2006) previously except the genus *Berosus*. The aim of this study was to make a contribution to Turkish aquatic beetles fauna with the new species and new records.

Material and Methods

Specimens of *Berosus* were collected in various parts of Turkey in different surveys of the aquatic Coleoptera since 1999. Additional material was also examined (deposited in the Zoological Museum, Atatürk University, Erzurum, Turkey). The beetles were killed with 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. Photographs were taken using a SMZ-1500 Nikon type 104 microscope. Voucher specimens have been deposited in the Zoological Museum, Atatürk University, Erzurum, Turkey. Distributional maps of each subgenus in Turkey are presented according to recent data (Figures 1,2). Figures belong to diagnostic characteres (Figures 3-24) are traced from the photographs.

Results

In total, 14 species belong to genus *Berosus* were collected and identified. The list and key to species are below:

Key to *Berosus* spp. known from Turkey

1. Each elytron without a long acute latero-apical spine.....
Subgenus ***Berosus*** (s. str.).....2
- Each elytron with a long acute latero-apical spine.....
Subgenus ***Enoplurus***.....7
2. Mesosternum with a very large, dented keel (Figure 20).....3
- Mesosternum with a smaller, dented keel (Figure 17).....4
3. Apex of median lobe easily seen in lateral view (Figure 5)
.....***B. byzantinus***
- Apex of median lobe not seen in lateral view (Figure 3)
.....***B. signaticollis***

4. Mesosternum with a short strong keel (Figure 19) *B. luridus*
 - Mesosternum with a dentated or smaller keel (Figures 17,18) 5
5. Mesosternal keel very low, generally very fine dentated (Figure 18) *B. affinis*
 - Mesosternal keel higher near the middle, finely dentated (Figure 17) 6
6. Parameres very acutely pointed at the tip in lateral view (Figure 6) *B. hispanicus*
 - Parameres not acutely pointed at the tip in lateral view (Figure 4) *B. dispar*
7. Posterior margin of last visible abdominal sternite with emargination (Figures 21-23) 12
 - Posterior margin of last visible abdominal sternite without emargination (Figure 4) 8
8. Posterior margin of parameres serrated medially in lateral view (Figure 9) *B. jaechi*
 - Posterior margin of parameres not serrated medially in lateral view (Figures 10-12) 9
9. Tip of median lobe abruptly curved towards to basally in lateral view (Figure 12) *B. fulvus*
 - Tip of median lobe not abruptly curved towards to basally in lateral view 10
10. Aedeagus narrow and long (Figure 11) *B. spinosus*
 - Aedeagus shorter 11
11. Parameres coarser in dorsal view (Figure 13) *B. frontifoveatus*
 - Parameres slender in dorsal view (Figures 14a,) *B. asiaticus*
12. Posterior margin of last visible abdominal sternite broadly excised (Figure 22) *B. guttalis*
 - Posterior margin of last visible abdominal sternite moderately excised (Figures 21,23) 13
13. Median lobe acutely dentated at near apex in lateral view (Figure 15a) *B. dentalis* sp. n.
 - Median lobe not dentated at near apex (Figure 16) *B. bispina*

List of *Berosus* spp. known from Turkey

1. *Berosus* (s. str.) *byzantinus* Ganglbauer, 1904

(Figure 5).

Distribution in Turkey: Aydın, İzmir (Schödl, 1993; İncekara et al., 2003).

Material examined: Kayseri: 2♂♂, 7♀♀, Yahyalı, Oba, 38°13'22N 35°12'58E, 1082 m, 30.V.2009; 3♂♂, 1♀, Senil, 38°11'44N 35°15'48E, 1081 m, 24.IV.2009; 4♂♂, 4♀♀, Pınarbaşı, Gürün road 45 km, 38°52'31N 36°46'38E, 1783 m, 22.IV.2009; Kayseri road 10 km, 38°39'25N 36°09'52E, 1445 m, 23.IV.2009; 2♂♂, 2♀♀, Bünyan, Köprübaşı, 33°40'06N 36°02'07E, 1429 m, 29.V.2009, 3♂♂, 7♀♀, 38°40'10N 36°01'32E, 1416m, 23.IV.2009; 5♂♂, 2♀♀, Pınarbaşı, 38°52'04N 36°52'03E, 1705 m, 22.IV.2009; 1♂, 3♀♀, Develi, Büyüktuzhisar, 38°56'09N 35°49'35E, 1314 m, 23.IV.2009.

Remark: Newly recorded from the Kayseri province.

Ecology: In stagnant, fresh or mainly in rather eutrophic water, shallow pools or ponds, with grassy and somewhat clayey bottom.

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

(Figure 3).

