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Litarachna communis Walter, 1925 (Acari: Hydrachnidiae: Pontarachnidae): Taxonomic Status, Lectotype and Paralectotype Designation and Redescription

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Abstract — Litarachna communis, the type species of the genus, was originally described by C. Walter (1925) based on specimens collected on the coast of Banyuls-sur-Mer in France. Walter did not specify the type designation and type depository of L. communis in the original description. Therefore, we looked for the specimens used in the original description of L. communis and successfully found 14 specimens on five glass slides (Nos. 2698-2702) deposited in the Natural History Museum of Basel. Comparative study of morphological characteristics between real specimens and the original descriptions by Walter (1925) was carried out in order to specify the material used in the descriptions of female, male, and nymph of L. communis. As a result, it was confirmed that the female on slide No. 2700, the male on slide No. 2701, and the nymph on slide No. 2702 were the specimens used in the original description of L. communis. Consequently, we designated the female on slide No. 2700 as the lectotype and the male on slide No. 2701 and the nymph on slide No. 2702 as the paralectotypes of L. communis. Redescriptions of the female, male, and nymph of L. communis were also given on the basis of the newly designated types to provide additional information on morphological characteristics of the species.

Keywords — lectotype; Litarachna communis; Pontarachnidae; redescription; water mites

INTRODUCTION

The Pontarachnidae is the only family found in a marine habitat in the subcohort Hydrachnidia (Krantz and Walter 2009) or in the phalanx Hydrachnidia (Krantz 1978). The family contains two genera, Pontarachna Philippi, 1840 and Litarachna Walter, 1925. The genus Litarachna consists of 26 species, which are mainly recorded from the intertidal zone on the coasts of the tropical and temperate Pacific, Atlantic and Indian Oceans (Smit 2002, Pešić 2013a,b, Pešić et al. 2012, 2013, Moto and Abé 2013). Litarachna communis Walter, 1925 is the type species of the genus and has been recorded thus far from the Mediterranean Coast. This species was originally described by Walter (1925) based on the specimens collected from algae on the coast of Banyuls-sur-Mer in France. In the original description, Walter mentioned most of the important taxonomic characteristics used for specific discrimina-
tion of the female, the male, and the nymph and provided drawings of their body parts in detail. However, he did not specify the type designation and type depository of *L. communis*. In the course of the history of classification of organisms, taxonomic confusion caused by a lack of type designation has occurred repeatedly. Therefore, for several years we have been looking for specimens used in the original description of *L. communis* in order to designate the types of this species. In 2012, we fortunately obtained information on the depository of the specimens used in the original description of *L. communis* with the aid of European acarologists Dr. H. Smit, Dr. R. Gerecke, and Dr. V. Pešič. We also had an opportunity to examine the actual specimens of *L. communis* deposited in the Natural History Museum of Basel in Switzerland with the assistance of Dr. E. Stöckli and Dr. A. Hänggi of this museum. In the present study, we specify the female, the male and the nymph specimens used in the original description by Walter (1925) on the basis of a precise comparison of taxonomic characteristics between real specimens and the original description. In addition, we designate the lectotype and paralectotype of *L. communis*. Furthermore, we provide a redescription of *L. communis* based on the designated lecto- and paralectotypes in order to compensate for a deficiency in the original description.

**MATERIALS AND METHODS**

Specimens of *L. communis* used for the present study are deposited in the Naturhistorisches Museum Basel, Augustinergasse 2, Postfach 1048, CH4001, Basel, Switzerland. A total of 14 specimens (8 ♀, 4 ♂, and 2 nymphs) mounted on five glass slides, Nos. 2698-2702 (Figures 1a-e), were examined.

Specimens on each slide were examined under a light microscope (Olympus, BX51). At first, the general condition of each glass slide was examined. Thereafter, the morphological characteristics of each specimen on the slide were examined in detail. Figures were drawn with the aid of a camera lucida (Olympus, U-DA), and measurements were made with an ocular micrometer.

