

# MARINE SCIENCE AND TECHNOLOGY BULLETIN

## A preliminary record on water mite (Acari: Hydrachnidia) fauna in Canakkale province (Biga Peninsula, Turkey).

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### ABSTRACT

This study has revealed first findings for water mites in Çanakkale Province, Biga Peninsula. According to the results of the field survey between 2008 and 2009, 11 Hydrachnidia species; *Eylais megalostoma* Koenike 1897, *Lebertia fimbriata* Thor 1899, *Torrenticola (barsica)* (Szalay 1933), *Limnesia walteri* Migot 1926, *Hygrobates longiporus* Thor 1898, *Hygrobates nigromaculatus* Lebert 1879, *Hygrobates longipalpis* Hermann 1804, *Atractides robustus* (Sokolow 1940), *Atractides nodipalpis* Thor 1899, *Atractides longirostris* (Walter 1925), *Mideopsis crassipes* Soar have been described at the Tuzla, Kocabaş Streams and Ayazma Creek for the first time.

### Introduction

Water mites constituting an important group in aquatic ecosystem are remarkable with their variable morphological structures and range from 0.2 to 10 mm in size. Water mites can be regarded as the indicator species due to their limited tolerance to variable ecological conditions. They are not inhabitants of meso-sabrobic environment. They are susceptible to all kinds of habitat alterations as a result of human activities. Their parasitic association with insects and even vertebrates increase their dispersal and cause to be used as biological control agents (Di Sabatino et al. 2008).

Free-living individuals inhabit groundwater, hot or cold springs, ponds, swamps, lakes, as well as marine environment, while parasite forms occupy the mantle cavity of mollusks and freshwater sponges (Esen and Erman 2013).

Over 6000 species have been described worldwide,

representing 57 families, 81 subfamilies with more than 400 genera (Di Sabatino et al. 2008). In Turkey, about 270 species of water mites are known so far (Özkan 1981; Özkan 1982; Erman and Özkan 1997; Tuzovskij and Gerecke 2003; Boyacı and Özkan 2004; Aşçı 2005; Uysal 2005; Erman et al. 2006; Pešić and Turan 2006; Erman et al. 2010; Gülle et al. 2011; Aşçı et al. 2011; Bursalı et al. 2011; Boyacı et al. 2012a; Boyacı et al. 2012b; Boyacı et al. 2012c; Esen et al. 2012; Esen and Erman 2013).

In this study, 11 water mite species identified from the running waters of Canakkale province (Biga Peninsula) which are representing first records for this region.

### Material and methods

The study area is located in the western part of the Marmara Region in North-West Anatolia (Figure 1). Seasonal field survey was carried out at the running waters of Çanakkale Province, Kocabaş, Tuzla Stream and Ayazma Creek (Upper Karamenderes Stream) which are rising from Kazdağı (Kaz Mount) Region. This study was conducted between 2008 and 2009. Water mites were sieved and collected by pasteur pipettes from the white containers into Koenik fluid (5 units of glycerin, 2 units of acetic acid and 3 units of distilled water). References of Viets (1936),

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Viets (1956), Sokolow (1940), Lundblad (1956), Besseling (1964), Szalay (1964), Cook (1974) and Bader (1975) were used for taxonomic identifications.

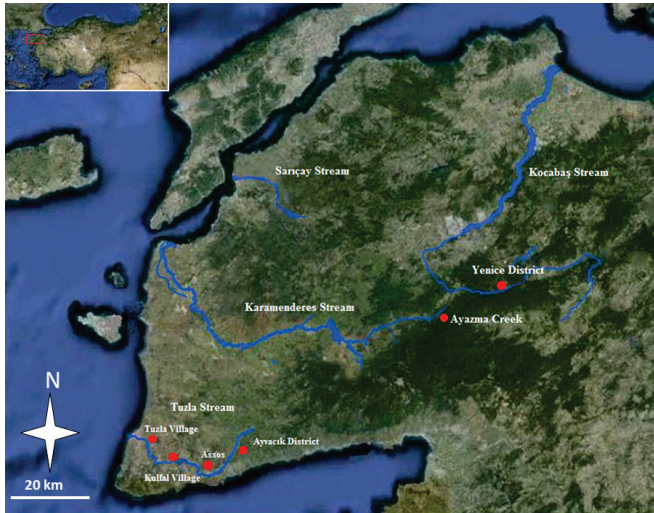


Figure 1. Map of the Biga Peninsula and its major streams with dots showing the collection sites (Modified from Google Earth, 2012).

