

# A New Record of a Water Mite (Acari, Hydrachnellae) for the Turkish Fauna: *Gnaphiscus setosus* Koenike, 1898

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**Abstract:** The morphological characters and geographical distribution of *Gnaphiscus setosus* Koenike, 1898, a new record for the Turkish fauna, are given.

**Key Words:** *Gnaphiscus setosus*, Hydrachnellae, Acari, New record, Turkey

## Türkiye Faunası İçin Yeni Bir Su Kenesi (Acari, Hydrachnellae) Türü: *Gnaphiscus setosus* Koenike, 1898

**Özet:** Türkiye faunası için yeni olan *Gnaphiscus setosus* Koenike, 1898'in yapısal özellikleri ve zoocoğrafik dağılımı verilmiştir.

**Anahtar Sözcükler:** *Gnaphiscus setosus*, Hydrachnellae, Acari, Yeni kayıt, Turkey

### Introduction

Oxidae is represented by only one species, *Oxus longisetus* (Berlese, 1885), in Turkey (1). So far, four species of *Gnaphiscus* are known worldwide (2). Of these, *G. occidentalis* Marshall, 1924, *G. affinis* Sokolow, 1934, *G. ekmani* Thor, 1913, and *G. setosus* Koenike, 1898, were recorded from Alaska, Eastern Siberia, Sweden, Finland, Siberia, the Altay Mountains in Kazakhstan and many countries in Europe, respectively (2).

In this work, *G. setosus* and its genus are recorded from Turkey for the first time. The morphological characters and geographical distribution of *Gnaphiscus setosus* are given.

### Materials and Methods

Water mites were collected and preserved as described by Özkan (3). Figures were drawn using a microscope (Nikon Type 104). Measurements are in microns.

### Results

*Oxidae* Oudemans, 1941

Key to the genera of Oxidae

- 1 Palp four-segmented ..... *Afrixus* Cook, 1966
- Palp-five segmented ..... 2
- 2 No evidence of a median suture line on ventral side of body; claws with one or two clawlets..... 3
- A median pore-free line extending from area of genital field to capitular bay; claws with two or more clawlets... *Flabellifrontipoda* Lunblad, 1947
- 3 Body laterally well flattened and height more than width; coxae extending up onto the dorsal side of body and coming close to each other behind the genital field in males..... 4
- Body fusiform, laterally flattened and height not more than width; coxae not extending up onto the dorsal side of body and not coming close behind the genital field, free from ephimeral chitin.....*Oxus* Kramer, 1877
- 4 Sexual dimorphism absent; excretory pore on a tall sclerite; coxae come close extremely behind the genital field and dorsally a narrow median strip with postocularia and dorsoglandularia, sometimes small sclerites present.....  
.....*Frontipoda* Koenike, 1891