Measurements are carried out only for the specimens in measurable condition. All measurements are given in micrometers (µm) in descriptions. The body parts were measured in the following format: (1) Idiosoma: Length — from the anterior-most margin of the first coxal plate to the terminal end of the idiosoma, width — at the widest point; (2) Segments of leg: Length — straight dorsal length from the proximal base to the distal end; (3) Segments of palp: Length — straight dorsal length from the proximal base to the distal end, height — at the proximal base and distal end of the segment; (4) Segments of chelicera: Length — straight ventral length from the proximal base to the distal end; (5) First to fourth coxal plates: Length — from the anterior-most margin of the first coxal plate to the posterior-most margin of the fourth coxal plate along the longitudinal axis, width — at the widest point; (6) Medial and lateral apodemes: Length — from the posterior margin of the fourth coxal plate to the distal end of these apodemes; (7) Genital field: Length — from the anterior margin to the posterior margin along the longitudinal median axis, width — at the widest point; (8) Pre- and postgenital sclerites in the female: Width — at the widest point.

**Terminology**

Terms on glandularia, platelets, setae, and acetabula were partly referred to Tuzovskij (1987) and Wiles et al. (2002). Right or left is referred to on the basis of a dorsal view. The number of paired setae, glandularia, and platelets on the right and left sides of the idiosoma is referred to only the one side. In addition to general terminology for Hydrachnidiae, the following terms are also employed for morphological notations.

Posteromedial and posterolateral apodemes: Posteromedial and posterolateral projections on the posterior margin of the fourth coxal plate; sclerotized ring: A sclerotized plate surrounding the gonopore in the male; genital sclerites: Two sclerotized plates placed anteriorly (pregenital) and posteriorly (postgenital) to the gonopore in the female; genital setae: Setae on the sclerotized ring in the male; perigenital setae: Setae around the genital field in the male; ventral glandularium: A ventral
large gland with a slit-like opening; wheel-like acetabulum (Cook 1996): A wheel-like structure with radiating sulci.

**Abbreviations**

Cx-I, II, III, IV: First to fourth coxal plates; Leg-I, II, III, IV: First to fourth legs; P-1, 2, 3, 4, 5: First to fifth segments of palpi; PMA: Posteromedial apodeme(s); PLA: Posterolateral apodeme(s); W-1, 2, 3, 4: First to fourth wheel-like acetabula; Vgl (nec Vgl sensu Lundblad (1927)): Ventral glandularium(a); Vpl-1, 2, 3: First to third ventral platelets; Vst-1, 2, 3: First to third ventral setae; Ost-1, 2, 3: First to third ocular setae; Apl-1, 2: First and second anterior platelets; Lpl-1, 2, 3: First to third lateral platelets; Dpl-1, 2, 3, 4: First to fourth dorsal platelets.

**RESULTS**

**Taxonomic status of Litarachna communis Walter, 1925**

*Family* Pontarachnidae Koenike, 1910

*Genus* Litarachna Walter, 1925

*Litarachna communis* Walter, 1925

Diagnosis — Ventral tubercle on P-2 absent; Ventral tubercle and peg-like seta on P-4 absent; P-2 as long as P-4 in dorsal length; P-5 longer than half of P-4 in dorsal length; Genital field in female located between left and right apodemes of Cx-I.

Remarks — *Litarachna communis* is quite similar to *L. divergens* Walter, 1925 and *L. denhami* Lohmann, 1909 in lacking a ventral tubercle on P-2 and P-4 and in the absence of a peg-like seta on P-4. However, according to Viets (1957), *L. communis* is distinguished from *L. divergens* by the ratio of the dorsal length of P-5 to that of P-4, the arrangement of perigenital setae in the male, and the location of the genital field in the female, and from *L. denhami* by the ratio of the dorsal length of P-2 to that of P-4. The ratios of the dorsal length of P-4 to that of P-2 in *L. communis* and *L. divergens* are almost the same, while the ratio in *L. denhami* is larger than those in *L. communis* and *L. divergens*. In addition, P-5 is longer than half of P-4 in *L. communis*, while P-5 is shorter than in *L. divergens*. Furthermore, the genital field of the female in *L. communis* is located between right and left apodemes of the first coxal plates, while in *L. divergens* it is located more posteriorly.

