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Article

New records of marine water mites (Acari: Hydrachnidia, Pontarachnidae) from Turkey

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ABSTRACT
In this study, five pontarachnid marine mites i.e. *Litarachna communis* Walter, 1925, *L. duboscqi* Walter, 1925, *Pontarachna adriatica* Morselli, 1980, *P. aenariensis* Mari & Morselli, 1983 and *P. punctulum* Philippi, 1840 are reported from Antalya and Izmir. Among them, *P. aenariensis* is new record for the Turkish fauna (1). *Pontarachna adriatica* and *P. punctulum* are first time recorded from Antalya (2). Deutonymph of *L. communis* (3) and male of *L. duboscqi* (4) are also for the first time reported from Turkey. Each species is illustrated and briefly described with notes and lastly showed on Turkey's map.

KEY WORDS: Antalya; Izmir; Marine mites; Mediterranean Sea; new records; Pontarachnidae.

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INTRODUCTION

There are two mite families, Halacaridae Murray, 1877 and Pontarachnidae Koenike, 1910, that inhabit the marine environment. They are exclusively small and meiobenthic, with the adult body length less than 2 mm and covered by chitinous cuticle. The family Halacaridae is represented by 64 genera and more than 1,100 known species (Bartsch 2009), while the Pontarachnidae family is represented by only 2 genera and 53 known species worldwide (Chatterjee *et al.* 2019). The investigation of the marine mites of Turkey started at the beginning of the twenty-first century. The first pontarachnid marine mite species given by Dr. Harry Smit from Mediterranean Sea of Turkey (Yumurtalik, Adana) (Smit 2008), while the first halacarid mite record given by Dr. Ilse Bartsch from Black Sea coast of Turkey (Sinop) (Durucan 2018a). According to the published records, 47 marine halacarid (Durucan 2018b, 2020) and 11 marine pontarachnid mite species (Smit 2008; Thessalou-Legaki *et al.* 2012; Pešić *et al.* 2013, 2019; Koç *et al.* 2015; Artüz and Pešić 2016; Durucan *et al.* 2018) (including this study) have been reported from Turkish coasts. This paper aims to report new pontarachnid mite records from Antalya and Izmir.

MATERIAL AND METHODS

Samples were collected by the author by snorkeling at Antalya (Hamitbey Beach) (36.87555556° N, 30.70722222° E) (sand, 5–7 m depth) (30 July 2018) and Izmir (Urla-Karantina Island) (*Pinctata*

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radiata, 0–1 m depth coll. S. Yiğitkurt). Samples were washed in 100 µm sieve in the laboratory under a binocular microscope (Nikon SMZ 10). Drawings were made with the aid of a camera lucida (Nikon Eclipse E400). Mites were mounted in Hoyer's medium and kept in collection of the author. All measurements are given in µm.

RESULTS

Genus *Litarachna* Walter, 1925

Litarachna communis Walter, 1925 (Fig. 1)

Material – 1 ♀, 1 ♂, 2 deutonymphs, Izmir (Urla-Karantina Island) (*Pinctata radiata*, 0–1 m depth), 18.10.2019; 1 ♂, Antalya (Hamitbey Beach) (sand, 5–7 m depth), 30.07.2018.

Female – Idiosoma 437 long and 400 wide. Genital field 67 long; postgenital sclerite bowed and 45 in width (Fig. 1a). **Male –** Idiosoma 425 and 430 long, 375 and 310 wide. Genital field 45 and 50 long, 35 and 38 wide respectively. Number of perigenital setae are 128 and 152 in males (Fig. 1b). Lengths of P1-P5: 37, 67, 50, 87, 55 (Fig. 1d). **Deutonymphs –** Idiosoma 320 and 317, 350 and 310 wide (Fig. 1c). Lengths of PI-PV: 27, 55, 38, 67, 38 (Fig. 1e). *Litarachna communis* is widely distributed in the Mediterranean Sea (Chatterjee *et al.* 2019). The morphological characteristics of the specimens from Antalya and Izmir accord with the previously given descriptions by Mari and Morselli (1983) and Koç *et al.* (2015).