## Systematics

### 1. Eylaidae Leach, 1815

#### 1.1. *Eylais megalostoma* Koenike, 1897

2 (♂) individuals of this species were identified from Tuzla Stream (39°55'813''N, 26°15'915''E, 7m Alt.). The sampling station was densely vegetated with aquatic plants such as *Cladophora* spp., *Ceratophyllum* spp., *Potamogeton* spp.

Distribution in Turkey: This species has been recorded from freshwaters of Erzurum and Van (Özkan 1982), Elazığ (Erman and Özkan 2000; Erman et al. 2006), Afyon (Özkan et al. 2003; Boyacı and Özkan 2004), Bingöl (Esen and Erman 2013), Kemaliye (Erzincan) (Esen et al. 2013).

### 2. Lebertiidae Thor, 1900

#### 2.1. *Lebertia fimbriata* Thor, 1899

2 (♀) specimens belong to this species were identified in Kocabaş Stream, Yenice District (39°93'861''N, 27°23'224''E, 266 m Alt.). This station has almost a constant water regime throughout the year. There is no aquatic vegetation observed in the stream, but the stream bed was surrounded by high trees such as oriental plane and salix. Domestic solid wastes left nearby the stream were observed at the sampling time.

Distribution in Turkey: This species has been recorded from Bingöl (Esen and Erman 2013) and Kemaliye (Erzincan) Provinces (Esen et al. 2013).

### 3. Limnesidae Thor, 1900

#### 3.1. *Limnesia walteri* Migot, 1926

Only a female of *Limnesia walteri* Migot, 1926 was identified from the Tuzla Stream (39°29'991''N,

26°19'989''E, 101 m. Alt.) nearby the ancient city of Assos, while 20 (14 ♀ 16 ♂) specimens were identified at the Kulfal Village (39°31'590''N, 26°17'231''E, 74 m. Alt.) where several headwaters were available feeding the stream.

Distribution in Turkey: This species has been recorded from Elazığ (Erman and Özkan 1997; Erman and Özkan 2000, Erman et al. 2006), Köprüçay Creek (Antalya) (Boyacı et al. 2012a), Bingöl (Esen and Erman 2013).

## 4. Hygrobatidae Koch, 1842

### 4.1. *Hygrobatas longiporus* Thor, 1898

9 specimens of *Hygrobatas (Hygrobatas) longiporus* (3♀ ve 6♂) described from the Tuzla Stream close to Ayvacık District (39°35'246'' N, 26°25'109''E, 240 m Alt.).

Distribution in Turkey: Rize Province (Pešić et al., 2007); Erzurum and Konya Provinces (Erman et al. 2008), Afyon Province, Sandıklı and Akdağ Streams (Erman et al. 2010), Bingöl (Esen and Erman 2013).

### 4.2. *Hygrobatas nigromaculatus* Lebert, 1879

16 specimens (12♀ ve 4♂) of this species were identified from Tuzla Stream at several locations; 39°29'991''N, 26°19'989''E, 101 m Alt., 39°31'590''N, 26°17'231''E, 74 m Alt. and 39°55'813''N, 26°15'915''E, 7 m Alt.

Distribution in Turkey: Afyon Province (Aşçı et al. 2006-2007); Erzurum Province (Boyacı and Özkan 2007); Elazığ, Erzurum and Malatya Provinces (Erman et al. 2008), Köprüçay Creek (Antalya) (Boyacı et al. 2012a) and Bingöl Province (Esen and Erman 2013).

### 4.3. *Hygrobatas longipalpis* Hermann, 1804

9 specimens (7 ♀ and 2 ♂) of this species were described from Tuzla Stream, close to ancient city of Assos (39°29'991''N, 26°19'989''E, 101 m Alt.).

Distribution in Turkey: This species has been cited from continental waters of Erzurum Province (Özkan 1982; Boyacı and Özkan 2007; Erman et al. 2008); Kayseri Province (Özkan et al. 1996); Afyon Province (Aşçı et al. 2006-2007) and Bingöl (Esen and Erman 2013).

### 4.4. *Atractides robustus* (Sokolow, 1940)

7 specimens (4♀ and 3♂) of this species were determined in Ayazma Creek (39°44'41.87''N and 26°50'33.80''E, 500 m Alt.), a higher branch of the Karamenderes Stream. The Ayazma Creek is located on the northern slopes of the Kaz Dağı (Mountain), close to headwaters and flows are clear year round. There was no aquatic vegetation observed at the sampling time, but the creek's bank was surrounded by a variety of broad-leaved trees such as chestnut (*Castanea sativa*), common hazel (*Corylus avellana*), oriental plane (*Platanus orientalis*) and Oriental Beech (*Fagus orientalis*) providing a shaded habitat.