**Designation of the lectotype and paralectotypes**

In the original description of *L. communis*, Walter (1925) described the female, male, and nymph in this sequence based on the examination of three specimens in total. However, he did not designate a type series in the original publication. We discovered 14 specimens of *L. communis* in total on the five glass slides (Nos. 2698-2702) (Figures 1a-e) deposited in the Natural History Museum of Basel. Therefore, all these specimens should be considered as syntypes of *L. communis* under Article 73.2 of the International Code of Zoological Nomenclature (International Commission on Zoological Nomenclature 1999). In order to designate the lectotype as well as the paralectotype of *L. communis*, we specified the female, male, and nymph used in the original description of *L. communis* by Walter (1925). The female must be designated as the lectotype and the others as the paralectotype.

In the original description of Walter (1925) the material was collected from the Baie du Troc, Banyuls-sur-Mer, on April 10, 1924. The taxonomic information, as it is recorded on the label of each glass slide, is as follows.

No. 2698: XII/48, 2 ♀, on the algae *Gigartina helminthocortes*, Mediterranean Sea.

No. 2699: XI/95, 3 ♀, 5 ♂, 1 nymph, on the algae *Gigartina helminthocortes*, Mediterranean Sea.

No. 2700: XI/96, ♀, on the algae at the surf zone, the Baie du Troc, Banyuls-sur-Mer, France, 10 April 1924, C. Walter coll.

No. 2701: XI/97, ♂, on the algae at the surf zone, the Baie du Troc, Banyuls-sur-Mer, France, 10 April 1924, C. Walter coll.

No. 2702: XI/98, nymph, on the algae at the surf zone, the Baie du Troc, Banyuls-sur-Mer, France, 10 April 1924, C. Walter coll.

Among the five glass slides mentioned above, three of them (Nos. 2700-2702) contained specimens collected from the same place on the same date in the original description. Furthermore, only
Figure 1: Specimens on original five glass slides of Litarachna communis: a – No. 2698, 2 ♀; b – No. 2699, 3 ♂, 5 ♀, 1 nymph; c – No. 2700, 1 ♀; d – No. 2701, 1 ♂; e – No. 2702, 1 nymph.

The result of the morphological comparison was summarized in Appendixes 1-3. The taxonomic characters observed in the specimens accorded well with those shown in the original descriptions and figures 18-25 in Walter (1925) except for the following points:

1) Lpl-2 and Ost-2 were not mentioned in the original description, although the platelet and the seta were present on the epidermal cuticle of the observed material. The differences were probably caused by the difficulty of precise observation at that time.

2) The direction of the tip of the PLA in the original figures 18 and 24 by Walter (1925) was somewhat different from that observed in the material. Walter (1925) probably made a picture of the PLA before complete mounting of the material.
3) The palpal chaetotaxy in the original description was different from that in the actual specimens. This discrepancy was probably caused by the difficulty of observation of the fine setae or sockets on dorsal margins of palpi.

4) Chelicerae in the original figure 21 were not broken, whereas those in the observed material were partly broken (Figure 2). It is highly probable that Walter (1925) made a picture of them before their damage through dissection.

5) Walter (1925) mentioned in the original description that a lot of setae on legs were bipectinate. On the contrary, setae on the legs in his original figure 23 were not bipectinate. According to the present examination of the material, most of the setae on legs were not bipectinate but spiniform. Consequently, Walter (1925) probably made the wrong conclusion that most of the setae on legs were bipectinate based only on the limited observation of a bipectinate seta on the genu of the first leg.

Considering the result of the morphological comparisons mentioned above as well as the collecting locality and the condition of specimens on the slides, specimens on slides No. 2700-No. 2702 were collected and arranged by C. Walter himself and used in the description of *L. communis*. Therefore, it should be concluded that the female on slide No. 2700, the male on slide No. 2701, and the nymph on slide No. 2702 are the specimens used in the original description of *L. communis* by Walter (1925).

In conclusion, we designate the female on slide No. 2700 as the lectotype of *L. communis* and the male and nymph on slides No. 2701 and No. 2702 as the paralectotype under the Article 74.1 of the *International Code of Zoological Nomenclature* (International Commission on Zoological Nomenclature 1999).