Litarachna duboscqi Walter, 1925 (Fig. 2)

Material – 1 ♂, Antalya (Hamitbey Beach) (sand, 5–7 m depth), 30.07.2018.

Male – Idiosoma 315 long and 272 wide. Genital field 33 long. Number of perigenital setae is 27 (Fig. 4). Lengths of P1-P5: 25, 50, 32, 70, 27 (Fig. 11). The species easily differs from other *Litarachna* having a pair of small platelets with coxoglandularia 4 and associated setae fused with a glandularium-like structure in one platelet lying in the integument between the posterior apodemes of coxae IV. Shape of palps with a ventral protrusion on the fourth segment (Durucan *et al.* 2018). *Litarachna duboscqi* is widely distributed in the Mediterranean Sea (Durucan *et al.* 2018). The morphological characteristics of the specimens from Antalya matches description given by Pešić *et al.* (2019).

Genus *Pontarachna* Philippi, 1840

Pontarachna adriatica Morselli, 1980 (Figs. 3 c, d)

Material – 2 ♀ ♀, Antalya (Hamitbey Beach) (sand, 7 m depth), 30.07.2018.

Female – Idiosoma 389 and 380 long, 314 and 330 wide. Genital field 70 long; postgenital sclerite bowed, 35 in length (Fig. 3c). Lengths of P1-P5 (Fig. 3d): 19, 35, 37, 39, 15. *Pontarachna adriatica* described by Morselli (1980) from Northern Adriatic brackish waters, Ferrara and Ravenna provinces. The species has been found among the gut contents of the Golden grey mullet *Lisa aurata* from Slovenia, Piran Bay at the depth of 12 m and reported from Southern Black Sea, Sinop (Turkey) at the depth of 10 m depth (Chatterjee *et al.* 2019). The morphological characteristics of the specimens from Antalya fits description given by Pešić *et al.* (2019).

