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Halacaridae (Acari: Prostigmata) of the Aegean Sea of Turkey (Çanakkale and Izmir)

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In Aegean Sea, the first taxonomic study on halacarid mites was done by Travé (1972), who reported *Acarochelopodia angelieri* Travé, 1972, *Acaromantis squilla* Trouessart & Neumann, 1893, *Actacarus* sp., *Actacarus illustrans* Newell, 1951, *Anomalohalacarus* sp., *Anomalohalacarus anomalus* (Trouessart, 1894), *Copidognathus loricifer* André, 1946, and *Scaptognathus sabularius* André, 1961 from Euboea Island, Greece (Durucan 2020). Of them, first mentioned species (*A. angelieri*) was considered *species inquirenda* by Bartsch (2009) because of not being illustrated and according to the same author *A. illustrans* and *A. anomalus* were probably misidentified and in need of verification.

To date, there is no halacarid mite record from Aegean coast of Turkey. The halacarid mites studied were collected from Çanakkale (Bozcaada) (39.824039, 26.080924) (coll. B. Özalp; Feb. 10, 2020) and Izmir (Urla, Karantina Island) (38.374693, 26.784428) (coll. S. Yiğitkurt; Oct. 18, 2019) (Fig. 1).



Figure 1. Map of the study locations, including the species reported in the study.

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Mites collected at Izmir were extracted from the oyster *Pinctada radiata* (Leach, 1814) (1 m depth) while those from samples at Çanakkale-Bozcaada were extracted from the seagrass *Posidonia oceanica* (L.) Delile (8 m depth). Mites were extracted by washing the substrates over a set of sieves (1 mm, 500 µm, 63 µm) and material retained sorted under binocular microscope (Nikon SMZ10). Mites were cleared in lactic acid and mounted in Hoyer's medium. Drawings were made using microscope equipped with a camera lucida (Nikon Eclipse E400). The specimens were deposited in Eğirdir Fisheries Faculty, Isparta University of Applied Sciences, Isparta, Turkey. All measurements are given in micrometers (µm). Terminology and abbreviations follow Bartsch (2006). In this study, 71 specimens were examined. Twelve species were identified from six different marine halacarid mite genera. Of them, deutonymphs of *Agauae chevreuxi* (Trouessart, 1889), *Agauopsis conjuncta* Viets, 1940, and female of *Simognathus adriaticus* Viets, 1940 are reported for the first time from Turkey, and, hence, illustrated.

Family Halacaridae Murray, 1877

Agauae chevreuxi (Trouessart, 1889)

Material examined – Two females and eight males, Urla, Izmir; one deutonymph, Bozcaada, Çanakkale.

Remarks – This species has been reported from different provinces of Turkey (Sinop, Istanbul, Antalya), and widely distributed in Black and Mediterranean Sea (Durucan 2020). The morphological characteristics of the specimens reported here accord with the previously descriptions from Turkey (Bilecenoglu *et al.* 2013; Durucan 2019a). Length of deutonymph idiosoma 462 µm long and 275 µm wide.

Agauae panopae (Lohmann, 1893)

Material examined – Two females and two males, Urla, Izmir.

Remarks – This species was previously reported from Antalya (Yakamoz Beach, Phaselis, Finike and Kaş) among macroalgae (*Corallina elongata* J. Ellis & Solander 1786, *Cystoseira crinita* Duby 1830, *Jania rubens* (Linnaeus) J.V. Lamouroux, 1816, *Mesophyllum expansum* (Philippi) Cabioch & M.L. Mendoza, 2003) from the depths of 2–10 m (Durucan 2019a). The morphological characteristics of the specimens reported here agree with the previous record by Durucan (2019a).

Agauopsis brevipalpus (Trouessart, 1889)

Material examined – Four females, three males and two deutonymphs, Bozcaada, Çanakkale; 10 females, two males and three deutonymphs, Urla, Izmir.

Remarks – This species is widely distributed and reported in the Black Sea and Mediterranean Sea (Durucan 2020). *Agauopsis brevipalpus* was reported for the first time from Turkey (Black Sea-Sinop) by Bartsch (2004). Afterwards, Durucan and Boyaci (2018) reported the species from Antalya with a few stations (Örnekköy, Yakamoz, Bilem, Kemer, Phaselis, Finike, Kaş and Kalkan). The specimens are morphologically indistinguishable from Black Sea (Bartsch 1996a) and Levantine Sea individuals (Viets 1940; Durucan and Boyaci 2018).

Agauopsis conjuncta Viets, 1940

Material examined – Two deutonymphs, Bozcaada, Çanakkale.