Distribution in Turkey: This species has been reported from Antalya and Mersin Provinces (Smit 1995); Erzurum and Malatya Provinces (Pestic and Erman 2006); Rize and Trabzon Provinces (Pešić et al. 2007), Bingöl (Esen and Erman 2013), Kemaliye District (Erzincan) (Esen et al. 2013).

#### 4.5. *Atractides nodipalpis* Thor, 1899

3 individuals (1♀ and 2♂) were found at the Ayazma Creek.

Distribution in Turkey: This species has been cited from freshwaters of Erzurum Province (Özkan 1982; Boyacı and Özkan 2007; Erman et al. 2010); Kayseri Province (Özkan et al. 1996); Elazığ Province (Erman and Özkan 2000; Erman et al. 2006); Malatya Province (Pestic and Erman 2006); Afyon Province (Aşçı et al. 2006-2007), Köprüçay Creek (Antalya Province) (Boyacı et al. 2012a), Bingöl (Esen and Erman 2013) and Kemaliye Province (Erzincan) (Esen et al. 2013).

#### 4.6. *Atractides longirostris* (Walter, 1925)

Only one female specimen of this species was determined from Tuzla Stream, close to Ayvacık District (39°35'246''N, 26°25'109''E, 240 m Alt.).

Distribution in Turkey: This species has been reported from Antalya Province (Gülle et al. 2010) and Bingöl Province (Esen and Erman 2013).

### 5. Mideopsidae Thor, 1928

#### 5.1. *Mideopsis crassipes* Soar, 1907

Only one female specimen of this species is determined from Tuzla Stream, nearby Kulfal Village (39°31'590''N, 26°17'231''E,, 74 m Alt.).

Distribution in Turkey: This species has been reported from Konya Province (Boyacı and Özkan 2000-2001), Köprüçay Creek (Antalya Province) (Boyacı et al. 2012a).

### 6. Torrenticolidae Piersig, 1902

#### 6.1. *Torrenticola barsica* (Szalay, 1933)

2 specimens of both sexes for this species were determined at the Kocabaş Creek nearby Yenice District (39°93'861''N, 27°23'224''E, 266 m Alt.).

Distribution in Turkey: This species has been recorded from continental waters of Rize (Turan and Pešić 2004; Turan and Pešić 2005; Pešić et al. 2007) and Artvin Provinces (Pešić et al. 2007) as well as Bingöl (Esen and Erman 2013), Kemaliye (Erzincan) District (Esen et al. 2013).

### Conclusion

In this study, water mites collected from freshwaters of Çanakkale Province between 2008 and 2009, are listed and compared with the Turkish checklist of water mite fauna by Erman et al. (2010). Consequently, the eleven species assigned to six families are representing first records for Çanakkale Province and the Marmara Region. The preliminary data revealed in this study will be employed for regional fauna inventory by governmental institutions.

