



## Marine water mites (Acari: Hydrachnidia: Pontarachnidae) from the Red Sea, with description of one new species

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**Abstract:** *Pontarachna arabica*, a new species of the predominantly marine water mite family Pontarachnidae (Acari: Hydrachnidia) is described from the Red Sea (Saudi Arabia). First descriptions of the female and deutonymph are given for *Litarachna smiti* Pešić, Chatterjee & Ahmed Abada, 2008.

**Résumé :** *Acariens marins (Acari : Hydrachnidia : Pontarachnidae) de la Mer Rouge, description d'une nouvelle espèce.* *Pontarachna arabica*, une nouvelle espèce d'Acarien marin de la famille dominante des Pontarachnidae (Acari: Hydrachnidia) est décrite de la Mer Rouge (Arabie Saoudite). Les premières descriptions de la femelle et de la deutonymphe sont présentées pour *Litarachna smiti* Pešić, Chatterjee & Ahmed Abada, 2008.

**Keywords:** *Pontarachna* • *Litarachna* • New records • Saudi Arabia

### Introduction

Water mites of the family Pontarachnidae Koenike, 1910 have been reported from tropical and temperate littoral habitats bordering the Mediterranean Sea, Aral Sea, Caspian Sea, Atlantic Ocean, Pacific Ocean, Red Sea and

Indian Ocean (Smit, 2002; Pešić et al., 2008a,b & c). Most species live in the marine littoral zone, but a few species are known from freshwater or brackish habitats (Cook, 1996). The family is represented by two genera: *Pontarachna* Philippi, 1840 and *Litarachna* Walter, 1925. So far, four species are known from the Red Sea: *Pontarachna punctulum* Philippi, 1840, *P. erythraea* K.O.Viets, 1966, *Litarachna denhami* (Lohmann, 1909) and *L. smiti* Pešić et al., 2008 (K.Viets, 1959; K.O.Viets, 1966; Pešić et al., 2008b).

In the present paper, a new species of *Pontarachna* is described from the Red Sea. It is first record of the genus from Saudi Arabia. In addition, the first description of the female and deutonymph of *Litarachna smiti* are provided.

## Materials and Methods

Materials examined in the present study were collected from the south-western coast of Saudi Arabia (Al-Birk) among marine macroalgae. The chemical characteristics of the water are as the follow: pH 8, water temperature was 37°C, phosphate 1  $\mu\text{M}$ , chloride 24000  $\mu\text{M}$ , conductivity 3999  $\mu\text{s.cm}^{-1}$ , total dissolved solutes 2000  $\mu\text{M}$ , salinity 35. The collected macroalgae were washed through 45  $\mu\text{m}$  sieves using the sea water to extract the animals and preserved in 70% alcohol; water mites were separated under a binocular microscope. The holotype of the new species and the non-type material are deposited in the Museum of the Natural History of Podgorica (MNHP).

All measurements are given in  $\mu\text{m}$ . The following abbreviations are used: L = length, %L = relative length, I/II/III/IV-Leg-1-6 = first to sixth segments of leg I/II/III/IV, P-1 to P-5 = palp segments 1 to 5, W = width.

## Systematics

**Genus *Pontarachna*** Philippi, 1840

***Pontarachna arabica*** sp. nov.

(Figs 1-5)

### Type material

Holotype: female, dissected and slide mounted in Hoyer's fluid. Red Sea: Saudi Arabia, Al-Birk, 18°12'47.03"N 41°31'32.31"E, 01.06.2007, leg. A. E. A. Abada.

### Diagnosis

Wheel-like acetabula *sensu* Cook (1996) absent, leg segments long, Cx-4 medial apodemes extending beyond posterior margin of genital field, P-4 slender and elongate.

### Description

**Female.** Idiosoma L/W 372/341. First coxal plates separated medially. Suture lines of first and second coxal plates and suture lines of third and fourth coxal plates complete, suture lines of second and third coxal plates incomplete. Lateral apodemes of fourth coxal plates shorter than medial apodemes, the latter extending beyond posterior margin of genital field (Fig. 1). Pregenital sclerite width 52  $\mu\text{m}$ , postgenital sclerite width 35  $\mu\text{m}$ . Postgenital sclerite with a pair of pores, but it cannot be discerned if these are so-called wheel-like acetabula *sensu* Cook (1996)

