

The first record of *Litarachna duboscqi* Walter, 1925 (Acari, Pontarachnidae) outside the Mediterranean Sea

by

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Abstract

A single female of *Litarachna duboscqi* Walter, 1925 was collected on the coast of the island of Tenerife (Canary Islands) extending the currently known distribution of this species by more than 2000 km southwestward into the eastern Atlantic.

Key words: water mites, new record, Tenerife, range expansion

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Introduction

The water mite family Pontarachnidae Koenike, 1910, the only family of the Hydrachnidia occurring in the marine environment, is represented by two genera: *Litarachna* Walter, 1925 and *Pontarachna* Philippi, 1840. Most species are reported from tropical and temperate littoral habitats; two species from South Korea have been described from marine interstitial environments (Pešić 2013) and a few species have been recorded from estuarine freshwaters. The family represents a well-defined monophyletic clade (Pešić et al. 2014), but almost nothing is known about the life cycle of Pontarachnidae. At present two species of the genus *Litarachna* – *L. communis* Walter, 1925 and *L. duboscqi* Walter, 1925 – are reported from the Mediterranean Sea. The third species, i.e. *Litarachna divergens* Walter, 1925 has recently been considered as a *species incerta* by Pešić & Smit (2015). Thus far, eleven species are known from the coastal waters of Africa (Table 1).

With this paper, we present the first record of *Litarachna duboscqi* from the Canary Islands. There are no former records of pontarachnid mites from marine coastal areas of the Macaronesian region. Our finding represents a southwestward expansion of the known distribution range of *L. duboscqi* by more than 2000 km.

Materials and methods

In 2014, August 2, a single female of *Litarachna duboscqi* was collected by A. Zawal in San Andrés, Playa de Las Teresitas, 28°50'469 N, 16°18'5418 E, on the island of Tenerife (Canary Islands, Spain). The sampling place was a kilometer long breakwater located 150 m from the beach. The specimen was taken by hand netting from a depth of 2 m, and preserved in Koenike fluid. Slide-mounting was done in Hoyer's fluid and specimen was deposited in the collection of the junior author. All measurements are given in μm . The following abbreviations are used: I/II/III/IV-Leg-1-6 = the first to sixth segments of the first to fourth legs, P-1 to P-5 = palp segments 1 to 5.

Results and discussion

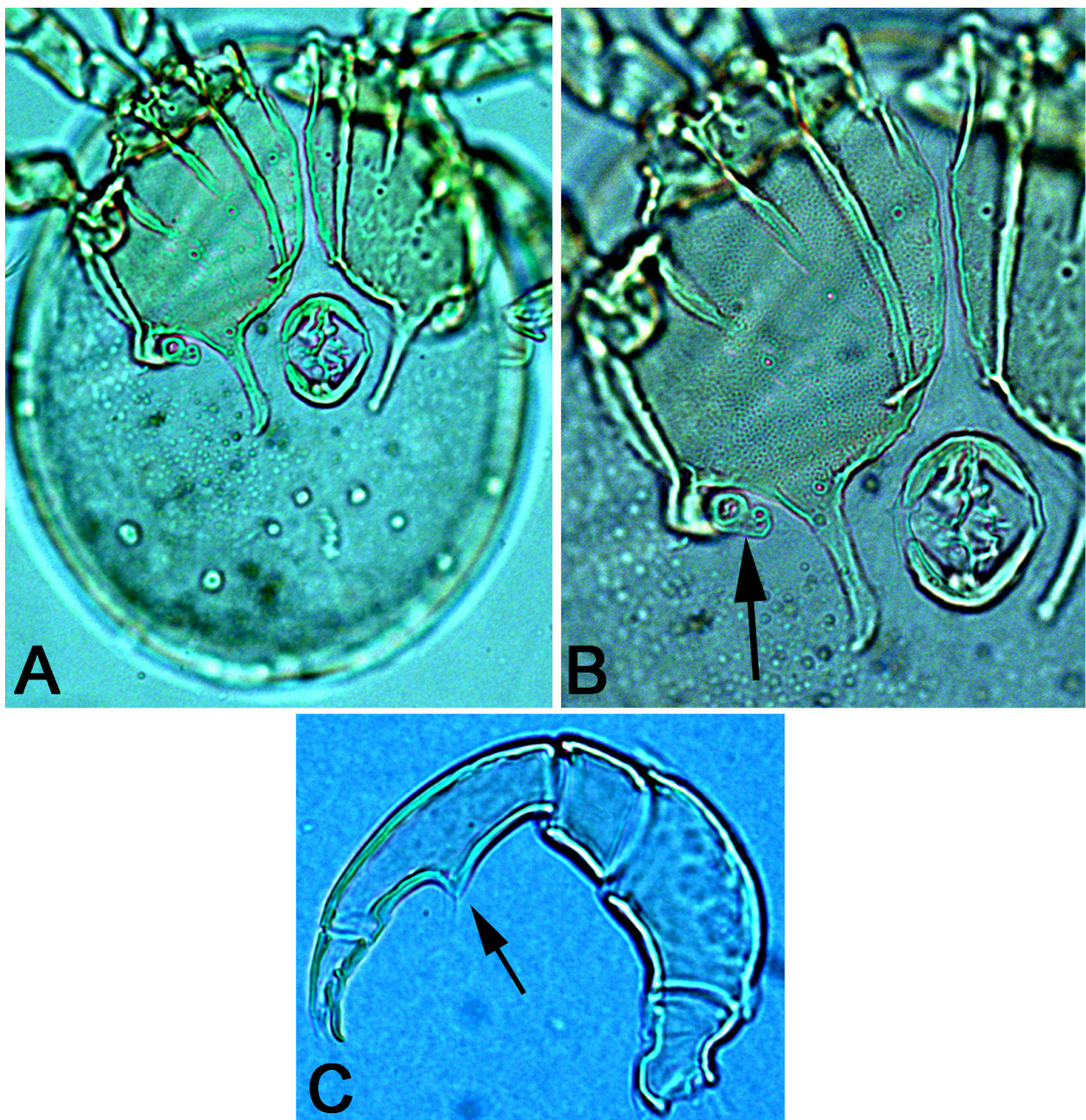
The specimen from the Playa de Las Teresitas described in this paper shows the typical combination diagnostic of *Litarachna duboscqi* Walter, 1925: 1) a pair of small platelets with coxoglandularia 4 and associated setae fused with a glandularium-like structure in one platelet lying in the integument between the posterior apodemes of coxae IV (Fig. 1B), and 2) shape of palps with a ventral protrusion on the fourth segment (Fig. 1C).

