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## A new marine mite of the genus *Litarachna* Walter, 1925 from Guadeloupe, Caribbean Sea (Acari, Hydrachnidia, Pontarachnidae)

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The water mite family Pontarachnidae Koenike, 1910, the only family of the true water mites (Hydrachnidia) occurring in the marine environment, consists of two genera, *Pontarachna* Philippi, 1840 and *Litarachna* Walter, 1925. Most of the known pontarachnid mites species were collected in the marine littoral zone (Smit 2003), but some species such as *Litarachna lopezae* and *Pontarachna nemethi*, are known only from mesophotic coral ecosystems (MCEs) and were collected at a depth of almost 70 m (Pešić *et al.* 2012, 2014).

The most recent checklist of pontarachnid mites was published by Chatterjee *et al.* (2019), listing 53 species worldwide, 30 species of *Pontarachna* and 23 species of *Litarachna*. Recently, two more species, one from each genus were described from the Gulf of Antalya, Levantine Sea, Turkey (Pešić *et al.* 2019).

To date, four pontarachnid species were reported from the Caribbean Sea. The genus *Pontarachna* is represented by one species, *P. nemethi* Pešić, Chatterjee & Schizas, 2012 described from an MCE formation east of Vieques Island, Puerto Rico, from a depth of 52–67 m. The genus *Litarachna*, is represented by three species, i.e., *L. degiustii* Cook, 1958 originally described from Bimini, Bahamas (Cook 1958) and later on reported by Pešić *et al.* (2008) from Lee Stocking Island (Bahamas) and from *Curaçao* (Netherlands Antilles), *L. caribica* Pešić, Chatterjee & Schizas, 2008, originally described from *Curaçao* (Pešić *et al.* 2008) and later on tentatively reported from the Pacific coast of Panama (Pešić *et al.* 2015), and *L. lopezae* Pešić, Chatterjee, Alfaro & Schizas, 2008 collected from a depth of nearly 70 m from an MCE in Mona Passage west off Puerto Rico (Pešić *et al.* 2014). Moreover, an unidentified species was found in association with the tube of the polychaete *Sabellastarte magnifica* at the littoral waters of north Puerto Rico (Pešić *et al.* 2014).

In this paper we describe one new species of the genus *Litarachna* from Guadeloupe, the overseas department of France in the Caribbean Sea. Sediment was collected among the seagrass *Thalassia testudinum* while snorkeling off the north coast of Guadeloupe at 1-2 m depth. The sediment was then placed on a 0.500 mm sieve and washed with water to capture meiofauna in an underlying 0.063 mm sieve. The separated fauna was preserved in ethanol. Small metazoans were sorted with the aid of an Olympus dissecting microscope and pontarachnid mites were isolated in vials filled with ethanol and later transferred

to Koenike-fluid. The holotype of the new species will be deposited in Naturalis Biodiversity Center in Leiden (RMNH).

Gland homology follows Wiles *et al.* (2002) and Pešić *et al.* (2019). All measurements are given in  $\mu\text{m}$ . The following abbreviations are used: Cx-I = first coxae, Cxgl-4 = coxoglandularia 4, dL = dorsal length, H = height, L = length, Lgl-3 = lateroglandularia 3, I/II/III/IV-L-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 *Litarachna* Walter, 1925

#### *Litarachna guadeloupensis* sp. nov.

Figs. 1-2

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**Material examined** — Holotype ♂ (RMNH), Caribbean Sea, Guadeloupe, Ilet la Biche, 16°20'19.3"N 61°38'51.7"W, 1-2 m depth, February 4, 2008, leg. NV Schizas, A Jassoud, dissected and slide mounted. Paratypes: 3 deutonymphs, same place and data as the holotype, leg. Schizas, one of them dissected and slide mounted (RMNH).