Distribution in Turkey: Amasya, Antalya, Aydın, Bayburt, Bingöl, Erzincan, İzmir, Kastamonu, Kars, Kayseri, Ordu, Samsun (Schödl, 1993;; İncekara et al., 2003, 2009a; İncekara, 2004 Mart, 2009).

Material examined: Artvin: Şavşat, 3♂♂, Yukarı koyunlu, 17.IX.2000; 4♂♂, 5♀♀, Şavşat, Veliköy stream, 12.VI.2000, Bayburt: 2♀♀, Değirmencik, 40°21'43N 40°15'18E, 1489 m, 27. VIII.2007; 1♂, 11♀♀; Mutlu, 40°14'13N 40°08'53E, 1635 m, 21.IX.2007; 1♂, 2♀♀; Danişment, 40°14'38N 40°09'54E, 1640 m, 21. X. 2007, 2♂, 2♀♀. Bingöl: 7♂♂, 10♀♀, centrum, Kızıyayısı, 15.V.2003; 8♂♂, 12♀♀, Adaklı, Akbinek, 16.V.2003; 2♂♂, 6♀♀, Adaklı, Hasbağlar, 15.V.2003; 9♂♂, 18♀♀, Karlıova, Boncukgöze, 5♂♂, 6♀♀, 6.X.2003, 9.X.2004, 2♂♂, 5♀♀, Toklular, 14.V.2003, 11♂♂, 10♀♀, 6.X.2003; 3♂♂, 7♀♀, Kığış, 16.V.2003; 1♂, 1♀, Yedisu, Geldi plateau, 13.V.2003. Erzincan: 1♀, Altunkent, 11.VI.1998; 1♀, Akbulut ski centre, 04.VII.2003; 1♂, 1♀, Kelkit road, second fountain, 27.V.2003. Erzurum: 13♂♂, 6♀♀, Çat, 04.VII.2000; 6♂♂, 5♀♀, Çat, 04.VII.2001; 7♀♀, Tortum road, 15 km, 28.X.1999; 6♀♀, Tortum road, 40 km, 24.VI.1999; 7♂♂, 5♀♀, Tortum, Pehlivانlı, 28.X.1999; 1♂, İspir, Çoruh, 19.VI.2000. Ordu: 1♂, Güneyce, 40°24'40N 37°47'42E, 1575 m, 22.X.2007. Tokat: 3♂♂, 2♀♀, Erbaa, Canpolat, 40°33'17K 36°36'09D, 1223m, 06.V.2008. Rize: 2♂♂, 3♀♀, Sürmene, 14.IX.2000. Sivas: 1♂, 2♀♀, Alçıören, Hafik, 39°47'43N 37° 27'31E, 1373 m, 24.VII.2009. 4♂♂, 11♀♀, Çukurbelen, Hafik, 39°49'26N 37° 10'20E, 1280 m,

28.V.2009. 1♂ 1♀, Hafik, 39°50'59N 37°22'11E, 1302 m, 28.V.2009. 2♂♂ 5♀♀, İmranlı, 39°50'54N 38°24'44E, 1619 m, 28.V.2009.

Ecology: In stagnant fresh water, shallow pools or ponds, with grassy and somewhat clayey bottom.

Remark: Newly recorded from the Artvin, Erzurum, Rize, Sivas and Tokat provinces.

3. *Berosus* (s. str.) *luridus* (Linnaeus, 1761)

(Figure 7, 19).

Distribution in Turkey: Artvin, Bayburt, Erzincan, Bingöl, Hakkari (Yüksekova), Ordu, Kars, Kastamonu, Samsun (Schödl, 1993; İncekara, 2004; İncekara et al., 2003, 2009a; Mart, 2005, 2009).

Material examined: Bayburt: 1♂, 1♀, Değirmencik, 40°21'43N 40°15'18E, 1489 m, 20.IX.2007. Erzincan: 1♂, Kelkit road, 5 km, 27.V.2003; 3♂♂, 1♀, Akbulut ski center, 04.VII.2003; 3♂♂, 2♀♀, Tercan-Mercan road, 10 km, 24.IV.1999; 1♂♂. Mercan-Çayırlı road, 1 km, 25.V.2003. Erzurum: 6♂♂, Çat 45 km, 06.II.2000; 8♀♀, Çat road highways work site, 03.VII.2002. Kayseri: 1♂, Yahyalı, Senil, 38°11'44N 35°15'48E, 1081 m, 24.IV.2009; 2♂♂, 1♀, Develi, Yenihayat, 38°16'55N 35°18'54E, 1080 m, 26.VII.2009. Samsun: 3♂♂, 2♀♀, Ondokuzmayıs, Balık Lake, 41°35'21N 36°06'43E, 0 m, 04.VI.2008. 3♂♂, 3♀♀; Terme, Balkanlı, Gölyazı, 41°15'15N 36°57'54E, 0 m, 04.VI.2008. Tokat: 3♂♂, 4♀♀, Pazar, Kaz Lake, 40°16'47N 30°09'27E, 541 m, 05.V.2008.