A pair of small platelets with (according to Wiles et al., 2002) coxoglandularia 4 and associated setae placed between the lateral and medial posterior apodemes of the fourth coxal plates. A pair of platelets with three pores and two pairs of glandularia posterior of genital field, but these also without the radiating spokes of the wheel-like acetabula (Fig. 3). Excretory pore unsclerotized, near the posterior idiosoma margin. Palp (Fig. 2) total L 202  $\mu\text{m}$ , dorsal L and %L (given as % of total L): P-1 20  $\mu\text{m}$  (9.9), P-2 41  $\mu\text{m}$  (20.3), P-3 38  $\mu\text{m}$  (18.8), P-4 86  $\mu\text{m}$  (42.6), P-5 17  $\mu\text{m}$  (8.4); P-2/P-4 ratio 0.48; P-4 gently curved and elongate. Legs: all tarsi with dorsodistal pointed process; dorsal L of I-Leg-2-6 (Fig. 4): 33, 44, 50, 74 and 74  $\mu\text{m}$ ; dorsal L of II-Leg-1-6: 40, 32, 50, 56, 79 and 86  $\mu\text{m}$ ; dorsal L of III-Leg-1-6: 52, 41, 52, 72, 100 and 108  $\mu\text{m}$ ; dorsal L of VI-Leg-1-6 (Fig. 5): 66, 50, 64, 100, 116 and 97  $\mu\text{m}$ ; III-Leg-5 with 2 swimming setae, IV-Leg-4 with 2 swimming seta, IV-Leg-5 with 2 swimming setae.

**Male.** Unknown.

### Remarks

Due to the lack of the wheel-like acetabula and long leg segments the new species resembles *Pontarachna otto* Harvey, 1998 and *P. longipes* Smit, 2008. The description of *P. otto* is based on a single male specimen from Queensland, Australia (Harvey, 1998), while the description of *P. longipes* is based on a single female specimen from Tioman Archipelago, Malaysia (Smit, 2008). The new species can be distinguished from the both species in the medial apodemes of the fourth coxal plates extending beyond posterior margin of genital field and P-4 is more elongated.

### Etymology

The species is named after the country of the type locality.

### Distribution

Red Sea; known only from the type locality.