Remarks – This species was originally described by Viets (1940) from Adriatic Sea (Croatia-Rovinj and Split). Later on, it was recorded from Tyrrhenian Sea (Livorno) by Morselli and Mari (1985) and from Kaş (Antalya) from 15 m depth among *Cymodocea nodosa* (Ucria) Ascherson 1870 (Durucan and Boyaci 2018). Length of idiosoma of deutonymphs about 300 µm long and 200 µm wide.

***Agauopsis microhyncha* (Trouessart, 1889)**

Material examined – Two females, Urla, Izmir; one male, one deutonymph, Bozcaada, Çanakkale.
Remarks – The species was previously reported from Antalya (Kaş) from 22 m depth on soft sandy bottom and the specimens reported herewith are morphologically indistinguishable from them (Mytilineou *et al.* 2016).

***Copidognathus brachystomus* Viets, 1940**

Material examined – Four females, Urla, Izmir.
Remarks – With regard to the external morphological characters, the specimens agree with specimens from Antalya (Durucan 2019b).

***Copidognathus remipes* (Trouessart, 1894)**

Material examined – Two females, Bozcaada, Çanakkale.
Remarks – The morphological characteristics of the specimens from Çanakkale accord with the previous reports of the species from Antalya (Durucan 2019b).

***Copidognathus tabellio* (Trouessart, 1894)**

Material examined. Two males and two females, Urla, Izmir.
Remarks – The morphological characteristics of the specimens from Izmir accord with the previously reports of the species from Antalya (Durucan 2019b).

***Halacaropsis hirsuta* (Trouessart, 1889)**

Material examined – Ten deutonymphs, Urla, Izmir.
Remarks – This species is very common in Mediterranean Sea (Croatia, Egypt, France, Italy, Spain, Strait of Gibraltar, Morocco and Turkey), being found in three other localities in Turkey (Istanbul and Antalya) (Durucan and Boyaci 2016; Durucan 2020). Length of idiosoma about 600 µm long and 440 µm wide (Fig. 2).

***Rhombognathus magnirostris* Trouessart, 1889**

Material examined – Two females, Urla, Izmir.
Remarks – Specimens accord with the previously recorded from Black Sea by Bartsch (1996b) and from Antalya by Durucan (2019a). The present finding constitutes the third record of this species from Turkey and stands as the first report from Aegean Sea.

***Rhombognathus paranotops* Bartsch, 1986**

Material examined – One female, Bozcaada, Çanakkale.

Remarks – The morphological characteristics of the specimens from Turkey accord with the description by Bartsch (1986) and previously recorded from the Antalya (Levantine Sea) by Durucan (2019a). The species reported from Antalya (Yakamoz Beach, Bilem, Phaselis and Finike) from the depths of 2–6 m among seaweeds (*Corallina officinalis* Linnaeus, 1758, *Cystoseira barbata* (Stackhouse) C. Agardh, 1820 and *Cystoseira crinita* Duby, 1830) (Durucan 2019a). The present finding constitutes the third record of this species from Turkey and stand as the first report from Aegean Sea.