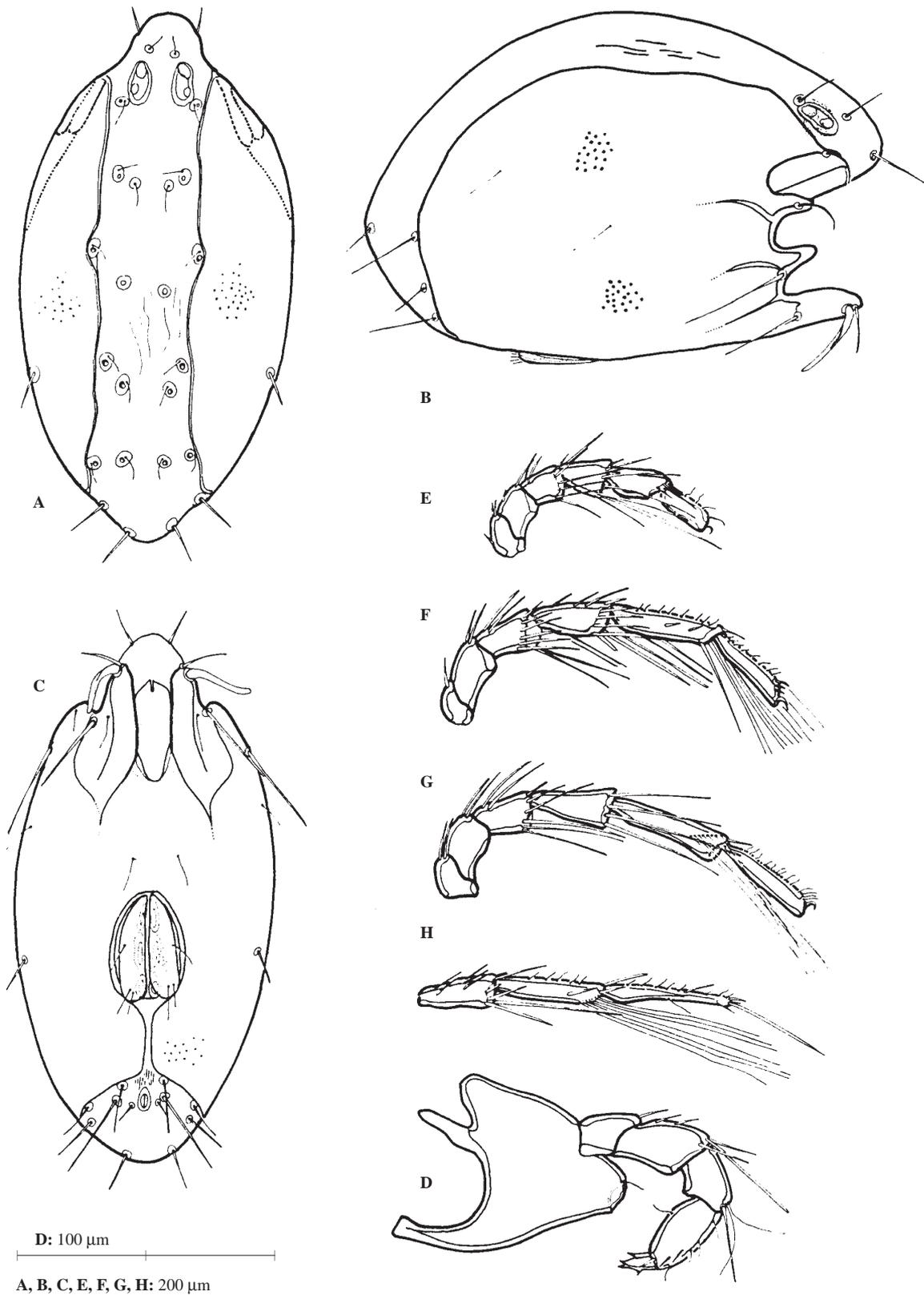


Figure 1. *Gnaphiscus setosus*: Male: A) Dorsal view, B) Lateral view, C) Ventral view, D) Gnathosoma, E-H) Legs I-IV respectively.

- Sexual dimorphism present; excretory pore not on the sclerite; genital field almost completely enclosed by the greatly expanded fourth coxae in males and the middle of body; dorsal stripe half of dorsal width; genital field located on the posterior part of body in females; body length much greater than width ..... *Gnaphiscus* Koenike, 1898

*Gnaphiscus* Koenike, 1898

Genotypus: *Gnaphiscus setosus* Koenike, 1898

Body oval and laterally well flattened; palps short and small; P2 and P3 with both thick-short and thin-long setae dorsally; females dorsally with an unsclerotized stripe wider than those of males; genital field almost completely enclosed by greatly expanded fourth coxae and located in front of last-half part of body in males; fourth coxae extended to the middle of the genital region with no chitin behind.

*Gnaphiscus setosus* Koenike, 1898

Male: Length of body 617 µm, width 529 µm, height 402 µm, front of body completely narrowed (Fig. 1 A-C); preannular distance 59 µm; eyes close to each other, distance between them 29 µm.

Capitulum length 117 µm, width 108 µm; infracapitulum length 75 µm, short and blunt edged; cheliser and cheliser claw length 118 and 29 µm, respectively; the depth of capitular bay 118 µm; the distance between capitular bay and genital region 157 µm, dorsal length of palp segments; 39-49-39-49-20=196 µm; ventral length; 20-39-19-49-20=147 µm, heights; 20-39-29-29-10 µm (Fig. 1-D).

Two setae present at the tip of the first epimer, one of them short-thick, other longer, wide dagger shaped and its length two times longer than the width of the first epimer; a certain suture line between anterior and posterior coxal group; one long and stiff seta present at the outer side of second and third epimer; in addition, there are three pairs of tiny-short setae on ventral side, the first located between the anterior coxal group and genital region, others located on the side part of posterior coxal group. Length of coxal area 500 µm, width 461 µm; length of genital flap 137 µm, width 78 µm, the second acetabulum larger than others; unsclerised and lined skin present behind the genital region; no sclerites associated with the excretory pore.