However, we do not designate the specimens on the slides No. 2698 and No. 2699 as the paralectotypes, because these specimens were not actually used in the specific description by Walter (1925) and were severely deteriorated to the extent that mor-
FIGURE 3: *Litarachna communis*, female lectotype (a and b), male paralectotype (c) and nymph paralectotype (d): a – Idiosoma, ventral view; b – Same, dorsal view; c – Idiosoma, ventral view; d – Idiosoma, ventral view. Scales = 100 µm (3-6).
FIGURE 4: *Litarachna communis*, female lectotype (a-e), male paralectotype (f and g) and nymph paralectotype (h): a – Right Leg-I, lateral view; b – Right Leg-II, lateral view; c – Right Leg-III, lateral view; d – Right Leg-IV, lateral view; e – Right palpus, lateral view; f – Right palpus, lateral view; g – Left palpus, lateral view; h – Right palpus, lateral view. Scales = 100 µm (a-d); 50 µm (e-h).
phological characteristics used for specific identification could not be examined.

When Walter (1925) made an original description of *L. communis*, he examined the following additional specimens to obtain distributional data on this species: Two females collected from the algae *Gigartina helminthocortes* in the Mediterranean Sea, and three males, five females, and one nymph probably collected from the same locality as the former two females. Considering the collecting locality, substrates, and number of individuals in each sex, these specimens surely correspond to those mounted on slides No. 2698 and No. 2699.

Apart from the specimens mentioned above, Walter (1925) also briefly noted the existence of other specimens of *L. communis* in the last part of the description, in which three males, five females, and one nymph were collected from the algae *Cystosira* found at 1-3 m depth in Rovigno near Punta Muccia in Italy by Dr. Vatova in 1925. Unfortunately, we could not find these specimens in the collections deposited in the Natural History Museum of Basel.

**Newly designated types and type depository of *L. communis***

**Lectotype:** Female (No. 2700, XI/96), on the algae at the surf zone, the Baie du Troc, Banyuls-sur-Mer, France, April 10, 1924, C. Walter coll. **Paralecotypes:** Male (No. 2701, XI/97) and nymph (No. 2702, XI/98), on the algae at the surf zone, the Baie du Troc, Banyuls-sur-Mer, France, April 10, 1924, C. Walter coll.

**Type depository.** Lectotype and paralectotypes: Naturhistorisches Museum Basel, Augustinergasse 2, Postfach 1048, CH4001, Basel, Switzerland.

**Redescription of the female based on the lectotype (Figures 3a-b, 4a-e)**

Female (*Lectotype*, No. 2700, XI/96) [New designation]

Idiosoma — 465 long and 430 wide.

Venter (Figure 3a) — Cx-I to Cx-IV fused into a single coxal plate; Right and left plates 245 – 248 long and 155 – 173 wide. PMA 50 – 55 long, PLA 50 – 52 long. Genital field 75 long and 64 wide. Pre-genital sclerite 64 long, postgenital sclerite 61 long, Vpl-1 located between PMA and PLA. W-1 located medioposteriorly to PMA, W-2 located lateroposteriorly to W-1. Vst-1 located between W-1 and W-2. Vgl, Vpl-2, and Vst-2 fused into a platelet and located lateroanteriorly to W-2 and close to lateral margin of idiosoma. Lyrifissure located medioanteriorly to Vpl-2. Excretory pore located close to terminal end of idiosoma. Vst-3 and Vpl-3 located lateroanteriorly to excretory pore. W-3 located lateroanteriorly to Vpl-3. W-4 absent.

Dorsum (Figure 3b) — Apl-1 lacking a gland and Ost-1 close to each other and placed anterior to margin of idiosoma. Ost-2 located lateroposteriorly to Apl-1. Lpl-1 located lateroposteriorly to Ost-2. Ost-3 and Apl-2 close to each other and placed medioposteriorly to Lpl-1. Lpl-2, Lpl-3, and Dpl-3 placed on lateral portion of dorsum. Dpl-1, Dpl-2, and Dpl-4 placed posterior half portion of dorsum. Lyrifissure not observed.

Chelicerae — Broken.