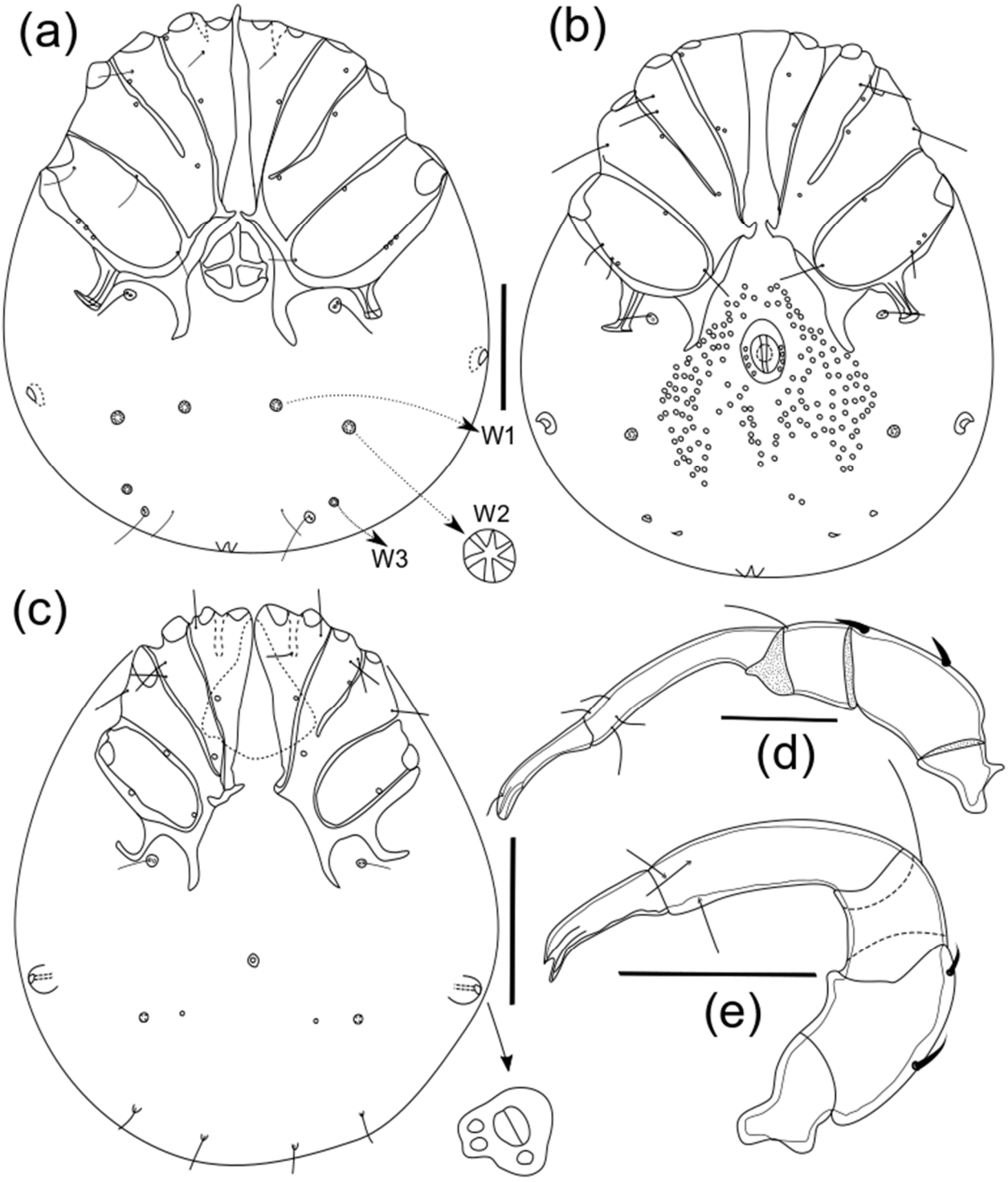

Figure 1. *Litarachna communis* Walter, 1925 – **(a)** Female idiosoma, ventral view, **W1 to W3**, wheel-like acetabula; **(b)** Male idiosoma, ventral view; **(c)** Deutonymph idiosoma, ventral view; **(d)** Male palp, lateral view; **(e)** Deutonymph palp, lateral view. Scale bars: (a-c) = 100 µm; (d & e) = 50 µm.