Ecology: In stagnant fresh water, mainly in rather eutrophic, shallow pools or ponds, with grassy and somewhat clayey bottom.

Remark: newly recorded from the Erzurum and Kayseri provinces.

4. *Berosus* (s. str.) *affinis* Brulle, 1922

(Figures 8, 18).

Distribution in Turkey: Adana, Antalya, Burdur, Bursa, Çanakkale, Antakya (Hatay), İçel, İstanbul, İzmir, Kırklareli, Kocaeli, Kastamonu, Konya, Manisa, Mugla, Ordu (Ünye), Samsun, Sakarya (Schödl, 1991; İncekara et al., 2003, 2009a).

Material examined: Kayseri: 6♂♂, 7♀♀, Develi, Büyüktuzhisar, 38°56'09N 35°49'35E, 1314 m, 23.IV.2009; 4♂♂, 3♀♀, Sindelhöyük, 38°19'03N 35°21'13E, 1076 m, 26.VII.2009; 5♂♂, 2♀♀, Yeşilhisar, Kovalı, 38°13'04N 35°13'28E, 1078 m, 25.VII.2009; 3♂♂, 1♀, Sultan Sazlığı, 38°14'09N 35°13'44E, 1073 m, 26.VII.2009; 2♂♂, 1♀, Yahyalı, İlyaslı, 38°11'47N 35°15'41E, 1085 m, 25.VII.2009; 2♂♂, 3♀♀, Ovaçiftlik, 38°13'53N 35.11'55E, 1082 m, 25.VII.2009.

Ecology: In temporary fresh water, shallow pools or ponds, with grassy bottom.

Remark: Newly recorded from the Kayseri province.

5. *Berosus* (s. str.) *hispanicus* Küster, 1847

(Figures 6,17).

Distribution in Turkey: Çanakkale (Schödl, 1993; İncekara et al., 2003).

6. *Berosus* (s. str.) *dispar* Reiche & Saulcy, 1856

(Figure 4).

Distribution in Turkey: Adana (Schödl, 1993; İncekara et al., 2003).

7. *Berosus* (*Enoplurus*) *jaechi* Schödl, 1991

(Figure 9).

Distribution in Turkey: Adana, Izmir (Schödl, 1991; İncekara et al., 2003).

Material examined: Van: 1♂ 1♀, Edremit, Andaç, 38°20'50N 48°11'20E, 1659 m, 29.IX.2009.

Remark: Newly recorded from the Van province.

8. *Berosus* (*Enoplurus*) *fulvus* Kuwert, 1888

(Figure 12).

Distribution in Turkey: Burdur (Schödl, 1991; İncekara et al., 2003).

9. *Berosus* (*Enoplurus*) *spinosus* (Steven, 1808)

(Figures 11, 24).

Distribution in Turkey: Ankara, Adana, Afyon, Ankara, Aksaray, Antalya, Aydın, Bayburt, Bingöl, Denizli, Edirne, Elazığ, İçel, Kars, Kırşehir, Malatya, Ordu, Samsun, Van (Schödl, 1991; İncekara et al., 2003, 2009a; Mart, 2005, 2009a; Darılmaz & Kıyak, 2006; Kıyak et al., 2006; Hızarcioğlu et al., 2010).

Material examined: Bayburt: 2♀♀, Değirmencik, 40°21'43N 40°15'18E, 1489m, 27. VIII.2007; 1♂ 11♀♀; Mutlu, 40°14'13N 40°08'53E, 1635 m, 21.IX.2007; 1♂ 2♀♀; Danişment, 40°14'38N 40°09'54E, 1640 m, 21. X. 2007, 2♂♂ 2♀♀. Bingöl: 1 ♂, 2 ♀♀, Genç, Çayağzı, 7.X.2003; 2 ♂♂, 3 ♀♀, Yayladere, Kiğı-Yayladere road, 40 km, 16.V.2003. Çorum: 1♂, Laçın, Narlıçay, 40°49'28N 34°52'00E, 450 m, 27.VI.2007. Kayseri: Yahyalı, Senil, 38°11'44N 35°15'48E, 1081 m, 24.IV.2009, 2♂♂, 2♀♀. Develi, Yenihayat, 38°16'55N 35°18'54E, 1080 m, 26.VII.2009, 3♂♂, 4♀♀. Erzincan: 1♂, Altunkent, 29.V.2003; 2♀♀, Hüseyin Ağa Çiftliği, 29.V.2003; 1♀, Mercan, 27.VIII.2003; Kars: 1♀, Sarıkamış, 2.IX.2000. Ordu: 1♂, Güneyce, 40°24'40N

37°47'42E, 1575 m, 22.X.2007. Sivas: 1♂, Doğanca, 39°52'39N 38° 04'29E, 1613 m, 28.V.2009. Söğütçü, 4♂♂ 11♀♀, 39° 27'32N 36° 46'10E, 1368 m, 28.V.2009; Tödürge lake, 4♂♂ 2♀♀, 39°52'20N 37°36'28E, 1293 m, 28.V.2009. Van: 1♂, Edremit, Andaç, 38°20'50N 48°11'20E, 1659 m, 29.IX.2009; 1♂, Erciş, Bayramlı, 38°57'37N 43°14'18E, 1655 m, 27.IX.2009.