Dorsal length of the leg segments: Leg I/1-6; 49-54-60-67-81-69=380 µm; Leg II/ 1-6; 49-59-69-88-137-

118=520 µm; Leg III/1-6; 39-49-69-88-137-108=499 µm; Leg IV/1-6; 39-49-69-88-137-156=450 µm. The distributions of swimming setae on leg segments: L II/5-9; L III/ 5-9; L IV/5-8 (Fig. 1 E-H).

Material Examined: Samples were collected from a stream with aquatic plants. 5.9.2000, 2♂, Gümenek, Tokat.

## Discussion

*Gnaphiscus setosus* is known from Germany, Norway, Sweden, England, France, Holland, Switzerland, Austria and Italy (2). So far, it has been evaluated as a European species (2-8). The results of our study demonstrated that this species is not a continental endemic.

The bodies of males in the literature are approximately 600 µm in length, 320 µm in width and 400 µm in height (4). Therefore the specimens precollected are narrower than our samples, whereas in terms of height and length they are similar to ours. It was reported that the body chitin of species is greenish-brown; legs and gnathosoma are dark brown, middle region of the dorsal side seemed white. These descriptions agree with our findings. Lundblad indicated that there is sexual dimorphism on the first legs of the male (6). That is, the third, fourth, and fifth segments of the first leg are rough, short and large. Its fourth part is triangular. In addition, dorsal lengths of the Leg I/3-5 for the male are 64-89-114 µm; heights 51-51-44; the percentages of heights to lengths are 79, 69-57, 30-38, 60 (6).

The sizes of our species are as follows: Leg I / 3-5: 60-67-81µm in length, 44-49-40 µm in height, and the percentages of heights to lengths are 73, 33-134, 49-49, 38. Our results indicated that the 4 and 5 parts of Leg I were thicker than those of Lundblad's samples. The fact that parts of Leg I were short and thick have been supported by previous studies. As there is not enough knowledge on the structural peculiarities of males, our findings were impossible to compare in detail.

*G. setosus* were collected from lakes surrounded with chestnut trees and covered by plants; from poor lakes having no plant on their shore and stony places in their base, in Switzerland; from the shore of Lanzer lake and channels in which many Elodea plants live with many other water plants, in Australia (6). Also *Lebertia*

*cognata*, *Hygrobates nigromaculatus*, *Arrenurus cylindricus*, *Lebertia rufipes*, *Unionicola crassipalpis*, *Piona rotunda*, *Forelia cerrata*, *Mideopsis curvipalpis*, *Mideopsis orbicularis*, *Teutonia cometes*, *Limnesia koenike* and *Arrenurus adnatus* were recorded from the same area (6). In addition, *Gnaphiscus setosa*, *Hygrobates fuluviatilis*, *H. calliger*, *Sperchon compactilis*

and *Oxus longisetus* were also captured from our study area. The area where we collected the samples is similar to the area in Australia. Although it was observed in standing water in Germany, it was stated that this species was not actually a thermotolerant (4). It is known that it lives generally in standing water and ponds on plains.

## References

1. Özkan, M., Erman, O., Boyacı, Y.Ö., Sultan Sazlığı'ndan (Kayseri) Türkiye Faunası İçin Yeni Birkaç Su Kenesi (Acari, Hydrachnellae) Türleri-II. J. of Zoology, 19, 77-118 1995.
2. Viets, K., Die Wassermilben des Süßwassers des Meeres (Hydrachnellae und Halacaridae). Gustav Fischer Verl., Jena, 870p 1956.
3. Özkan, M., Doğu Anadolu Bölgesi Su Akarları (Acari, Hydrachnellae) Üzerine Sistemik Araştırmalar I. Doğa Bilim Dergisi, Temel Bilimler, 5, 25-46 1981.
4. Viets, K., Wassermilben oder Hydracarina (Hydrachnellae und Halacaridae). Gustav Fisher Verl., Jena, 574 p 1936.
5. Cook, D. R., Water Mite Genera and Subgenera. Amer. Entomol. Ins., 21, 860p, 1974.
6. Lundblad, O., Zur Kenntnis süd-und mitteleuropäischer Hydrachnellae. Arch. Für Zoologie, 10 (1), 1-296 1956.
7. Gercke, R., Süßwassermilben (Hydrachnellae). Lauterbornia, 18, 1-184 1994.
8. Viets, K.O. Die Milben des Süßwassers (Hydrachnellae und Halacaridae [part], Acari). II.: Katalog-Sonderbaende der Naturwiss. Vereins. Hamburg, Paul Parey Verl., 8, 1012 p 1987.