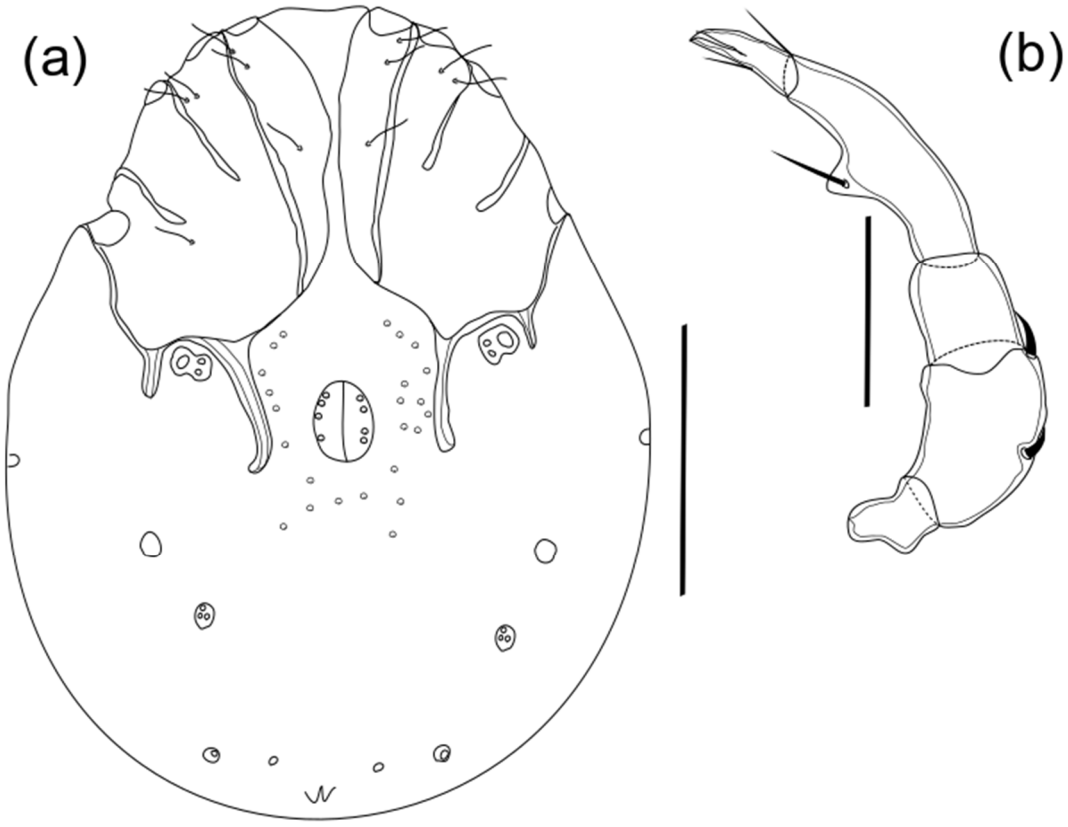

Figure 2. *Litarachna duboscqi* Walter, 1925 – **(a)** Male idiosoma, ventral view; **(b)** Male palp, lateral view. Scale bars: 100 µm.

Pontarachna punctulum Philippi, 1840 (Figs. 3 a, b)

Material – 1 ♂, Izmir (Urla-Karantina Island) (*Pinctata radiata*, 0–1 m depth), 18.10.2019.

Male – Idiosoma 355 long and 307 wide. Genital field is 48 long, with 82 perigenital setae. (Fig. 3a). Lengths of P2-P5: 39, 41, 63, 19 (Fig. 3b). According to Viets (1957) and Morselli (1980), *P. punctulum* is characterized by the higher number of perigenital setae in males (80–90). However, this number is known to vary. The number of perigenital setae of the specimen from Urla accord with the previously given records. *Pontarachna punctulum* is the one of the most encountered species in the genus *Pontarachna*. It has been commonly found in Mediterranean area. There are also some records from Black Sea, USA and Canada (Chatterjee *et al.* 2019).

Pontarachna aenariensis Mari & Morselli, 1983 (Fig. 4)

Material – 1 ♀, Izmir (Urla-Karantina Island) (*Pinctata radiata*, 0–1 m depth), 18.10.2019.

Female – Idiosoma 450 long, 387 wide. Genital field is 82 long. Postgenital sclerite bowed, 38 in width (Fig. 4a). Lengths of P1-P5: 14, 39, 40, 63, 14 (Fig. 4b). The species described by Mari and Morselli (1983) from Lacco Ameno d'Ischia (Italy) among *Posidonia oceanica*. The species was only known from the type locality from Italy. This record is the first report of the species outside its type locality. The distribution of this species extends from Italy (Tyrrhenian Sea) to Turkey

(Aegean Sea). The morphological characteristics and body size of the female specimen from Turkey accord with the original descriptions by Mari and Morselli (1983).