Ecology: In stagnant or temporary fresh water, shallow pools or ponds, with grassy and somewhat clayey bottom.

Remark: Newly recorded from the Erzincan, Çorum and Sivas provinces.

10. *Berosus (Enoplurus) frontifoveatus* Kuwert, 1888

(Figure 13).

Distribution in Turkey: Ankara, Balıkesir, Bursa, Elazığ, Isparta, İcel (Schödl, 1991; İncekara et al., 2003; Hizarcioğlu et al., 2010).

Material examined: Erzincan: 2♂, Altunkent, 29.V.2003.

Ecology: In stagnant fresh water, shallow pool, with grassy and somewhat clayey bottom.

Remark: Newly recorded from the Erzincan province.

11. *Berosus (Enoplurus) asiaticus* (Kuwert, 1888)

(Figures 14a,b,c, 26).

Material examined: Bitlis: 1♂, Ahlat, Bahçedere, 38°47'18N 42°37'42E, 1658 m, 27.IX.2009. Muş: 1♂, Bulanık, 38°59'03N 42°19'07E, 1595 m, 29.VII.2009; 2♂♂, Malazgirt, Çayırdere, 39°09'04N 42°22'55E, 1486 m, 29.VII.2009.

Ecology: Stagnant, well vegetated, permanent freshwater with muddy bottom.

Distribution in world: Iran, Iraq, Kuwait.

Remark: A new record for the Turkish fauna.

12. *Berosus (Enoplurus) guttatus* (Rey, 1883)

(Figures 10, 22, 25).

Material examined: Bitlis: 17♂♂, 5♀♀, Güldüzü, Arın lake, 38°49'25N 43°00'46E, 1667 m, 27.IX.2009; 8♂♂, 2♀♀, Güldüzü, Kavuçtuk, 38°48'45N 43°03'54E, 1675 m, 27.IX.2009. Sivas: 8♂♂, Yarhisar lake, Hafik, 39°51'27N 37°27'10E, 1286 m, 24.VII.2009. Van: 1♂, Van lake, 38°54'44N 43°32'04E, 1625 m, 30.VII.2009.

Ecology: Generally found in stagnant fresh water, shallow pools or ponds, with grassy and somewhat clayey bottom. Surprisingly, we collected one male from the soda water (Van lake).

Remark: A new record for the Turkish fauna.

Distribution in world: Algeria, France, Morocco, Spain, Tunisia.

13. *Berosus (Enoplurus) dentalis* sp. n.

(Figures 15a,b, 21, 27a,b,c, 28).

Material examined: Type material: Holotype ♂ (Zoological Museum of Ataturk University): "TR: KAYSERİ, Yenihayat, 38°16'55N 35°18'54E, 26.VII.2009. Leg. A. Polat".

Paratype: 2♂♂, 2♀♀ from the type locality.

Description

Body length: 4.5 mm, width: 2.2 mm. Dorsal surface (Figure 28) brownish yellow. Head often variably darkened posteriorly, moderately punctured, the punctuation a little stronger and denser posteriorly. Antennae yellowish. Maxillary palpi yellowish, darker at the apex. Elytra with a long acute latero-apical spine; often with some obsolete, slightly darker spots (more darkened posteriorly). Ventral surface of body (Figure 28) piceous. Posterior margin of last visible abdominal sternite moderately excised (Figure 22). Pronotum more sparsely punctured medially. Elytral striae distinct, rather sharply impressed, weaker anteriorly. Punctuation of the interstices becoming gradually much finer (sometimes almost distinct) apically and laterally. Mesosternum evenly ridged. Appendages yellowish brown. Median lobe of aedeagus characteristically dentated near the apex in lateral view (Figure 15a). General aspects of females as in males, but males larger.

Ecology: Stagnant, poorly vegetated, temporary pond with muddy bottom.

Etymology: The species *Berosus dentalis* sp. n. is named after dentate median lobe of the Aedeagus.

14. *Berosus (Enoplurus) bispina* Reichet & Saulcy, 1856

(Figure 16, 23).