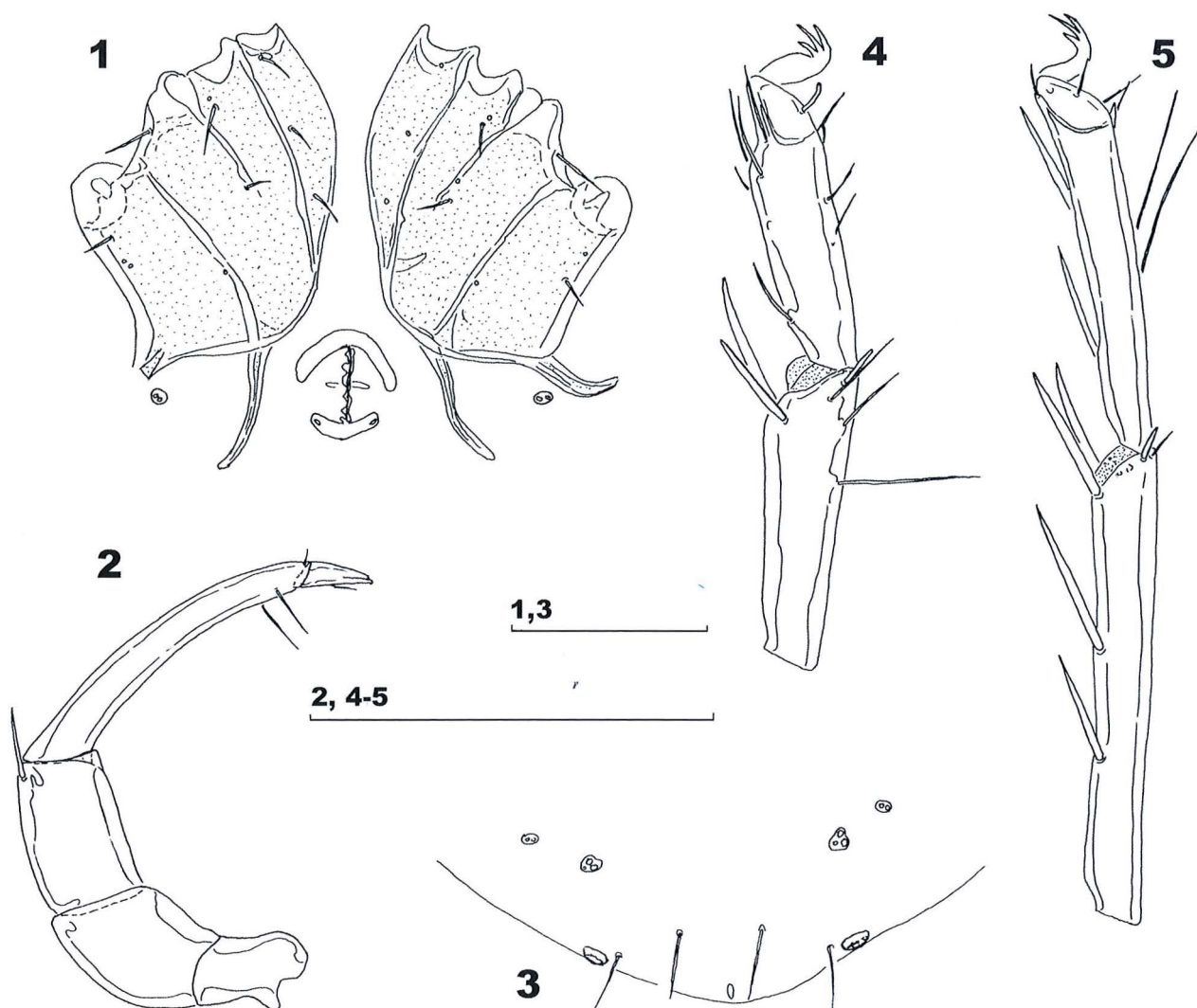
## Genus *Litarachna* Walter, 1925

***Litarachna smiti*** Pešić, Chatterjee & Ahmed Abada, 2008 (Figs 6-11)

### Material

Red Sea: Saudi Arabia, Al-Birk, 18°12'47.03"N 41°31'32.31"E, 01.06.2007, leg. A. E. A. Abada, 4 males, 2 females, 2 deutonymphs, one male, one female and one deutonymph of them are dissected and slide mounted in Hoyer's fluid.





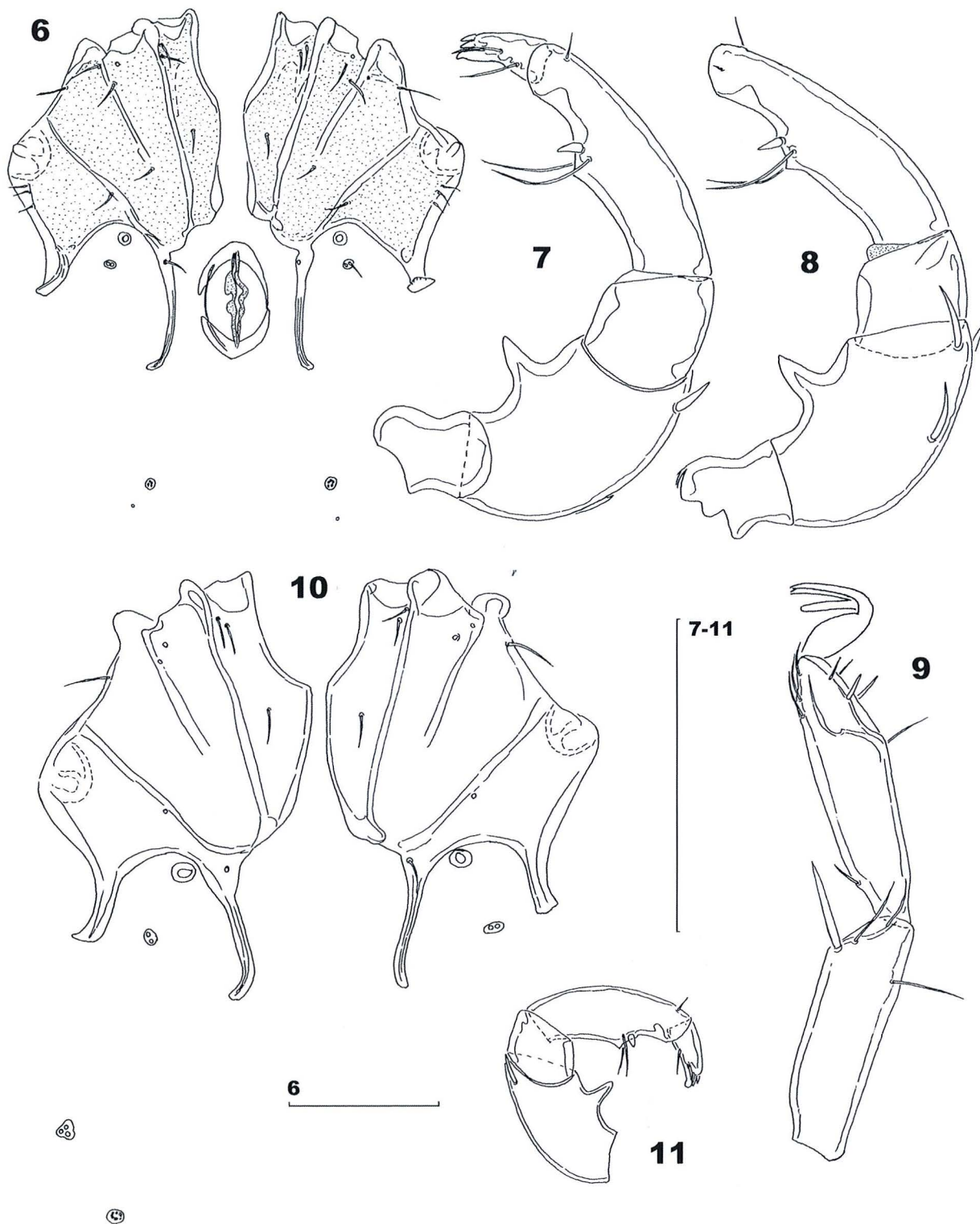
**Figures 1-5.** *Pontarachna arabica* sp. nov., female. **1.** Coxal and genital field. **2.** Palp. **3.** Posterior part of idiosoma, ventral view. **4.** I-Leg-5-6. **5.** IV-Leg-5-6. Scale bars = 100  $\mu$ m.