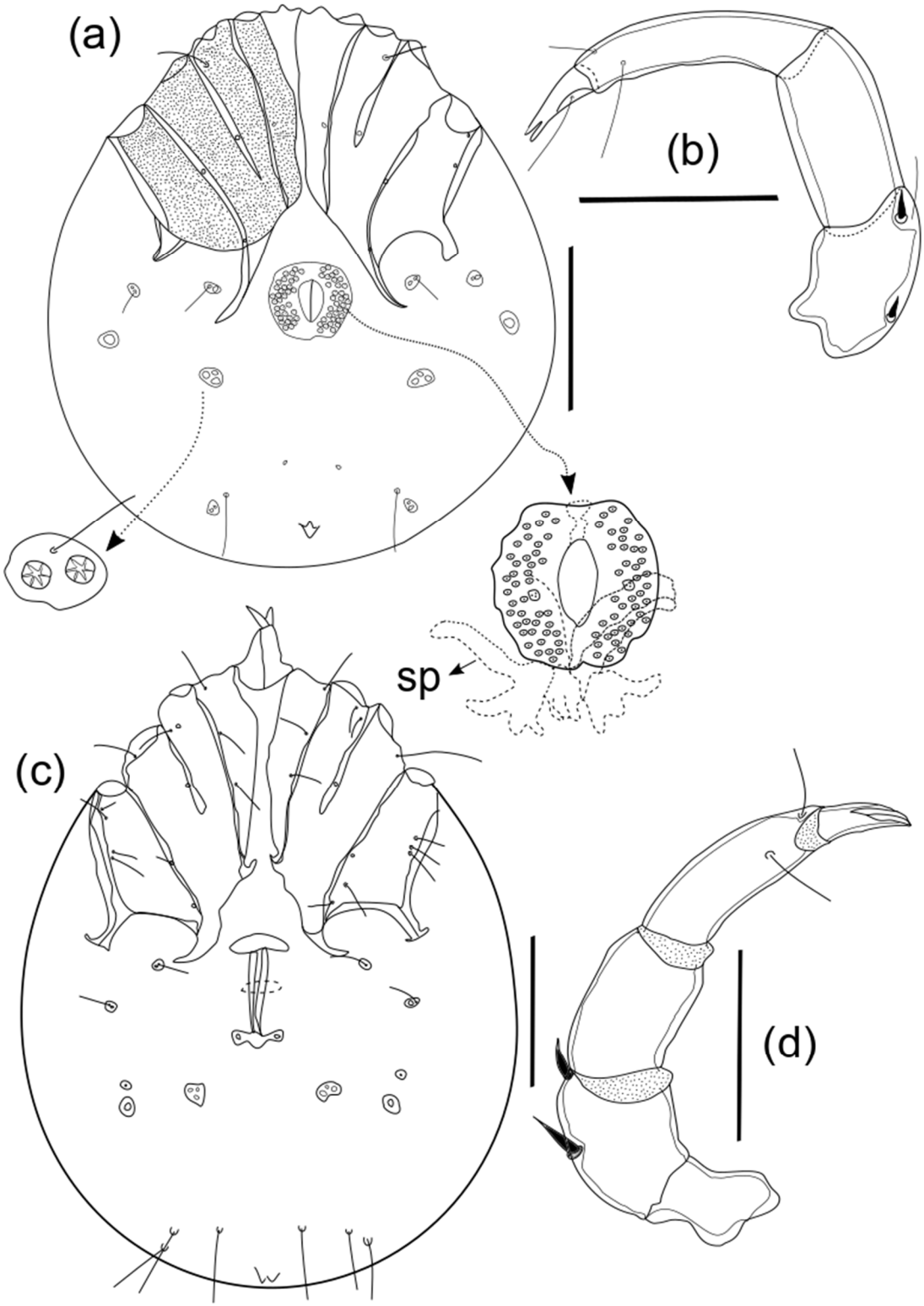

Figure 3. *Pontarachna punctulum* Philippi, 1840 (a & b) – **(a)** Male idiosoma, ventral view, **sp** = spermatophora; **(b)** Male palp; Lateral view *Pontarachna adriatica* Morselli, 1980 (c & d) – **(c)** Female idiosoma, ventral view; **(d)** Female palp, lateral view. Scale bars: (a & c) = 100 µm; (b & d) = 50 µm.