Distribution in Turkey: Adana, Afyon, Antakya (Hatay), Kayseri (Schödl, 1991; Hansen, 1999; Özemsi & Önder, 1988).

Material examined: Bitlis: 4 ♂♂, 1 ♀♀, Güldüzü, Kavuştuk, 38°48'45N 43°03'54E, 1675 m, 27.IX.2009. Kayseri: Bünyan, Büyük Tuzhisar, 2♂♂, 2♀♀, 38°56'09K 35°49'35D, 1314 m, 23.IV.2009.

Remark: Newly recorded from the Bitlis province. *B. (E.) bispina* had been given as a new record for the Turkish fauna by Özemsi & Önder (1988).

However, this species had been recorded from Turkey by D'Orchymont (1943) and lenistea (1978) previously

However, this species had been recorded from Turkey by D'Orchymont (1943) and lenistea (1978) previously.

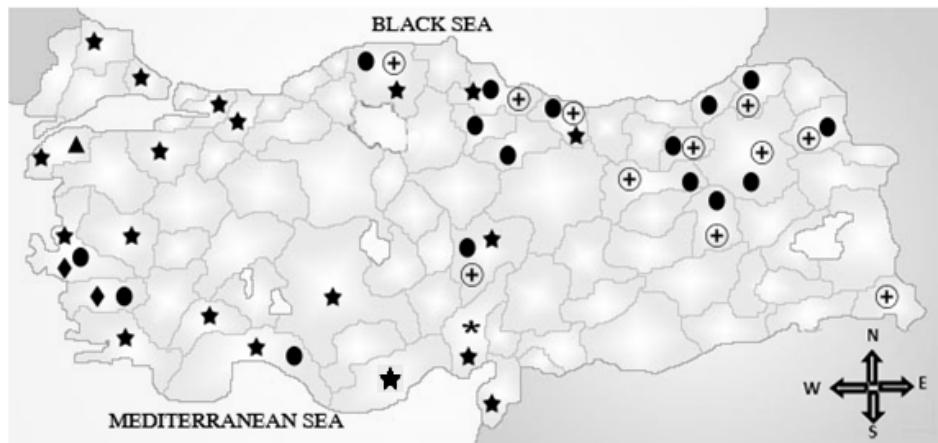


Figure 1. Distributional map of the *Berosus* (s. str.) in Turkey. ★: *B. affinis*; ▲: *B. hispanicus*; ●: *B. signaticollis*; +: *B. luridus*; ♦: *B. byzantinus*; ✕: *B. dispar*.

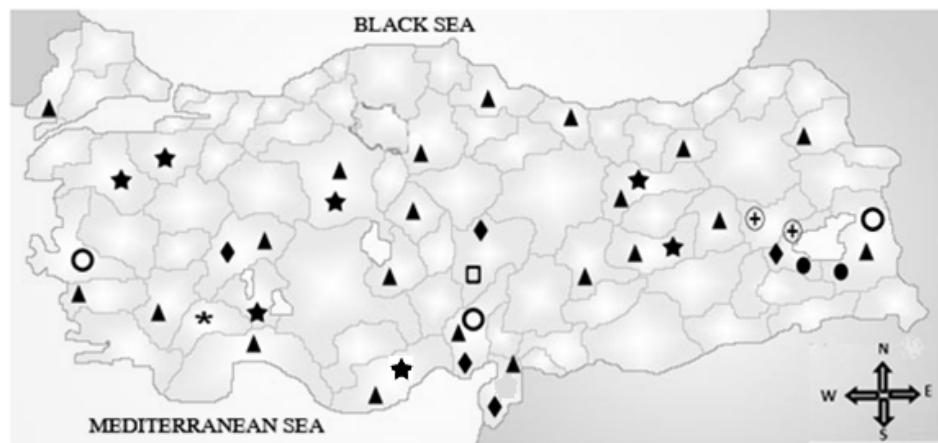
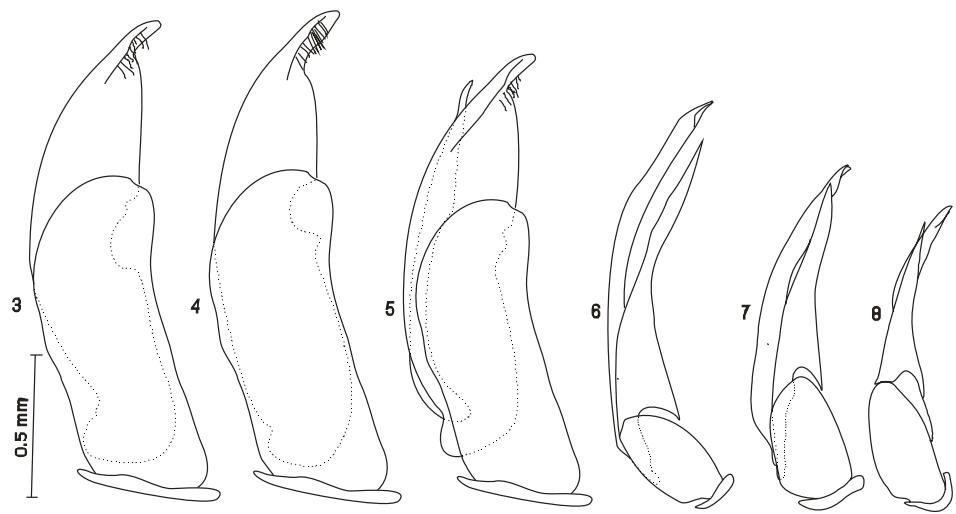
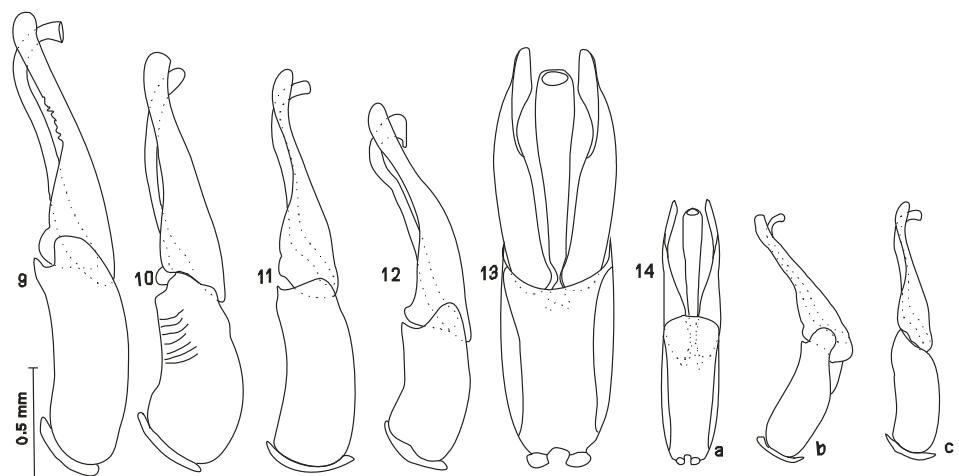