**Compared material** — *Litarachna caribica*, holotype ♂, paratype deutonymph, Curaçao, Nieuwpoort, 12°02'50"N, 68°49'21"W, 24.x.2007, Schizas & Torres-Prats (RMNH). *Litarachna lopezae*, holotype ♂, Puerto Rico, Bajo de Sico, 18°14'41.676"N, 67°24'45.791"W, depth 69.5 m, 20.iv.2011 (NHMB). Notes: As stated in the original description of *L. caribica* (see Pešić *et al.* 2008) and *L. lopezae* (see Pešić *et al.* 2014) the holotypes of these two species were planned to be deposited in the Museum of the Natural History in Podgorica, Montenegro (MNH-PM). However, the conditions for depositing and long-term curation of type material in MNH-PM are poor, not allowing the safe accommodation of the specimens. Therefore, the first author of the species' descriptions (VP) decided to transfer the type material to other reputable museums. *Litarachna lopezae* was transferred to the Museum of Natural History Basel (NHMB) and the type material of *L. caribica* will be transferred to the Naturalis Biodiversity Center in Leiden (RMNH).

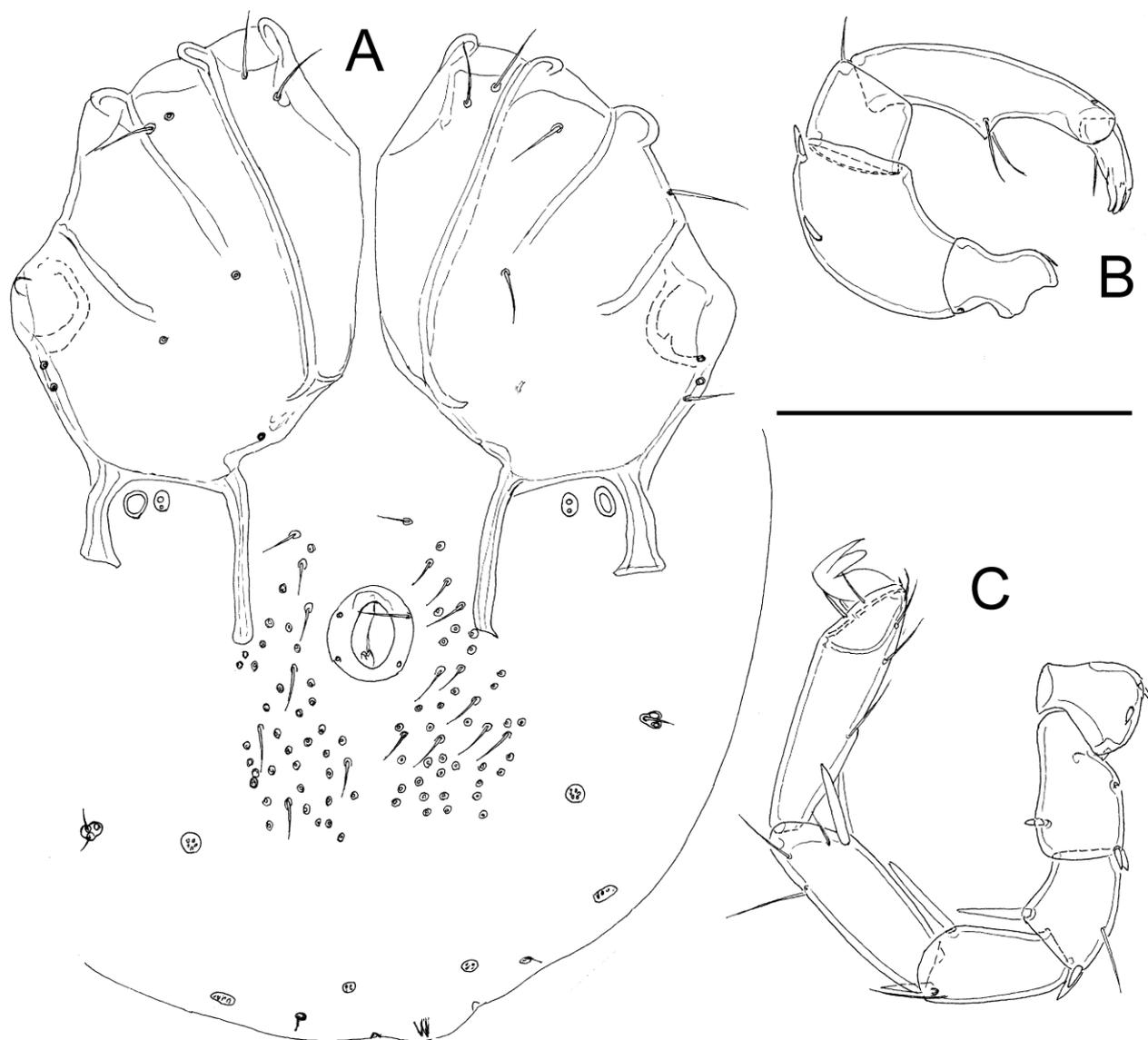
**Diagnosis** (Female unknown) — A pair of small platelets with coxoglandularia 4 and associated setae free in the integument between posterior apodemes of Cx-IV; posterior margin of Cx-IV with long medial posterior apodemes extending beyond anterior margin of the ring around gonopore; a ring around gonopore with two pairs of setae surrounded by 43-44 pairs of perigenital setae free in integument.