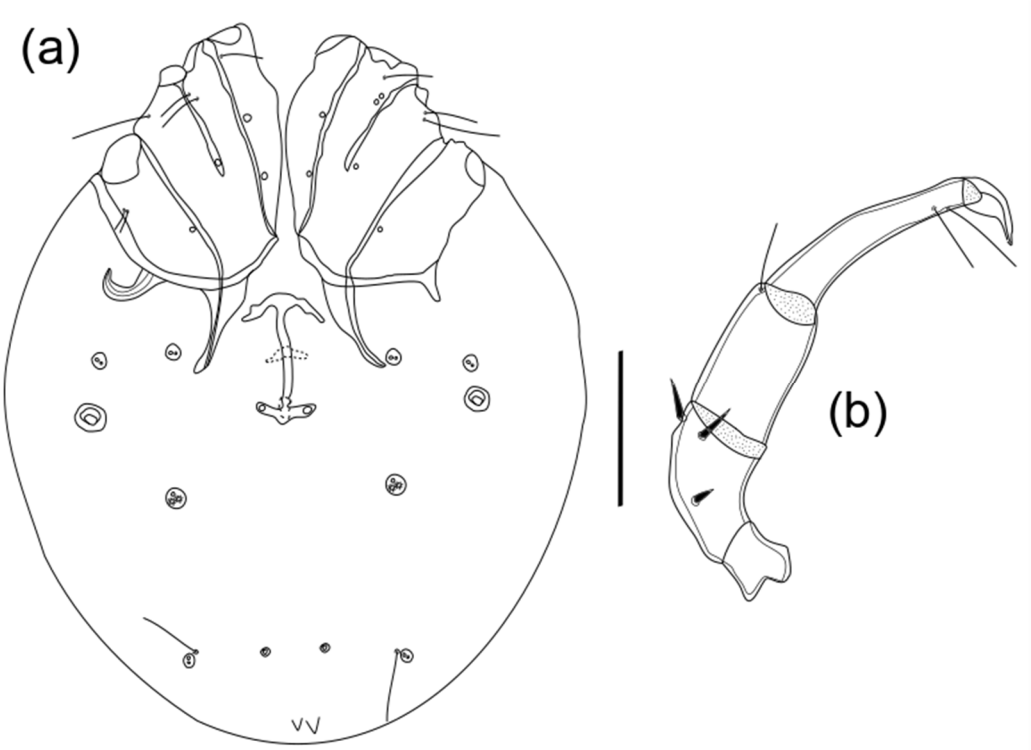

Figure 4. *Pontarachna aenariensis* Mari & Morselli, 1983 – **(a)** Idiosoma female, ventral view; **(b)** Palp female, lateral view. Scale bar: 100 µm.

DISCUSSION

In Turkey, the first pontarachnid marine mite, *Pontarachna episce*, was reported by Smit (2008) from Yumurtalik (Adana) from a gill filament of a fish. In 2012, the genus *Litarachna* was reported for the first time from Side (Antalya) giving as a most common Mediterranean pontarachnid mite species as a *Litarachna divergens* with both sexes. However, the species probably refers to a *L. communis* (Durucan *et al.* 2018). After that, Pešić *et al.* (2013) reported two species, i.e., *Pontarachna valkanovi* and *Pontarachna adriatica* from the Black Sea coast of Turkey (Sinop), for the first time. Two years later, Koç *et al.* (2015) reported *L. communis*, *L. duboscqi* and *P. punctulum* from Aegean coast of Turkey (Izmir). Artüz & Pešić (2016) reported a female intersex individual of *Litarachna communis*, collected from 5.5 m depth, among *Zostera marina* seagrass meadow from the north-western coast of the Sea of Marmara. Afterwards, 4 new species i.e., *Litarachna antalyaensis*, *L. enigmatica, L. muratsezgini* and *Pontarachna turcica* were described as a new species from Turkish Mediterranean coast (Antalya) (Durucan *et al.* 2018; Pešić *et al.* 2019). To date, 10 pontarachnid species are reported from Turkey. The summary of the findings is contributed to an increase in the number and better knowledge of pontarachnid diversity. This study increases the number of marine pontarachnid known species from 10 to 11 in Turkey. Regarding the pontarachnid fauna, the Mediterranean Coast of Turkey (Levantine Sea) is the richest coast of Turkey, as shown on the Figure 5. Further studies aimed to improve our knowledge of Turkish pontarachnid marine mites should focus on unstudied areas and habitats in Turkey.