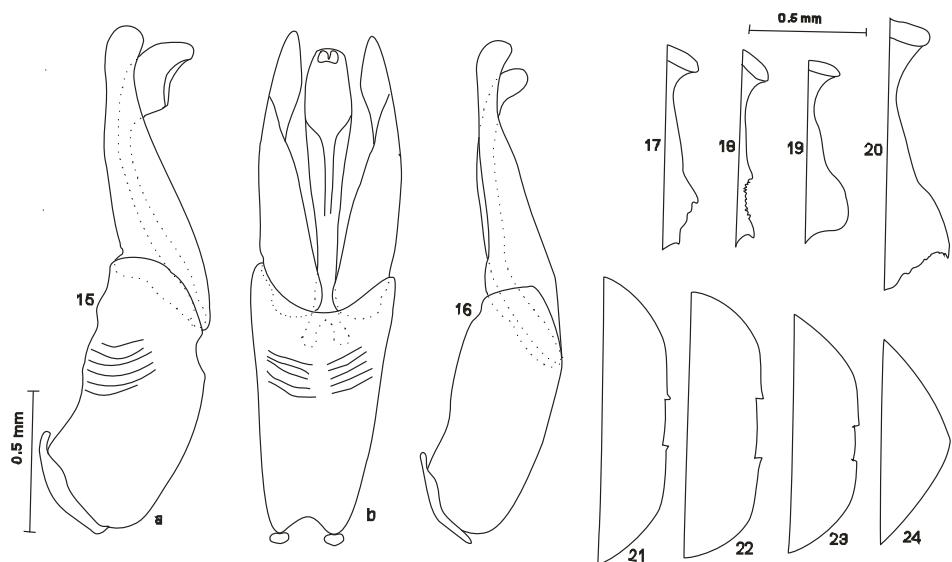
Figure 2. Distributional map of the subgenus *Enoplurus* in Turkey. □: *Berosus dentalis* sp. n.; ▲: *B. spinosus*; ★: *B. frontifoveatus*; ○: *B. jaechi*; ♦: *Berosus bispina*; +: *B. asiaticus*; ✕: *B. fulvus*; ●: *B. Guttalis*.



Figures 3-8. Aedeagophore, lateral. 3) *Berosus signaticollis*; 4) *B. dispar*, 5) *B. byzantinus*; 6) *B. hispanicus*; 7) *B. luridus*; 8) *B. affinis* (Figures 4,6 traced from Schödl, 1993).