## Description

**Male** — Idiosoma L 289, W223. Coxal field: L 133, W 204; Cx-I separated medially; suture lines Cx-II/III and Cx-III/IV incomplete; posterior margin of Cx-IV with two pairs of apodemes, the medial ones long, posteriorly extending beyond the anterior margin of sclerotized ring around gonopore (Fig. 1A). Sclerotized ring around gonopore L/W 27/25, with two pairs of setae, surrounded by 43-44 pairs of perigenital setae lying free in integument. Between the posterior apodemes of the fourth coxal plates a pair of glandularia-like structures and a pair of small platelets with coxoglandularia 4 and associated setae. Posterior to the genital field a pair of platelets with three pores (V3 [gland and seta sensu Wiles *et al.* 2002] fused with Lgl-3) and three pairs of wheel-like acetabula sensu Cook (1996). One of these wheel-like structures large with many radiating spokes, the most posterior ones small with relatively few radiating spokes. Excretory pore unsclerotized, near posterior end of idiosoma.

Palp: total L 210; dL/H, dL/H ratio: P-1, 16/14, 1.16; P-2, 65/33, 2.0; P-3, 25/27, 0.92; P-4, 77/17, 4.45; P-5, 27/11, 2.4; L ratio P-2/P-4, 0.85; P-2 ventral margin concave, dorsal margin convexly bowed; P-3 ventrally almost straight; P-4 with setal tubercle, dividing segment in two parts, both parts with a concave margin (Fig. 1B). Legs: dL of I-L-1-6: 27, 30, 36, 42, 61, 78. dL of IV-L-1-6: 63, 42, 49, 83, 95, 106; III-L-5 and IV-L-5 each with two swimming setae.

Female unknown.



**Figure 1.** *Litarachna guadeloupensis* sp. nov., holotype ♂, Guadeloupe, Caribbean Sea: A – idiosoma, ventral view; B – palp; C – I-leg. Scale bar = 100 µm.

Deutonymph: As in adult but lacking a genital field (Fig. 2A). Idiosoma L 216, W 169; coxal field L 91, W 147; Palp (Fig. 2B): total L 146; dL/H, dL/H ratio: P-1, 10/12, 0,85; P-2, 44/23, 1.87; P-3, 20/20, 1.0; P-4, 53/14, 3.8; P-5, 19/9, 2.0; L ratio P-2/P-4, 0.83; Legs: dL of I-L-1-6: 24, 24, 27, 28, 42, 58. dL of IV-L-1-6: 41, 27, 31, 53, 64, 64; III-L-5 and IV-L-5 with one and two swimming setae, respectively.