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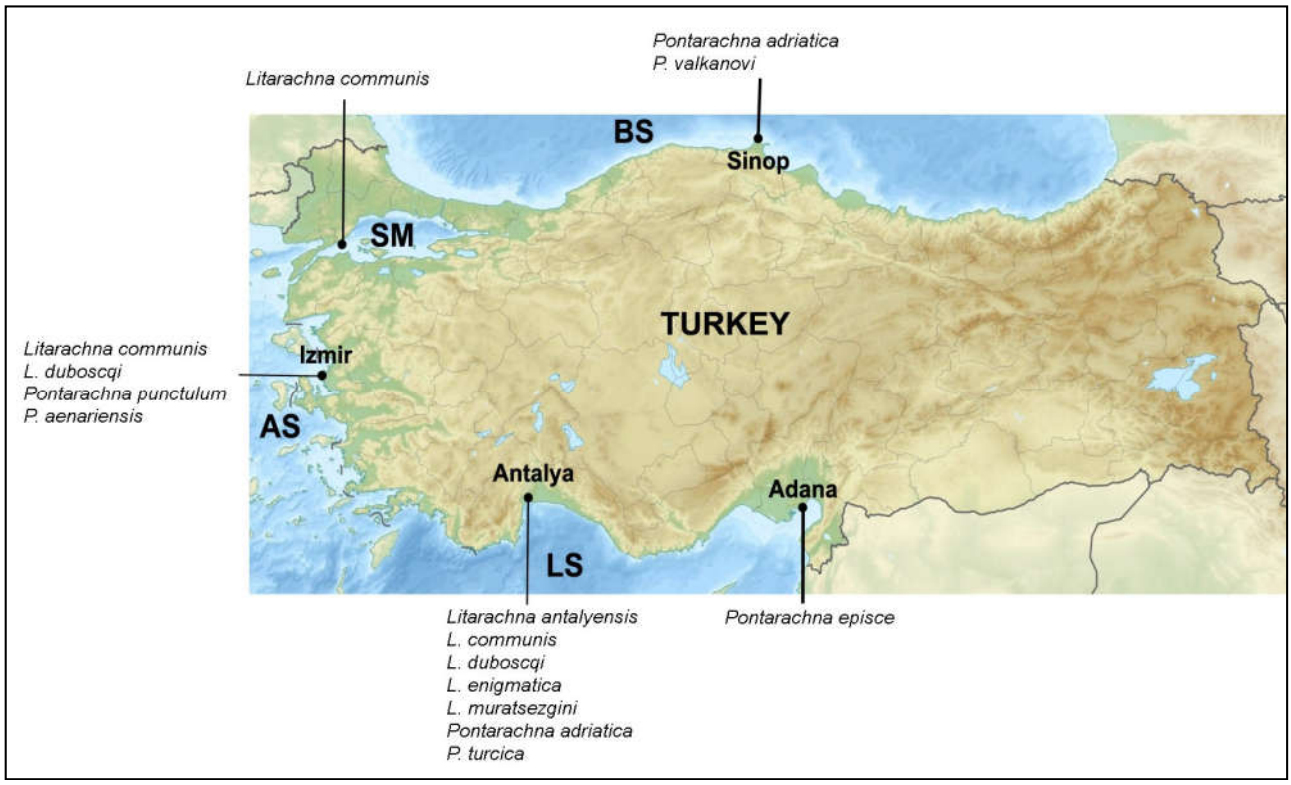

Figure 5. Map showing recorded pontarachnid marine mite species in Turkey. The points indicated that locations where the species recorded till now. **BS:** Black Sea, **SM**: Sea of Marmara, **AS**: Aegean Sea, **LS**: Levantine Sea.

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گزارش‌های جدیدی از کنه‌های دریازی (Acari: Hydrachnidia, Pontarachnidae) از ترکیه

فورکان دوروکان

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چکیده

در این بررسی، پنج گونه کنه دریازی از خانوادهٔ Pontarachnidae یعنی *Litarachna communis* Walter, 1925، *L. duboscqi* Walter, 1925، *Pontarachna adriatica* Morselli, 1980، *P. aenariensis* Mari & Morselli, 1983 و *P. punctulum* Philippi, 1840 از آنتالیا و ازمیر گزارش می‌شوند. از میان آنها، *P. aenariensis* گونهٔ جدیدی برای فون ترکیه است (۱). گونه‌های *Pontarachna adriatica* و *P. punctulum* برای نخستین بار از آنتالیا گزارش می‌شوند (۲). پورهٔ سن دوم *L. communis* (۳) و نر *L. duboscqi* (٤) نیز برای نخستین بار از ترکیه گزارش می‌شوند. هر گونه ترسیم و به صورت خلاصه و همراه با یادداشت‌هایی توضیح داده شدند و در پایان روی نقشه ترکیه در این بررسی نشان داده شدند.

واژگان کلیدی: آنتالیا؛ ازمیر؛ کنه‌های دریازی؛ دریای مدیترانه؛ گزارش‌های جدید؛ Pontarachnidae.

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