### References

- Aşçı, F. 2005. Afyonkarahisar İli su akarlarının (Acari, Hydrachnellae) sistematik, ekolojik ve mikrobiyolojik yönden incelenmesi. Afyon Kocatepe Üniv. Bilimsel Araş. Projeleri Kom. 031. FENED. 06 nolu proje, 86 s.
- Aşçı, F., Bursalı, A., and M. Özkan. 2006-2007. Afyonkarahisar İli Su Kenesi (Acari; Hydrachnidia) Faunası. Süleyman Demirel Üniversitesi, Eğirdir Su Ürünleri Fakültesi Dergisi, 2-3(1-2): 46-49.
- Aşçı, F., Boyacı, Y. Ö., and M. Özkan. 2011. Two new water mite records (Acari, Hydrachnidia, Hygrobatidae) for Turkish. Çankaya University Journal of Science and Engineering, 8(2): 201- 204.
- Bader, C. 1975. Die Wassermilben der Schweizerischer National parks, I. systematisch faunistischer Teil., . Ergebnisse wiss Unters Schweiz Natn Parks, 1471: 1-270.
- Besseling, A.J. 1964. De Nederlandse watermijten (Hydrachnellae Latreille, 1802). Monographien van de Nederlandsche, Entomologische Vereeniging, 199 pp.
- Boyacı, Y.Ö. and M. Özkan. 2000-2001. Türkiye Faunası için Yeni Bir Su Kenesi (Mideopsidae, Hydrachnellae, Acari) Türü: *Mideopsis* (s.str.) *crassipes* Soar, 1907. Süleyman Demirel Üniversitesi, Eğirdir Su Ürünleri Fakültesi Dergisi, 7: 101-107.
- Boyacı, Y.Ö. and M. Özkan. 2004. Water Mite (Acari, Hydrachnellae) Fauna of Lake Çapalı, Afyon, Turkey. Turkish Journal of Zoology, 28: 199-203.
- Boyacı, Y.Ö. and M. Özkan. 2007. Dumlu Çayı ve Akdağ Suyu Su Kenelerinin (Acari, Hydrachnidia) Sistematik ve Ekolojik Yönden İncelenmesi. Ege Üniversitesi Su Ürünleri Dergisi, 24 (1-2): 113-115.
- Boyacı, Y. Ö., Gülle, P., and İ. Gülle. 2012a. Water Mite (Hydrachnidia) Fauna of Köprüçay River (Antalya) and Its Branches. Süleyman Demirel Üniversitesi, Fen Bilimleri Enstitüsü Dergisi, 16-1: 29-32.
- Boyacı, Y. Ö., Gülle, P., and H. Didinen. 2012b. A new water mite species (Hydrachnidia: Aturidae) from Turkey: *Barbaxonella taurusensis* sp. nov. Turkish Journal of Zoology, 36(4): 481-484.
- Boyacı, Y.Ö., Gülle, P., and M. Özkan. 2012c. Water mites of the genus *Sperchon* Kramer (Acari: Hydrachnidia: Sperchontidae) from Turkey, with description of a new species from Taurus Mountains (Southern Turkey). Aquatic Insects, 34(1): 85-92.
- Bursalı, A., Aşçı, F., and M. Özkan. 2011. *Lebertia insignis* Neuman, 1880 (Acari, Hydrachnidia, Lebertiidae), a new record for the Turkish fauna. Turkey Bulletin of Entomology, 1(1): 27-30.
- Cook, D.R. 1974. Water Mite Genera and Subgenera. Memorial American, Entomology, Instutie, Michigan, 860 pp.
- Di Sabatino, A., Smith, H., Gerecke, R., Goldschmidt, T., Matsumoto, N., and B. Cicolani. 2008. Global diversity of water mites (Acari, Hydrachnidia; Arachnida) in freshwater. Hydrobiologia, 595: 303-315.
- Erman, O., and M. Özkan. 1997. *Limnesia* (s.str.) Koch, 1836 (Limnesidae, Hydrachnellae, Acari) Türleri Üzerine Bir Çalışma. Hacettepe Fen ve Mühendislik Bilimleri Dergisi, 18: 67-89.
- Erman, O., and M. Özkan. 2000. Elazığ İli Su Kenesi (Hydrachnellae, Acari) Faunası. Fırat Üniv. Fen ve Mühendislik Bilimleri Dergisi, 12(2): 19-28.
- Erman, O., Telliöğlü, A., Orhan, O., Çitil, C., and M. Özkan. 2006. Water Mites (Hydrachnidia: Acari) Fauna of Hazar Lake and Behremaz Stream (Elazığ) and Their Seasonal Distribution. Science and Engineering Journal of Fırat University, 18(1): 1-10.
- Erman, O., Telliöğlü, A., Çitil, C., and M. Özkan. 2008. Türkiye Faunası İçin Yeni *Hygrobatas* Koch, 1837 (Hygrobatidae: Hydrachnidia: Acari) Türleri. Fırat Üniversitesi Fen ve Mühendislik Bilimleri Dergisi., 20(1): 1-14.
- Erman, O., Pešić, V., Esen, Y., and M. Özkan. 2010. A checklist of the water mites of Turkey (Acari: Hydrachnidia) with description of two new species. Zootaxa, 2624: 1-48.