Figures 9-14. Aedeagophore. 9) *Berosus jeachi* (lateral); 10) *B. guttalis* (lateral); 11) *B. spinosus* (lateral); 12) *B. fulvus* (lateral); 13) *B. frontifoveatus* (dorsal); 14) *B. asiaticus* (a: dorsal; b,c: lateral) (Figure 12 traced Schödl, 1991).



Figures 15-24. 15) *Berosus dentalis* sp. n. (a: lateral, b: dorsal). 16) *B. bispina* (lateral). 17-20: Mesosternum. 17) *B. hispanicus*, 18) *B. affinis*, 19) *B. luridus*, 20) *B. signaticollis*. 21-24: Last abdominal sternite. 21) *B. dentalis* sp. n. 22) *B. guttalpis*. 23) *B. bispina*. 24) *B. spinosus* (Figure 17 traced Schödl, 1993).



Figures 25-27. 25) *Berosus guttalpis* (lateral). 26) *B. asiaticus* (lateral) 27) *B. dentalis* sp. n. (a: dorsal, b: ventral, c: lateral).

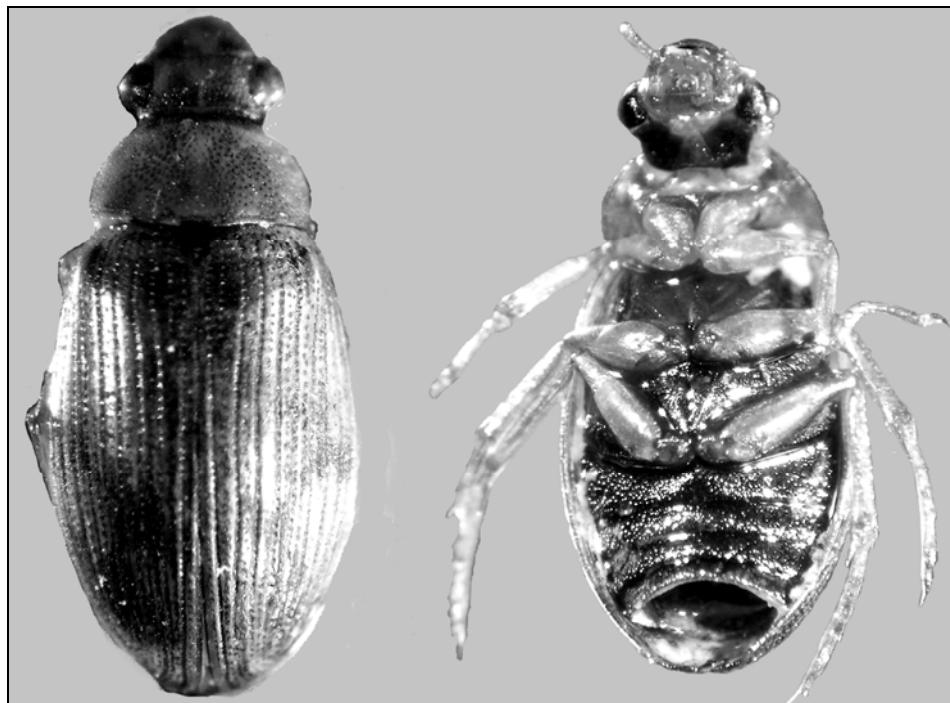


Figure 28. *Berosus dentalis* sp. n.

Discussion

So far, 11 species of the genus *Berosus* have been recorded from Turkey (Schödl, 1991, 1993; Hansen, 1999; İncekara et al., 2003; Löbl & Smetana, 2004). The number of *Berosus* species has increased to 14 with the recording of the *Berosus (E.) guttalilis*, *B. (E.) asiaticus* and describing of the *Berosus dentalis* sp. n. from Turkey.

Berosus dentalis sp. n. most closely resembles *B. spinosus* externally, but is easily distinguished by its characteristic aedeagophore shape and last abdominal sternite.

Further studies aiming to improve our knowledge on Turkish water beetles should focus on collecting in little additional families and filling the large gaps in our knowledge regarding the diversity of water beetles in some specific habitats.

Özet

Türkiye hidrofilidleri (Coleoptera) üzerine çalışmalar IV. *Berosus* Leach, 1817 cinsi ve yeni bir türü: *Berosus dentalis* sp. n.

Türkiye'den bilinen *Berosus* (Coleoptera: Hydrophilidae) türlerinin kontrol listesi, Türkiye'deki dağılımlarıyla birlikte verilmiştir. Toplam 14 tür tespit edilmiş, bunlardan, *Berosus dentalis* sp. n. Orta Anadolu (Kayseri)'dan tanımlanmıştır. Türkiye faunası için yeni kayıt olan *Berosus* (*Enoplurus*) *guttalis* ve *B.* (*Enoplurus*) *asiaticus* gözden geçirilmiş ve bu türlerin bazı ayırt edici karakterlerinin şekilleri verilmiştir. Bazı türlerin ekolojileri kısaca tartışılmış, her bir altcinsin Türkiye'deki dağılım haritası sunulmuştur. Cinsin Türkiye türlerine ait kısa bir teşhis anahtarı da verilmiştir.