Palpi (Figure 4e) — P-2 with one to two spiniform setae on dorsomedial margin and a pair of spiniform setae on dorsodistal margin; P-4 with two filiform setae and a spiniform seta on dorsodistal margin and two filiform setae on ventrodistal margin; P-2 without a tubercle on ventromedial margin; P-4 without a tubercle and a peg-like seta on ventromedial margin. Length of segments of palpi as follows: P-1 18-20; P-2 118-120; P-3 53; P-4 125; P-5 70-73.

Legs (Figures 4a-d) — Length and chaetotaxy are given in Tables 1 and 2, respectively. Two swimming setae located on tibia of Leg-IV. A pair of bacilliform setae located on dorsal margin of tarsi in all
legs. A bipectinate seta located on ventral margin of genua in Leg-III.

**Redescription of the male based on the paralectotype (Figures 3c, 4f-g)**

Male (Paralectotype, No. 2701, XI/97) [New designation]

Idiosoma — 450 long and 400 wide.

Venter (Figure 3c) — Cx-I to Cx-IV fused into a single coxal plate; Right and left plates 203-205 long and 133 – 138 wide. PMA 38 long, PLA 15 – 25 long. Genital field 44 long and 35 wide. Forty-nine and 53 perigenital setae located on right and left of genital field, respectively. Vpl-1 located between PMA and PLA. W-1 located lateroposteriorly to genital field. W-2 located laterally to W-1. Vgl, Vpl-2, and Vst-2 fused into a platelet and located lateroanteriorly to W-2. Lyrifissure located medioanteriorly to Vpl-2. Excretory pore located close to terminal end of idiosoma. Vst-3 and Vpl-3 located lateroanteriorly to excretory pore. W-3 located anteriorly to Vpl-3. Vst-1 unobserved, and W-4 absent.

Dorsum — Unobservable. Probably same form as the female.

Chelicerae — Broken and composed of claw and basal segments.

Palpi (Figures 4f-g) — P-2 with a spiniform seta as well as a bipectinate on dorsomedial and dorsodistal margins. P-4 with two filiform setae and a spiniform seta on dorsodistal margin and two filiform setae on ventrodistal margin. A tubercle on ventromedial margin of P-2, a tubercle and a peg-like seta on ventromedial margin of P-4 absent. Length of segments of palpi as follows: P-1 18; P-2 88-90; P-3 40-42; P-4 100-103; P-5 58-60.

Legs — Length and chaetotaxy are given in Table 3 and 4, respectively. One swimming seta located on tibia of Leg-IV. A pair of bacilliform setae located on dorsal margin of tarsi in all legs.

**Redescription of the nymph based on the paralectotype (Figures 3d and 4h)**

Nymph (Paralectotype, No. 2702, XI/98) [New designation]

Idiosoma — 299 long and 282 wide.

Venter (Figure 3d) — Cx-I to Cx-IV fused into a single coxal plate; Right and left plates 138 – 140 long and 88 – 95 wide. PMA 30 long, PLA 38 long. Genital field undeveloped. Vpl-1 located between PMA and PLA. W-2 located lateroposteriorly to PMA. W-3 located lateroposteriorly to W-2. Vgl, Vpl-2, and Vst-2 fused into a platelet and located lateroanteriorly to W-2. Excretory pore located close to
terminal end of idiosoma. Vst-3 and Vpl-3 located lateroanteriorly to excretory pore. Lyrifissure and Vst-1 not observed. W-1 and W-4 absent.

Dorsum — Unobservable.

Chelicerae — Immeasurable, composed of claw and basal segments.

Palpi (Figure 4h) — P-2 with a spiniform seta on dorsomedial and dorsodistal margin. P-3 with a filiform seta. P-4 with two filiform setae and a spiniform seta on dorsodistal margin and a filiform seta on ventrodistal margin. A tubercle on ventromedial margin of P-2, a tubercle and a peg-like seta on ventromedial margin of P-4 absent. Length of segments of palpi as follows: P-1 13-15; P-2 63; P-3 30; P-4 74-75; P-5 42-43.

Legs — Length and chaetotaxy are given in Tables 5 and 6, respectively. A pair of bacilliform setae located on dorsal margin of tarsi in all legs. Swimming setae absent.