- Esen, Y., Pešić, V., Çitil, C., and O. Erman. 2012. New records of water mite (Acari: Hydrachnidia) species for the Turkish fauna. *Turkish Journal of Zoology*, **36(3)**: 375-382.
- Esen, Y., and O. Erman. 2013. The Water Mites (Hydrachnidia: Acari) Fauna of Bingöl Province. *Fırat Univ. Journal of Science*, **25(2)**: 105-114.
- Esen, Y., Dilkaraoğlu, S., and O. Erman. 2013. A systematic study on water mites (Acari: Hydrachnidia) of Kemaliye district (Erzincan). *Türkiye Entomoloji Dergisi*, **37(3)**: 263-276.
- Gülle, P., Boyacı, Y. Ö., Kebapçı, Ü., and İ. Güllü. 2010. A new *Atractides* Koch, 1837 (Acari: Parasitengona: Hygrobatidae) species for the Turkish fauna, *Oltenia, Studii si Comunicari, Stiintele Naturii*, **26-(2)**: 84-86.
- Gülle, P., Boyacı, Y. Ö., and İ. Güllü. 2011. A New Species of *Arrenurus* Dugès 1834 (Acari: Hydrachnellae) from Turkey. *Turkish Journal of Entomology*, **35 (4)**: 569-573.
- Lundblad, O. 1956. Zur Kenntnis süd-und mitteleuropaeischer Hydrachnelliden. *Arkiv för Zoologi*, **10**: 1-296.
- Özkan, M. 1981. Doğu Anadolu su akarları (Hydrachnellae, Acari) üzerine taksonomik araştırmalar I. *Doğa Temel Bilimler*, **5(IA)**: 25-46.
- Özkan, M. 1982. Doğu Anadolu Su Akarları (Acari, Hydrachnellae) Üzerine Sistemik Araştırmalar-II. *Atatürk Üniv Fen Fakültesi Dergisi*, **1**: 145-163.
- Özkan, M., Erman, O., and Y.Ö., Boyacı. 1996. Sultan Sazlığı'nın (Kayseri) Su Akarı (Hydrachnellae, Acari) Faunası Üzerine Bir Araştırma. *Turkish Journal of Zoology*, **20**: 95-98.
- Özkan, M., Boyacı, Y. Ö., and O. Erman. 2003. Sultan Sazlığı, Çapalı ve Işıklı Gölü Su Kenesi Faunasının Tür Çeşitliliği, Rastlanma Sıklığı ve Baskınlık Değerleri Üzerine Bir Araştırma. I. Ulusal Erciyes Sempozyumu, *Bildiriler Kitabı*, 23-25 Ekim 2003, Erciyes-Kayseri, 303-309.
- Pešić, V., and O. Erman. 2006. Water mite species of the genus *Atractides* Koch (Acari: Hydrachnidia, Hygrobatidae) from Turkey, with a description of one new species. *Zootaxa*, **1198**: 53-68.
- Pešić, V., and D. Turan. 2006. New Records and Description of a New Subspecies for the Water Mite Fauna (Acari, Hydrachnidia) of Turkey from the Eastern Black Sea Coast. *Turkish Journal of Zoology*, **30**: 405-411.
- Pešić, V., Ağırbaş, E., and D. Turan. 2007. A contribution to the knowledge of the water mite fauna of running waters draining to the Eastern Black Sea coast of Turkey. *Lauterbornia*, **59**: 45-52.
- Smit, H. 1995. New records of water mites from Turkey, with 11 species new for the Turkish Fauna (Acari, Hydrachnellae). *Storkia*, **4**, 10-15. Sokolow, I.I. 1940. *Hydracarina Fauna SSCR. Zoology Institute, Academia Science*, **5(2)**: 1-511.
- Sokolow, I.I. 1940. *Hydracarina Fauna SSCR. Zoology Institute. Academiai Science*, **5(2)**: 1-511.
- Szalay, L. 1964. *Viziatkak Hydracarina Fauna Hungariae. Budapest, Akad, Kiado*, 380 pp.
- Turan, D., and V. Pešić. 2004. Three Water Mite Species of the Genus *Torrenticola* Piersig (Acari, Hydrachnidia) New for the Turkish Fauna. *Natura Montenegrina, Podgorica*, **3**: 37-41.
- Turan, D., and V. Pešić. 2005. *Monatractides stadleri* (Walter, 1921), a new water mite species (Acari, Hydrachnidia) for the Turkish Fauna. *Natura Montenegrina, Podgorica*, **2**: 41-44.
- Tuzovskij, P., and R. Gerecke. 2003. A new diagnosis and status for *Mixobates* Thor, 1905 (Acari, Hydrachnidia, Hygrobatidae), with a revision of the palaeartic species *Ann. Limnologie-International Journal Limnology*, **39(2)**: 151-174.
- Uysal, G. 2005. Karamık Gölü su keneleri (Acari, Hydrachnellae) üzerine sistematik bir çalışma. *Afyonkarahisar Kocatepe Üniv. Fen Bilimleri Enstitüsü, Yüksek Lisans Tezi*, s. 100.
- Viets, K. 1936. *Wassermilben oder Hydracarina. (Hydrachnellae und Halaacaridae). Dahlis Tierwelt Detschl, Jena*, 642 pp.
- Viets, K. 1956. *Die milben des Süßwassers und des meeres. 2/3 katalog und Nomenklatur. VEB Gustav Fischer Verlag, Jena*, 870 pp.