**Figures 1-5.** *Pontarachna arabica* sp. nov., femelle. **1.** Zone coxale et génitale. **2.** Palpe. **3.** Partie postérieure de l'idiosome, vue ventrale. **4.** Patte I-5-6. **5.** Patte IV-5-6. Echelle = 100  $\mu$ m.

### Description

**Female.** Idiosoma L/W 484-485/419-422. First coxal plates separated medially. Suture lines of first and second coxal plates and suture lines of third and fourth coxal plates complete, suture lines of second and third coxal plates incomplete. Posterior margin of the fourth coxal plates strongly concave, with two pairs of apodemes extending beyond posterior margin of genital field (Fig. 6). Genital field 80  $\mu$ m long, 47  $\mu$ m wide; pre-genital and post-genital sclerite strongly bowed. A pair of glandularia-like structures and a pair of small platelets with (according to Wiles et al., 2002) coxoglandularia 4 and associated setae

placed between the lateral and medial posterior apodemes of the fourth coxal plates. A pair of platelets with three pores and three pairs of wheel-like acetabula (*sensu* Cook, 1996) or specialized glandularia (*sensu* Tuzovskij, 1978) posterior of genital field. Two of these wheel-like structures large with many radiating spokes, the most posterior of the wheel-like structures small with fewer radiating spokes. Excretory pore unsclerotized, near the posterior idiosoma margin. Palp (Figs 7-8) total L 266  $\mu$ m, dorsal L and relative L (given as % of total L): P-1 20  $\mu$ m (7.5), P-2 85  $\mu$ m (19.6), P-3 41  $\mu$ m (15.4), P-4 91  $\mu$ m (34.2), P-5 29  $\mu$ m (10.9); P-2/P-4 ratio 0.93; P-2 with ventral projection,



**Figures 6-11.** *Litarachna smiti* (6-9 = female, 10-11 = deutonymph). **6.** Coxal and genital field. **7.** Palp. **8.** Palp (P-1 to P-4). **9.** I-Leg-5-6. **10.** Coxal field. **11.** Palp (P-2 to P-5). Scale bars = 100  $\mu$ m.

**Figures 6-11.** *Litarachna smiti* (6-9 = femelle, 10-11 = deutonymph). **6.** Zone coxale et génitale. **7.** Palpe. **8.** Palpe (P-1 à P-4). **9.** Patte I-5-6. **10.** Zone coxale. **11.** Palpe (P-2 à P-5). Echelle = 100  $\mu$ m.

ventral margin of P-4 with a setal tubercle and a small peg-like seta. Dorsal L of I-Leg-3-6 (Fig. 9): 50, 56, 80 and 93  $\mu\text{m}$ ; Dorsal L of IV-Leg-1-6: 78, 50, 100, 113, 132 and 133  $\mu\text{m}$ ; III-Leg-5 with 2 swimming setae, IV-Leg-4 with one swimming seta, IV-Leg-5 with 2 swimming setae.

**Deutonymph.** As in adults, but lacking a genital field (Fig. 10). Idiosoma L/W 272/225; Palp (Fig. 11) dorsal L (P-2-5): 53, 20, 53 and 21  $\mu\text{m}$ ; P-2/P-4 ratio 1.0.

### Remarks

*Litarachna smiti* belongs to the species group characterized by the presence of a ventral projection on P-2 (Pešić et al., 2008b). This species was first described from Al-Horydah and Al-Birk (Red Sea; south-western coast of Saudi Arabia) by Pešić et al. (2008b) based on male specimens, and therefore the first description of the female and deutonymph are given here.

### Distribution

Red Sea.

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