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### Table 3: Length of segments of right and left legs of male (paralectotype), right / left.

| Leg | Trochanter | Basifemur | Telofemur | Genu | Tibia | Tarsus |
|-----|------------|-----------|-----------|------|-------|--------|
| I   | 38/38      | 38/35     | 53/53     | 63/63| 90/90 | 101/103|
| II  | 43/38      | 33/30     | 55/53     | 65/65| 95/93 | 110/108|
| III | 50/48      | 38/33     | 55/50     | 68/68| 100/103| 118/118|
| IV  | 85/88      | 50/45     | 63/65     | 96/98| 115/115| 123/123|

### Table 4: Chaetotaxy of legs of male (paralectotype), spiniform / filiform.

| Leg | Trochanter | Basifemur | Telofemur | Genu | Tibia | Tarsus |
|-----|------------|-----------|-----------|------|-------|--------|
| I   | 3/1        | 4/0       | 6/1       | 4/3  | 4/3   | 2/10   |
| II  | 3/1        | 4/0       | 6/1       | 6/2  | 6/3   | 2/11   |
| III | 3/1        | 4/0       | 6/1       | 7/2  | 8/3   | 2/10   |
| IV  | 2/1        | 4/0       | 4/1       | 8/2  | 8/4   | 1/7    |

### Table 5: Length of segments of right and left legs of nymph (paralectotype), right / left.

| Leg | Trochanter | Basifemur | Telofemur | Genu | Tibia | Tarsus |
|-----|------------|-----------|-----------|------|-------|--------|
| I   | 23/28      | 20/28     | 36/37     | 38/40| 60/60 | 70/73  |
| II  | 28/28      | 20/23     | 35/35     | 40/40| 63/63 | 75/75  |
| III | 33/39      | 25/23     | 35/35     | 43/40| 70/65 | 81/83  |
| IV  | 60/58      | 30/35     | 43/40     | 63/58| 73/77 | 83/82  |

### Table 6: Chaetotaxy of legs of nymph (paralectotype), spiniform / filiform.

| Leg | Trochanter | Basifemur | Telofemur | Genu | Tibia | Tarsus |
|-----|------------|-----------|-----------|------|-------|--------|
| I   | 2/1        | 3/0       | 6/1       | 3/1  | 3/1   | 2/7    |
| II  | 2/1        | 3/0       | 6/1       | 4/0  | 5/2   | 2/7    |
| III | 2/1        | 3/0       | 6/1       | 4/0  | 6/2   | 2/7    |
| IV  | 1/1        | 3/0       | 4/1       | 6/2  | 6/3   | 1/7    |
Morphological variation and abnormality of the type series

The idiosoma was 450 – 520 long and 400 – 430 wide in the female (n=5), 387 – 450 long and 315 – 400 wide in the male (n=4), and 299 long and 282 wide in the nymph (n=1). The coxal plate was 215 – 250 long and 140 – 173 wide in the female (n=4), 202 – 223 long and 123 – 138 wide in the male (n=4), and 138 – 140 long and 88 – 95 wide in the nymph (n=1). PMA and PLA were 40 – 55 long and 28 – 52 long, respectively, in the female (n = 4); 28 – 40 long and 15 – 33 long, respectively, in the male (n = 4); and 30 long and 38 long, respectively, in the nymph (n=1). The genital field was 73 – 80 long and 58 – 70 wide in the female (n = 4) and 44 – 55 long and 35 – 43 wide in the male (n = 4). The pregenital and postgenital sclerites (n=4) were 58 – 70 wide and 53 – 63 wide, respectively. The genital fields of all female specimens (n = 4) were located at the level of the posterior end of the suture line passing between the first and second coxal plates. Four pairs of genital setae were located on the right and left sides of the sclerotized rings of all male specimens (n=4).

DISCUSSION

Walter (1925) described most of the taxonomic characters of L. communis in detail, but incorrectly mentioned the numbers of wheel-like acetabula and perigenital setae. In this study, three pairs of wheel-like acetabula and 102 perigenital setae were found in L. communis. According to Tuzovskij (1987), every pontarachnid species have five pairs of idiosomal lyrifissures. However, we could observe only one pair of lyrifissures in the male and female, but none in the nymph. The specimens mounted on the slides can be observable only from ventral side. Therefore, it is probable that we overlooked the dorsal lyrifissures.

