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New species of *Lebertia* Neuman, 1980 (Acari, Hydrachnidia, Lebertiidae) for The Turkish Water Mites Fauna

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Abstract

In this study, 3 *Lebertia* species of water mites that are new records to the Turkish fauna; *Lebertia* (*Pilolebertia*) *salebrosa,* Koenike, 1908 *Lebertia* (*Pilolebertia*) *inaequalis* Kock, 1837 are presented. The drawings of palp features for the species were given and their zoogeographic distributions were discussed.

Key Words

Lebertia, New records, Water mites, Hydrachnidia, Turkey

Türkiye Su Kenesi Faunası İçin Yeni Lebertia (Acari, Hydrachnidia) Türleri

Özet

Bu çalışmada, Türkiye su kenesi faunası için yeni kayıt olan 3 Lebertia türü; *Lebertia* (*Pilolebertia*) *salebrosa,* Koenike, 1908 *Lebertia* (*Pilolebertia*) *inaequalis* Kock, 1837 and *Lebertia* (*Hexalebertia*) *holsatica* K. Viets, 1920 verilmektedir. Bu türlerin palp şekilleri ve zocoğrafik yayılışları verilerek, tartışmaları yapılmıştır.

Anahtar Kelimeler: *Lebertia*, Yeni kayıt, Su kenesi, Hydrachnidia, Türkiye

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Introduction

Water mite species belonging to the family of Lebertiida are known in all zoogeographical regions except Australia and Antarctica (Di Sabatino et al. 2008). The numbers of known species of this family in the world have been reported as 138 by Zhang et al. (2011). The number of species has been reported as 74 for the Lebertiida family for the European continent (Gerecke 2009). There are very few studies in Turkey for the Lebertiida species. Until now, 22 species of Lebertiida have been reported from Turkey and all these species belong to the genus of *Lebertia*. The genus is divided into five subgenera according to Gerecke (2009). These subgenera are *Eolebertia*, *Mixolebertia*, *Pilolebertia*, *Brentalebertia* and *Lebertia*. With the new species recorded in this study the number of species belonging to the Lebertiida has increased to 25 in Turkey.

Materyal ve Metot

Water mites were collected, preserved, and prepared according to the methods describedby (Cook 1974). All samples were examined under stereo (Leica MZ60, Germany) and compound microscopes (Olympus CX41, Japan) with drawing attachments

Results

LebertidaeThor,1900

***Lebertia* Neuman, 1880**

***Lebertia* (*Pseudolebertia*) *salebrosa* Koenike, 1911**

Material Examined: Konya province, Sille stream, 1200 m, 26.06.2010, (3♀/8♂); 20.07.2010, (1♀/1♂).

Remarks: Integument covered by fine lines in dorsal part, numerous irregularly arranged pores, with the dorsum simply smooth and porose or some of the lines more pronounced, legs without swimming setae, IV.L-6 2-4 very tiny nail setae. $P_3$with the dorsalsetae not for apart and in basal part of segment, P_4 peg seta small, dorsal seta of P_4 rather long, P_2 is bulge shaped in the dorsal region, $P_3$is larger in the distal region, seta slightly pass over the length of P_4 and the middle dorsal seta are very close to the distal seta.

L. salebrosa was different from all species known in the linear arrangement of cuticular structures, dorsal and distal setae of P_3 further from each other and P_4 bearing a stronger peg seta (Fig.1a).

Distribution: The species know in Europe, Germany, the Netherlands, the Czech Republic and Romania (Viets, 1956).

***Lebertia* (*Pilolebertia*) *inaequalis* (Koch, 1837)**

Material Examined: The species is commonly found in all slow and medium flowing waters. Isparta provinces, Göksu stream, 985 m, 27.09.2005, (10♀/7♂), 26.10.2005, (11♀/16♂); 28.07.2005,(8♀/10♂); Burdur, Söğütlü stream, 1160 m, 27.09.2012,17 (1♀/1♂). Konya, İkizler stream, 1095 m.Turkey (Boyacı, 1995).

Remarks: Both sexes Integument smooth, coxal field not extended, swimming setae numbers; II.L-5, 3-6,III.L-4 2-8, III.L-5 6-10, IV.L-4 2-8, IV.L-5 5-11, IV.L-6 with 2-4 fine central setae P_2relatively long, ventrodistal seta rather strong, shorter than P_2, P_3 mediodistal seta halfway between ventro and

dorsa distal setae. The setae at the front bottom end of P_2 is thinner. The proximal side of the P_4 is twice the width of the distal side, the pore setae on the lower side have prolapsed to the front half. The length of the setae of P_3 do not exceed P_5, setae are not close to each other in the distal.

L. inaequalis is characterized by the distal setae insertions on P_3 at equal distance, P_4 distally narrowed, with ventral setae both inserted in te distal part of the segment, the distal one near segment edge and with a very small mediodistal peg seta (Fig.1b).

Distribution: Common in Europe (Viets, 1956).