**Etymology** — Named after the island where the new species was found.

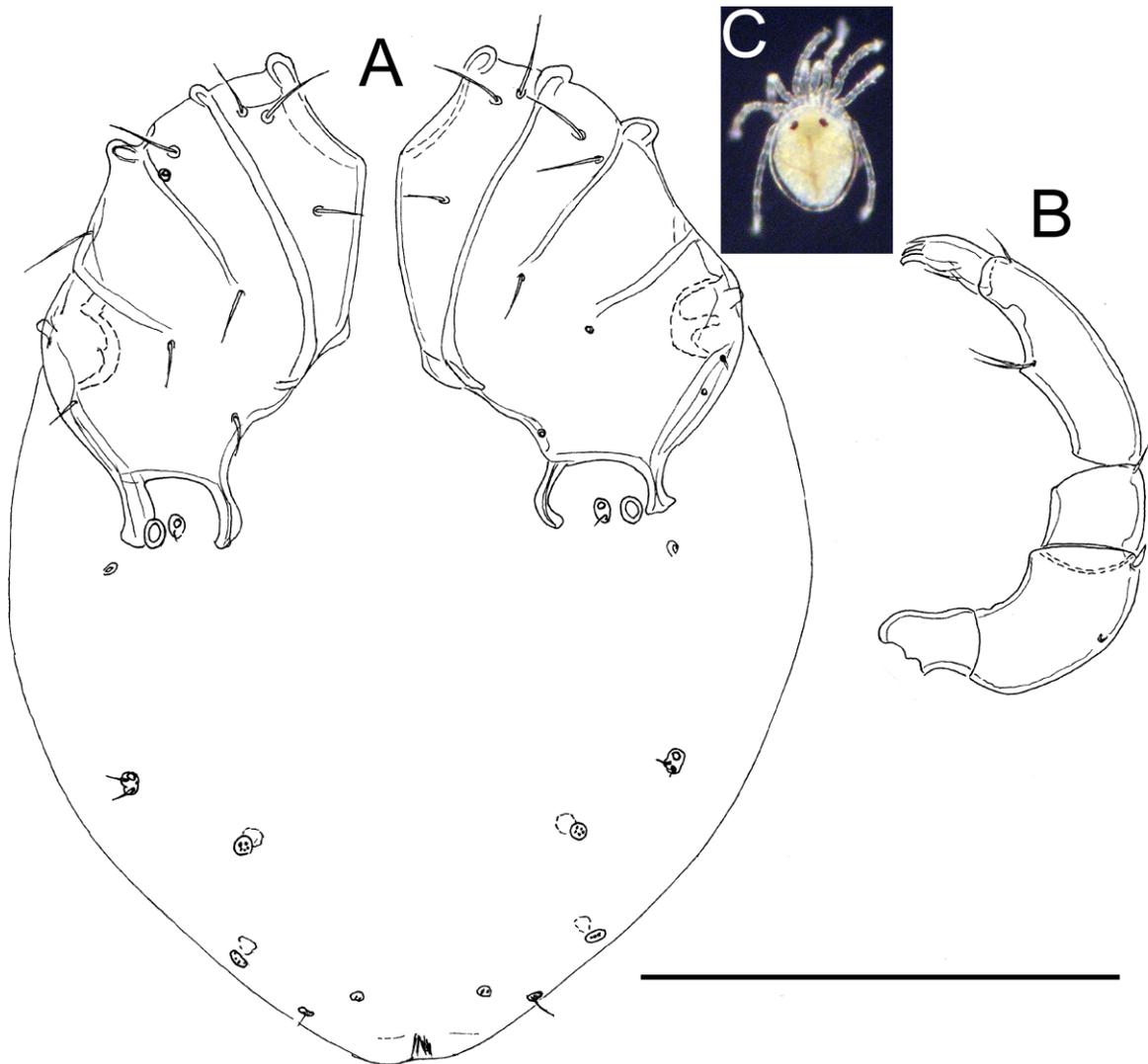
**Discussion** — The new species belongs to the *Litarachna duboscqi* species group (see Pešić *et al.* 2008 for discussion) characterized primarily by the incomplete, medially obliterated, suture line Cx-III/IV and ventral margin of P-4 with a large tubercle.

Due to the glandularium-like structure posterior to Cx-IV not fused with adjoining coxoglandularia 4, and the higher number of perigenital setae (> 20 pairs) in male, the new species resembles *Litarachna sagamiensis* Moto & Abé, 2013 from the Pacific coast of Japan and *L. caribica* from Curaçao. The latter species differs in the light fusion of the first coxal plates (unfused in *guadeloupensis*), and a moderate length of medial posterior apodemes of Cx-IV not extending beyond the sclerotized ring around gonopore (extending in *guadeloupensis*), the latter bearing four pairs of setae (two pairs in *guadeloupensis*).