The number of perigenital setae in the paraplectotype male did not correspond with the specimens reported from the Black Sea by Tuzovskij (1978). The paraplectotype has 102 perigenital setae, whereas the Black Sea specimen has about 150 perigenital setae. In addition, Tuzovskij (1987) mentioned that a platelet "humeralis ventralis (Ho)" was present on a coxal plate in L. communis in Tuzovskij (1978). However, the lectotype and paralectotypes of L. communis have two setae instead of the platelet on the coxal plate. Therefore, L. communis sensu Tuzovskij (1978) is considered to be another species. The number of perigenital setae considerably varies within a species and the existence of the platelet Ho is not yet examined in many pontarachnid species. Consequently, the specific identification for the Black Sea specimen is not available in the present circumstances.

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APPENDIX 1

Comparison of taxonomic characteristics in the female of *Litarachna communis* between the original description by Walter (1925) and observation of the actual specimen (No. 2700) in the present study. In addition to the abbreviations used in the description, the following additional abbreviations are also employed. *R*: right, *L*: left, *Leg-I (II, III, IV)* - 1 (2, 3, 4, 5, 6): Trochanter (to tarsus) of the first (to the fourth) leg. Measurements are given in micrometers (µm). For the paired appendage, if the measured value and the number of setae in the right appendage are different from those in the left appendage, those in the left appendage are given in parentheses. The characteristic is shown in bold in the case that a discrepancy between the original description and the present observation is recognized.
| Idiosoma Platelets and setae | Platelets, setae, glandularium and wheel-like acetabula | Coxal plates |
|-----------------------------|---------------------------------------------------------|--------------|
| **Length** | **Width** | **Apl-1** | **Apl-2** | **Ost-1** | **Ost-2** | **Ost-3** | **Lpl-1** | **Lpl-2** | **Lpl-3** | **Dpl-1** | **Dpl-2** | **Dpl-3** | **Dpl-4** |
| Walter (1925) | 480 | 390 | Present | Present | Present | Absent | Present | Present | Present | Absent | Present | Present | Present |
| Present study | 465 | 430 | Present | Present | Present | Present | Present | Present | Present | Present | Present | Present | Present |
| **Present study** | 465 | 430 | Present | Present | Present | Present | Present | Present | Present | Present | Present | Present | Present |

| Platelets, setae, glandularium and wheel-like acetabula | Coxal plates |
|---------------------------------------------------------|--------------|
| **Ypl-1** | **Ypl-2** | **Ypl-3** | **Lyrifissure** | **W-1** | **W-2** | **W-3** | **W-4** | **Vst-1** | **Vst-2** | **Ypl-2, Vst-2 & Vgl** | **Height** | **Width** |
| Walter (1925) | Present | Present | Present | Present | Present | Present | Present | Present | Present | Present | Fused | 235 | 300 |
| Present study | Present | Present | Present | Present | Present | Present | Present | Present | Present | Present | Fused | 248 (245) | 328 |

| Coxal plate | MPA | LPA | Separation of Cx with suture line |
|-------------|-----|-----|----------------------------------|
| **R & L Cx-I** | **Length** | **Condition** | **Condition** | **Cx-I & II** | **Cx-II & III** | **Cx-III & IV** |
| Walter (1925) | Separated | 52 | Laterally curved | Medially curved | Complete | Incomplete | Complete |
| Present study | Separated | 55 (50) | Laterally curved | LATERALLY CURVED | Complete | Incomplete | Complete |