References

- Darılmaz, M. & S. Kiyak, 2006. A contribution to the knowledge of the Turkish water beetles fauna (Coleoptera). **Munis Entomology and Zoology**, **1**: 129-144.
- D'Orchymont A., 1943. Notes sur la tribu Berolini Bedel. (Coleoptera Palpicornia Hydrophilidae). **Bulletin of Museum Royal History Natural Belgium**, **19** (42): 1–12.
- Hansen, M., 1999. World Catalogue of Insects. Hydrophiloidea (Coleoptera). Aps. Stenstrup, Apollo Books, Copenhagen, Vol. 2, 416 pp.
- Hızarcioğlu, R., S. Kiyak & M. C. Darılmaz, 2010. Some aquatic Coleoptera from Ankara province, Turkey. **Munis Entomology and Zoology**, **5** (1): 278-282.
- İncekara, Ü., A. Mart, & O. Erman, 2003. Check list of the Hydrophilidae (Coleoptera) species of Turkey and a new record for the Turkish fauna. **Turkish Journal of Zoology**, **27**: 47-53.
- İncekara, Ü., 2004. Erzincan İli Hydrophilidae, Helophoridae ve Hydrochidae (Coleoptera) Türleri Üzerine Sistematisk Araştırmalar. Atatürk Üniversitesi Fen-Edebiyat Fakültesi Doktora Tezi, Erzurum, 178 s.
- İncekara, Ü., A. Mart & O. Erman, 2005. Studies on Turkish Hydrophilidae Coleoptera I. Genus *Enochrus* Thomson, 1859. **Turkish Journal of Zoology**, **29**: 155-158.
- İncekara, Ü., M. Darılmaz, A. Mart, A. Polat & H. Karaca, 2009a. Faunistic study on two sister plain (Bafra and Çarşamba) aquatic Coleoptera fauna In Turkey: Two similar geography but rather different fauna, with a new record. **Munis Entomology and Zoology**, **4** (1): 125-138.
- İncekara, Ü., A. Mart, A. Polat & H. Karaca, 2009b. Studies on Turkish Hydrophilidae (Coleoptera) III. genus *Hydrochara* Berthold 1827 with the description of a new species, *Hydrochara major* sp. n. **Turkish Journal of Zoology**, **33**: 315-319.
- Kiyak, S., S. Canbulat, A. Salur & M. Darılmaz, 2006. Additional notes on aquatic Coleoptera fauna of Turkey with a new record (Helophoridae: Hydrophilidae). **Munis Entomology and Zoology**, **1**: 273-278.

- Ienistea, M. A., 1978. Hydradephaga und Palpicornia. In: Illies J. ed., Limnofauna Europe. Stuttgart, Gustav Fischer, 291-314.
- Löbl, I. & A. Smetana, 2004. Catalogue of Palearctic Coleoptera. Vol. 2: Hydrophiloidea-Staphylinoidea. Apollo Books, Copenhagen, 942 pp.
- Mart, A., 2005. Bingöl İli Helophoridae, Hydrophilidae ve Hydrochidae (Coleoptera) Türleri Üzerine Sistemik Araştırmalar. Atatürk Üniversitesi Fen-Edebiyat Fakültesi, Doktora Tezi, Erzurum, 157 s.
- Mart, A., 2009. Water scavenger beetles (Coleoptera: Hydrophilidae) provinces of Central Black Sea Region of Turkey. **Journal of the Entomological Research Society**, **11** (1): 47-70.
- Mart, A., Ü. İncekara & O. Erman, 2006. Studies on Turkish Hydrophilidae (Coleoptera) II. Genus *Paracymus* Thomson, 1867. **Journal of the Entomological Research Society**, **8**: 1-4.
- Schödl, S., 1991. Revision der gattung *Berosus* Leach, 1. Teil: Die palaarktischen arten der untergattung *Enoplurus* (Coleoptera: Hydrophilidae). **Koleopterologische Rundschau**, **61**: 111-135.
- Schödl, S., 1993. Revision der gattung *Berosus* Leach, 3. Teil: Die palaarktischen und orientalischen arten der untergattung *Berosus* s. str. (Coleoptera: Hydrophilidae). **Koleopterologische Rundschau**, **63**: 189-233.
- Özemsi, U. & F. Önder, 1988. Faunistic studies on the aquatic Heteropterous and Coleopterous insects of Sultan Sazlığı (Kayseri/TURKEY). IX. National Biology Congress (21-23 September 1988, Sivas) 2: 183.