*Litarachna sagamiensis* Moto & Abé, 2013 is similar to the new species in the unfused Cx-I, but can easily be separated from the male of new species in lower number of perigenital setae (24–25, data taken from Moto & Abé 2013) and a comparatively longer medial posterior apodemes of Cx-IV reaching posterior margin of the sclerotized ring around gonopore (Moto & Abé 2013)

Two other species known from the Caribbean Sea, *L. degiustii* and *L. lopezae* belong also to *duboscqi*-species group. *Litarachna degiustii* differs in the large fusion of the first coxal plates, the fusion of glandularium-like structure posterior of the fourth coxal plates with coxoglandularia 4, and the presence of four pairs of perigenital setae in the male (Cook 1958; Pešić *et al.* 2008). *Litarachna lopezae* can be separated by the fused Cx-I, a glandularium-like structure fused with Cx-IV, a peg-like seta at the base of P-4 ventral tubercle and the presence of four pairs of perigenital setae in the male (Pešić *et al.* 2014).

**Conclusion** — This is the first report of a new pontarachnid mite species from Guadeloupe indicating both the lack of taxon-specific sampling efforts and the understudied species-rich meiofauna assemblages in the Caribbean Sea.



**Figure 2.** *Litarachna guadeloupensis* sp. nov., deutonymph, Guadeloupe, Caribbean Sea: A – idiosoma, ventral view; B – palp; C – photograph of the animal, dorsal view. Scale bar = 100  $\mu$ m.

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## References

- Cook, D.R. (1958) A new species of *Litarachna* from the British West Indies (Acarina: Pontarachnidae). *Proceedings of the Entomological Society of Washington*, 60, 19–22.
- Cook, D.R. (1996) A freshwater species of *Pontarachna* (Acari, Pontarachnidae) from South Africa, with a discussion of genital acetabula in the family. *Anales Instituto de Biología, Universidad Nacional Autónoma de México, Serie Zoología*, 67, 259–264.
- Chatterjee, T., Schizas, N. & Pešić, V. (2019) A checklist of Pontarachnidae (Acari: Hydrachnidia) and notes on distributional patterns of the species. *Zootaxa*, 4619 (3), 527–544. <https://doi.org/10.11646/zootaxa.4619.3.6>
- Moto, A. & Abé, H. (2013) A new species of *Litarachna* (Acari: Hydrachnidia: Pontarachnidae) from Sagami Bay, central Japan. *Acta Arachnologica*, 62 (2), 67–74. <https://doi.org/10.2476/asjaa.62>.
- Pešić, V., Chatterjee, T. & Schizas N. (2008) Marine water mites (Acari: Hydrachnidia: Pontarachnidae) from the Caribbean Sea, with description of one new species. *Cahiers de Biologie Marine*, 49, 253–259.
- Pešić, V., Chatterjee, T. & Schizas, N. (2012) A new species of *Pontarachna* (Acari, Hydrachnidia, Pontarachnidae) from a mesophotic coral ecosystem off Vieques Island, Puerto Rico, Caribbean Sea. *Zootaxa*, 3440, 63–67.
- Pešić, V., Chatterjee, T., Alfaro, M. & Schizas, N. (2014) A new species of *Litarachna* (Acari, Hydrachnidia, Pontarachnidae) from a Caribbean mesophotic coral ecosystem. *ZooKeys*, 425, 89–97. <https://doi.org/10.3897/zookeys.425.8110>
- Pešić, V., Chatterjee, T. & Schizas, N. (2015) First record of *Litarachna caribica* (Acari, Pontarachnidae) from the Pacific coast of Panama. *Marine Biodiversity Records*, 8(e85), 1–3. <https://doi.org/10.1017/S1755267215000688>
- Pešić, V., Durucan, F. & Zawal, A. (2019) Marine mites (Acari: Hydrachnidia) of the Mediterranean Sea: Descriptions of two new species, key for identification and future prospects. *Zootaxa*, 4585 (3), 501–516. <https://doi.org/10.11646/zootaxa.4585.3.6>
- Smit, H. (2003) Five new species of the water mite family Pontarachnidae from Western Australia (Acari: Hydrachnidia). In: Wells, F.E., Walker, D.I. & Jones, D.S. (Eds.), *The Marine Flora and Fauna of Dampier, Western Australia*. Western Australian Museum, Perth, pp. 547–562.
- Wiles, P.R., Chatterjee, T. & De Troch, M. (2002) Two new and one known marine water mite (Acari: Hydrachnidia: Pontarachnidae) from South-East Africa. *Journal of Natural History*, 36, 1987–1994. <https://doi.org/10.1080/00222930110068583>