| Genital field | Chelicera | Length of segments of legs |
|---------------|-----------|-----------------------------|
| **Length** | **Width** | **Position** | **Minimum interval between pre- & post- genital sclerites** | **Condition** | **Total length** | **Claw length** | **Leg-I-1** | **Leg-I-2** | **Leg-I-3** | **Leg-I-4** | **Leg-I-5** | **Leg-I-6** |
| Walter (1925) | 80 | 60 | Between R & L Cx | 5 | Complete | 177 | 44 | 33 | 31 | 41 | 67 | 96 | 104 |
| Present study | 75 | 63 | Between R & L Cx | 4 | Broken | - | 45 | 48 (43) | 45 (43) | 63 (65) | 70 (73) | 98 (100) | 103 (110) |
| Length of segments of legs | Number of ventral spiniform setae on legs | Bipectinate setae on legs |
|---------------------------|------------------------------------------|--------------------------|
| Legs-II-1 | Legs-II-2 | Legs-II-3 | Legs-II-4 | Legs-II-5 | Legs-II-6 | Legs-III-1 | Legs-III-2 | Legs-III-3 | Legs-III-4 | Legs-III-5 | Legs-III-6 | Present study | Walter (1925) |
| 41 | 31 | 44 | 72 | 99 | 106 | 52 | 36 | 57 | 75 | 112 | 123 | 50 (43) | 33 (40) | 63 (65) | 75 (78) | 100 (103) | 120 (117) | 48 (53) | 48 (45) | 68 (65) | 78 (80) | 115 | 125 (130) |

| Chaetotaxy of palpi: spiniform/filiform/bipectinate setae |
|-----------------------------------------------|
| P-1 | P-2 | P-3 | P-4 | P-5 |
| Walter (1925) |
| 1/0/0 | 3/0/0 | 0/1/0 | 0/4/0 | 0/0/0 |
| Present study |
| 0/0/0 | 4/0/0 | 0/0/0 | 1/4/0 | 0/0/0 |
APPENDIX 2

Comparison of taxonomic characteristics in the male of *Litarchina communis* between the original description by Walter (1925) and observation of the actual specimen (No. 2701) in the present study.
| Idiosoma Platelets, glandularium, setae and wheel-like acetabula | Platelets, glandularium, setae and wheel-like acetabula |
|---|---|
| **Length** | **Width** | **Vpl-1** | **Vpl-2** | **Vpl-3** | **Lyrifissure** | **W-1** | **W-2** | **W-3** | **W-4** | **Vst-1** | **Vst-2** | **Vst-3** | **Vpl-2, Vst-2 & Vgl** |
| Walter (1925) | 375 | 330 | Present | Present | Present | Present | Present | Present | Present | Present | Present | Present | Present | Present |
| Present study | 450 | 400 | Present | Present | Present | Present | Present | Present | Present | Present | Present | Present | Present | Present |

| Chaetotaxy of palpi: spiniform/filiform/bipectinate setae |
|---|
| **P-1** | **P-2** | **P-3** | **P-4** | **P-5** |
| Walter (1925) | 1/0/0 | 3/0/2 (2/0/0) | 0/1/0 | 0/4/0 | 0/2/0 |
| Present study | 0/0/0 | 2/0/2 | 0/0/0 | 1/4/0 | 0/0/0 |

| Separation of Cx with suture line |
|---|
| **Length** | **Width** | **Number of genital setae** | **Length of gonopore** | **Number of perigenital setae** |
| Walter (1925) | Separated | 52 | Medially curved | Lateral to curved | Complete | Incomplete | Complete | 40 | 34 | 4 | 28 | ca. 100 |
| Present study | Separated | 55 (50) | Medially curved | Lateral to curved | Complete | Incomplete | Complete | 44 | 35 | 4 | 32 | 102 |
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APPENDIX 3

Comparison of taxonomic characteristics in the nymph of *Litarchna communis* between the original description by Walter (1925) and observation of the actual specimen (No. 2702) in the present study.
| Idiosoma | Wheel-like acetabula | Dorsal length of palpi | Chaetotaxy palpi: spiniform/filiform setae | Number of ventral spiniform setae on legs |
|----------|----------------------|------------------------|---------------------------------------------|------------------------------------------|
| Length   | Width    | Gonopore | W-1 | W-2 | W-3 | W-4 | P-1 | P-2 | P-3 | P-4 | P-5 | P-1 | P-2 | P-3 | P-4 | P-5 | Leg-IV-4 | Leg-IV-5 |
| Walter (1925) | 345 | 270 | Absent | Present | Present | Absent | 13 | 60 | 22 | 67 | 36 | 0/0 | 5/0 | 0/1 | 4 | 4 |
| Present study | 299 | 282 | Absent | Present | Present | Absent | 15 (13) | 63 | 30 | 74 (75) | 42 (43) | 0/0 | 3/0 | 0/1 | 4 | 4 |