In addition, we give some measurements of

Table 1

List of water mite species of the family Pontarachnidae Koenike, 1910 from coastal waters of Africa with their distribution per marine biogeographic realms (abbreviated into a capital two- or three-letter combination) and provinces (in parentheses). Abbreviations of biogeographic realms are as follows: CIP, Central Indo-Pacific; TA, Tropical Atlantic; TAA, Temperate Australasia; TNA, Temperate Northern Atlantic; TNP, Temperate Northern Pacific; TSA, Temperate Southern Africa; TAS, Temperate South America; WIP, Western Indo-Pacific. For biogeographic divisions of coastal and shelf areas, we follow Marine Ecoregions of the World (MEOW), a system presented by Spalding et al. (2007).

Taxa	Distribution
<i>Pontarachna africana</i> Smit, 2002	TSA (Agulhas)
<i>P. arabica</i> Pešić, Chatterjee & Ahmed Abada, 2008	WIP (Red Sea and Gulf of Aden)
<i>P. capensis</i> Lohmann, 1907	TSA (Agulhas)
<i>P. denhami</i> (Lohmann, 1909)	TSA (Agulhas); WIP (Red Sea and Gulf of Aden)
<i>P. erythraea</i> K.O. Viets, 1966	WIP (Red Sea and Gulf of Aden)
<i>P. hoffmannae</i> Cook, 1996	TSA (Agulhas)
<i>P. punctulum</i> Philippi, 1840	WIP (Red Sea and Gulf of Aden)
<i>Litarachna cawthorni</i> Wiles, Chatterjee & De Troch, 2002	WIP (Western Indian Ocean)
<i>L. marshalli</i> Wiles, Chatterjee & De Troch, 2002	TSA (Agulhas)
<i>L. madagascariensis</i> Pešić, 2013	WIP (Western Indian Ocean)
<i>L. smiti</i> Pešić, Chatterjee & Abada, 2008	WIP (Red Sea and Gulf of Aden)

**Fig.1**

Photographs of *Litarachna duboscqi*, female, Playa de Las Teresitas, Tenerife: A = idiosoma, ventral view; B = coxal and genital field (arrow showing platelet with coxoglandularia 4 and associated seta fused with a glandularium-like structure); C = palp (arrow showing ventral protrusion on the fourth segment)

the female from the island of Tenerife. Idiosoma length/width 306/236 μm ; genital field 54 μm long; postgenital sclerite bowed, 38 μm in width; palp: total length 207; dorsal length/ height (in parentheses dorsal length/height ratio) of palpal segments (P-1-5): P-1, 16/15 (1.07); P-2, 66/35 (1.9); P-3, 25/26 (0.97);

P-4, 72/19 (3.8); P-5, 28/13 (2.1); dorsal length of I-Leg: 35, 33, 37, 42, 63, 76.

Litarachna duboscqi was originally described by Walter (1925) based on the material from the French Mediterranean coast and from the Adriatic Sea (Rovigno), and later reported by Fischetti (1928)

from the eastern Mediterranean Sea under the name of *Litarachna rhodia* (syn. to *L. duboscqi*). K. Viets (1939, 1941) reported *L. duboscqi* from the Adriatic Sea. Recently, Kapisir et al. (2014) reported an intersexual specimen of this species from the Adriatic Sea, which had a female genital field with perigenital setae, arranged regularly free in the integument around the male genital field.

As this is the first record of this species outside the Mediterranean area, it is likely that this specimen is the result of a relatively recent introduction. This could include a natural range expansion, but possibly also mechanisms based on anthropogenic activities. However, we cannot exclude the possibility that Canary Islands are part of the natural range of *L. duboscqi*. This species should be further assessed with molecular markers to test whether it has recently been introduced into the Atlantic or its recent distribution is a result of vicariance, probably linked to the events that followed the Messinian salinity crisis.

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