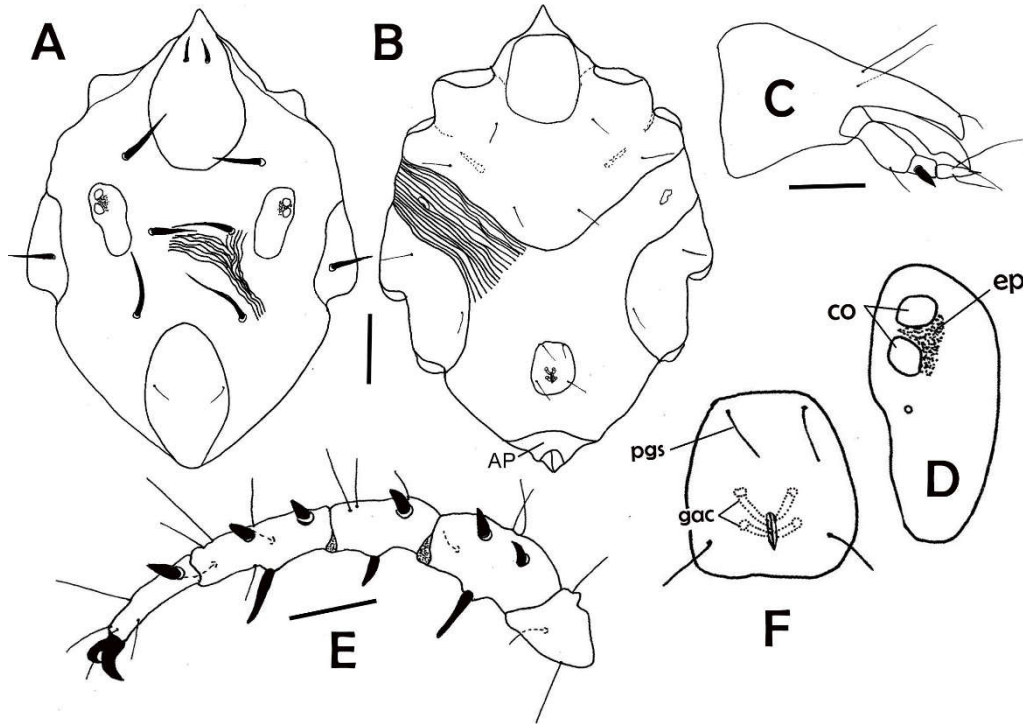


Figure 2. *Halacaropsis hirsuta* (Trouessart, 1889) (deutonymph) – A. Dorsal view of idiosoma; B. Ventral view of idiosoma; C. Lateral view of gnathosoma; D. Ocular plate; E. Lateral view of leg I; F. Genitoanal plate (AP: anal plate; co: corneae; ep: eye pigment; gac: genital acetabula; pgs: perigenital setae). Scale bars: 50 µm.

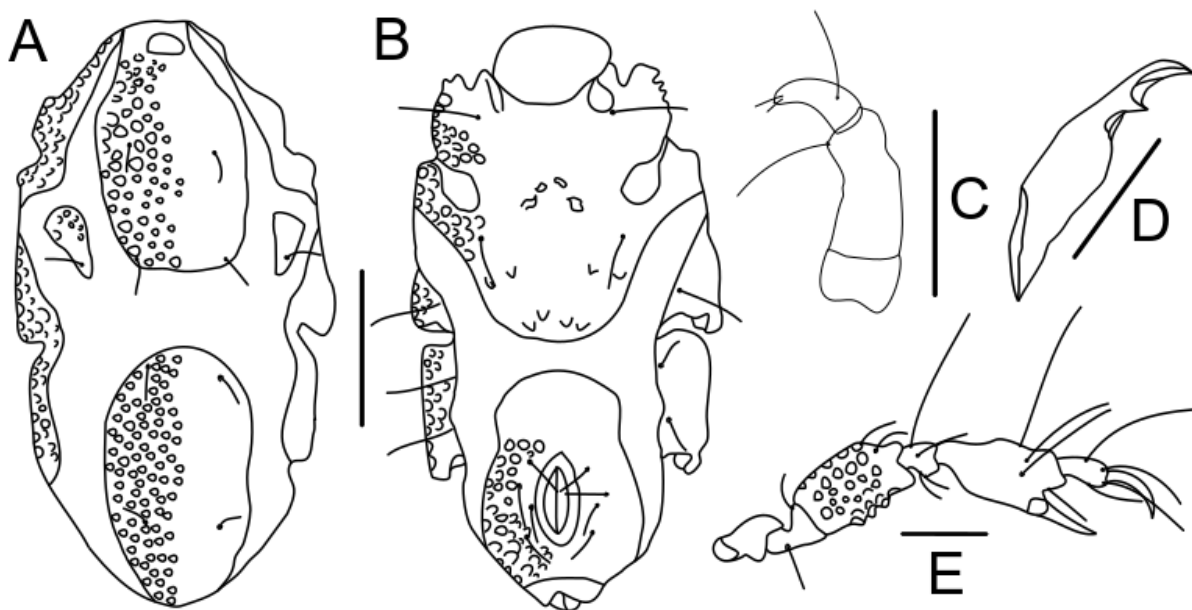


Figure 3. *Simognathus adriaticus* Viets, 1940 (female) – A. dorsal view of idiosoma; B. ventral view of idiosoma; C. lateral view of ; D. lateral view of chelicera; E. lateral view of leg I. Scale bars: 50 µm.

Simognathus adriaticus Viets, 1940

Material examined – One female, one protonymph, Bozcaada, Çanakkale.

Remarks – The morphological characteristics of the specimens from Turkey accord with the original descriptions (Viets 1940) and with those previously recorded from Levantine Sea (Antalya, Yakamoz Beach) by Stamouli *et al* (2017). The female of the species from Turkey is the first time given with this study (Fig. 3). The present finding constitutes the second record of this species from Turkey and stand as the first report from Aegean Sea of Turkey (Çanakkale, Bozcaada).

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