***Lebertia* (*Hexalebertia*) *holsatica* Viets, 1920**

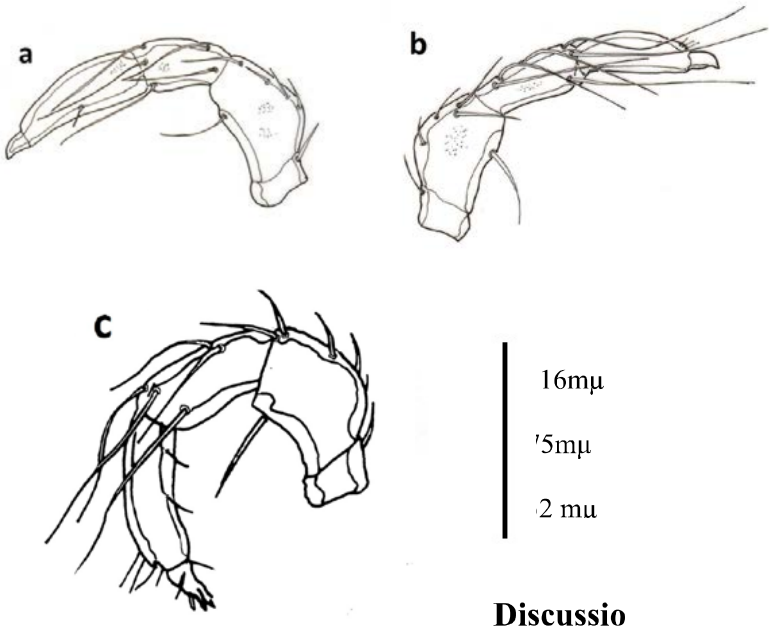
Material Examined: Karaman, Ilisira stream, 17.09.1992, (1♀/0).

Remarks: the integument on the dorsal is mammillated and smooth fine line on the abdomen. Coxal field with sexual dimorphism, legs without swimming setae, IV. L-6 with two ventral setae, palp slender, P_3 and P_4 are more delicate than the others, P_2 ventral setae, P_3 dorsal setae equally spaced, P_4 long, peg like seta minute. There are six setae on the P_3 and the length of the setae are longer than P_5(Fig.1c).

Discussion: *L. holsatica* was the first described *Mixolebertia* species with an absence of swimming setae. Iit cannot be confused with other species of the subgenus by the reticulation of the dorsal integument and extremely elongated, P_4 with ventral setaelocated close each other.

Distribution: The species is known in Germany, France, Denmark and Romania in Europe (Viets 1956).

Figure 1. Palps: a. *Lebertia selebrosa*, male,b. *Lebertia inaequalis*, female;c. *Lebertia holsatica*, female.



Discussion

Lebertia contains a high number of species (9 species) in Turkey compared to the other subgenera of the Lebertiida family. 22 species belonging to the genus of *Lebertia* have been reported from Turkey and 5 of them are new species for the scientific world. These new records are *Lebertia* (*Mixolebertia*) *turcica* Bursali& Özkan, 2004, *Lebertia* (*Lebertia*) *martini* Gülle and Boyaci, 2012, *Lebertia* (*Lebertia*) *erzurumensis*Esen et al., 2013, *Lebertia* (*Brentalebertia*) *anatolica*Esen et al., 2013, *Lebertia* (*Lebertia*) *marasensis* Esen and Erman, 2014. All Lebertia species and localities are known from Turkey as follows; *Lebertia* (*Lebertia*) *castalia* K. Viets, 1925, Erzurum, Muş. *Lebertia* (*Lebertia*) *glabra* Thor, 1897, Niğde. *Lebertia* (*Lebertia*) *fimbriata* Thor, 1899, Erzincan. *Lebertia* (*Pilolebertia*) *porosa* Thor,1900 Afyonkarahisar,Antalya,Burdur,Erzurum,Konya and Rize.*Lebertia* (*Lebertia*) *maculosa* Koenike,

1902, Rize. *Lebertia* (*Lebertia*) *schechteli* Thor,1913, Elazığ, Erzurum, Kayseri and Van. *Lebertia* (*Mixolebertia*) *turcica* BursaliandÖzkan, 2004, Tokat. *Lebertia* (*Pilolebertia*) *insignis* Neuman, 1880, Bursalı et al., 2011, Tokat. *Lebertia* (*Hexalebertia*) *stigmatifera* Aşçı et al.,2011, Rize. *Lebertia* (*Lebertia*) *martini* Gülleand Boyaci,2012.*Lebertia* (*Lebertia*) *maglioi* Thor, 1907;*Lebertia* (*Mixolebertia*) *sefvei* Walter, 1911,*Lebertia* (*Lebertia*) *erzurumensis* Esen et al.,2013, *Lebertia* (*Brentalebertia*) *anatolica* Esen et al., 2013.*Lebertia* (*Lebertia*) *subtilis* Koenike, 1902, *Lebertia* (*Pilolebertia*) *longiseta* Bader, 1955.*Lebertia* (*Brentalebertia*) *minutipalpis* K. Viets, 1920.*Lebertia*(*Lebertia*) *rufipes* Koenike, 1902,Esen and Erman, 2014.*Lebertia* (*Pilolebertia*) *longiseta* Bader, 1955, Esen and Erman, 2014.*Lebertia* (*Pilolebertia*) *pilosa* Maglio, 1924,Esen and Erman, 2014,*Lebertia* (*Mixolebertia*) *separata* Lundblad, 1930, Esen and Erman, 2014 and *Lebertia* (*Brentalebertia*) *minutipalpis* K.Viets,1920, Esen and Erman, 2014. Examination of *Lebertia* material collected mainly from southwestern Turkey revealed the presence of a very distinct new species, as well as the new provincial records (22 localities from 9 provinces) for the three previously recorded species: *L.* (*Pilolebertia*) *salebrosa*,*L.* (*Pilolebertia*)*ineaqualis L.* (*Hexalebertia*) *holsatica*, from Afyonkarahisar, Antalya, Burdur, Denizli, Isparta, Konya, Tokat, Elazığ and Erzurum provinces. The faunistic investigation of the genus Lebertia in Turkey is still restricted to limited geographical regions, leaving big gaps in our knowledge of diversity of this genus in the regions of Marmara, Thrace, The Eastern and Western Black Sea coasts. Our results suggest that in the course of further investigations extended to cover all regions many more species will be found.

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