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TAXONOMIC ELEMENTS ON *UROPODA GRESSITTI* HIRSCHMANN, 1972 FROM SOUTH GEORGIA (ACARI: UROPODINA: UROPODIDAE)

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ABSTRACT — Female, deutonymph, protonymph and larva of the species *Uropoda gressitti* Hirschmann, 1972 are described, based on specimens collected from South Georgia by the British Antarctic Survey in 1981. Original drawings of adult and immature stages are presented with a key to the Uropodina species of the Subantarctic region.

KEYWORDS — adult and immature stages; South-Georgia; Subantarctica

INTRODUCTION

Uropodina mites are small (300 – 1200 μm), yellow or reddish-brown members of the soil fauna; they inhabit soil, leaf litter, moss, lichens and bark of tree. Several species live in association with other arthropods and vertebrates. More than two thousand species are known worldwide (Wiśniewski and Hirschmann 1993). The Antarctica is the most poorly studied region of the world, up to now only four Uropodina species are reported from this region.

The first two species found in the material collected during the German South-Polar Expedition (Possession Island), were described as *Opisthope crozetensis* Richters, 1907 and *Piracarus crozetensis* Richters, 1907 (Richters 1907). Later Hirschmann (1974) placed these two species into the genus *Uropoda* Latreille, 1806 resulting to the new combination *Uropoda crozetensis* (Richters, 1907), but Hirschmann (1974) needed to change the name of *Piracarus crozetensis* to *Uropoda richtersi* Hirschmann, 1974 to avoid homonymy.

Some years later Hirschmann (1972) observed soil material from the South Georgia and described two other new species: *Uroobovella gressitti* Hirschmann, 1972 and *Uropoda gressitti* Hirschmann, 1972. Unfortunately Hirschmann (1972) gave only a brief description of females of these species and he did not find the immature stages of the latter species.

In 2008, I spent two weeks in the Natural History Museum, in London, where I studied the unsorted soil samples of the Arachnida collection. I found several specimens of *Uropoda gressitti* Hirschmann, 1972 in the materials collected during the British Antarctic Survey, 1981. Females, deutonymphs, protonymphs and larvae of *U. gressitti*, were observed and their description and/or redescription is provided in the present paper.

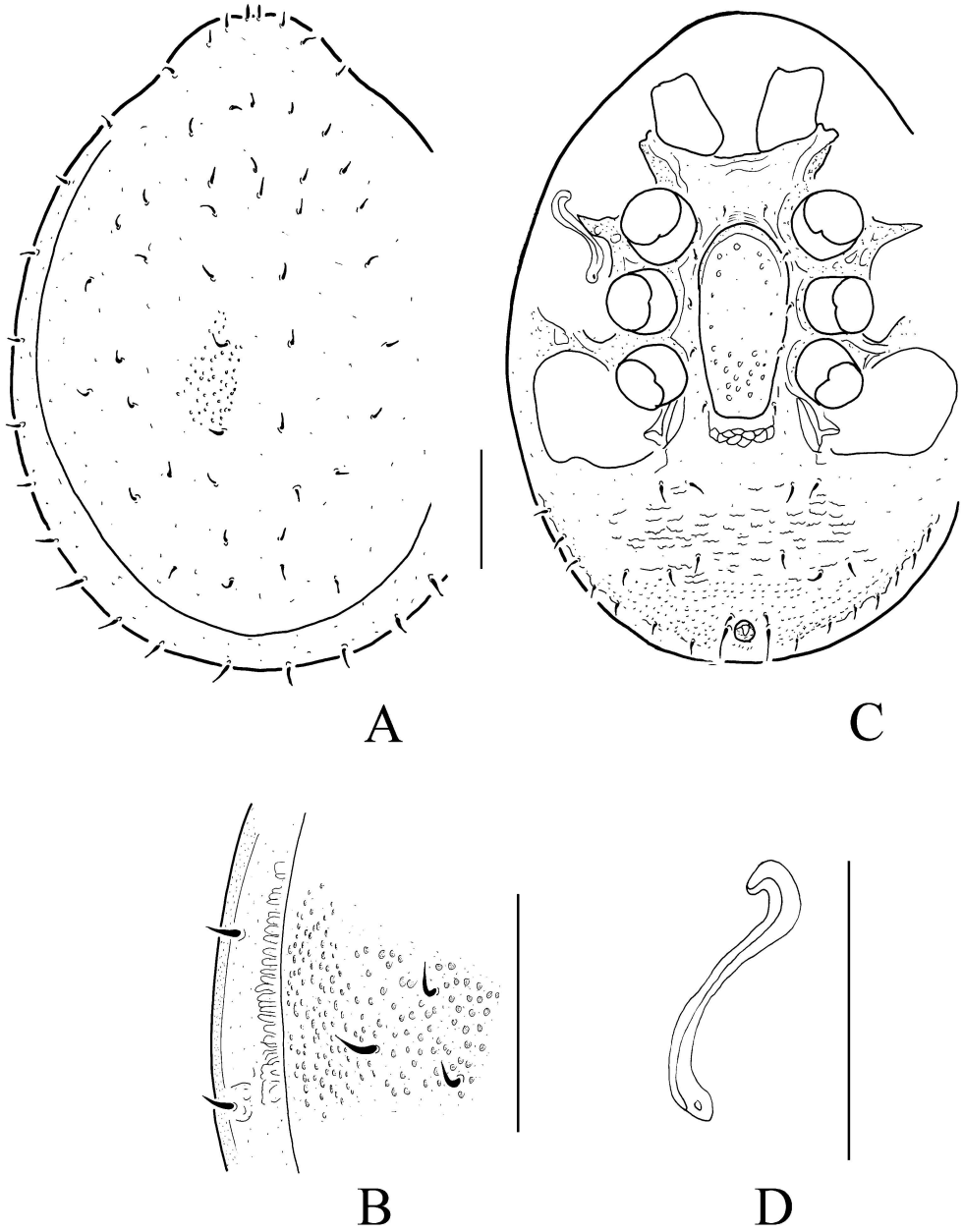


FIGURE 1: *Uropoda gressitti* Hirschmann, 1972 (female): A – dorsal view; B – ornamentation and setae on dorsal shield; C – ventral view; D – peritreme. Scale bar = 100 μm.

MATERIALS AND METHODS

Specimens were cleared in lactic acid mounted on slides and later stored in alcohol. Drawings were made using a drawing tube at 16 and 40x magnification. All specimens examined are deposited in the Arachnida collection of the Natural History Museum, London (UK). Abbreviations: h1-h3, hypostomal setae, h4, capitular setae, St1-St5, sternal setae. Measurements are given in micrometers (μm), width of idiosoma was taken at the level of the coxae IV.

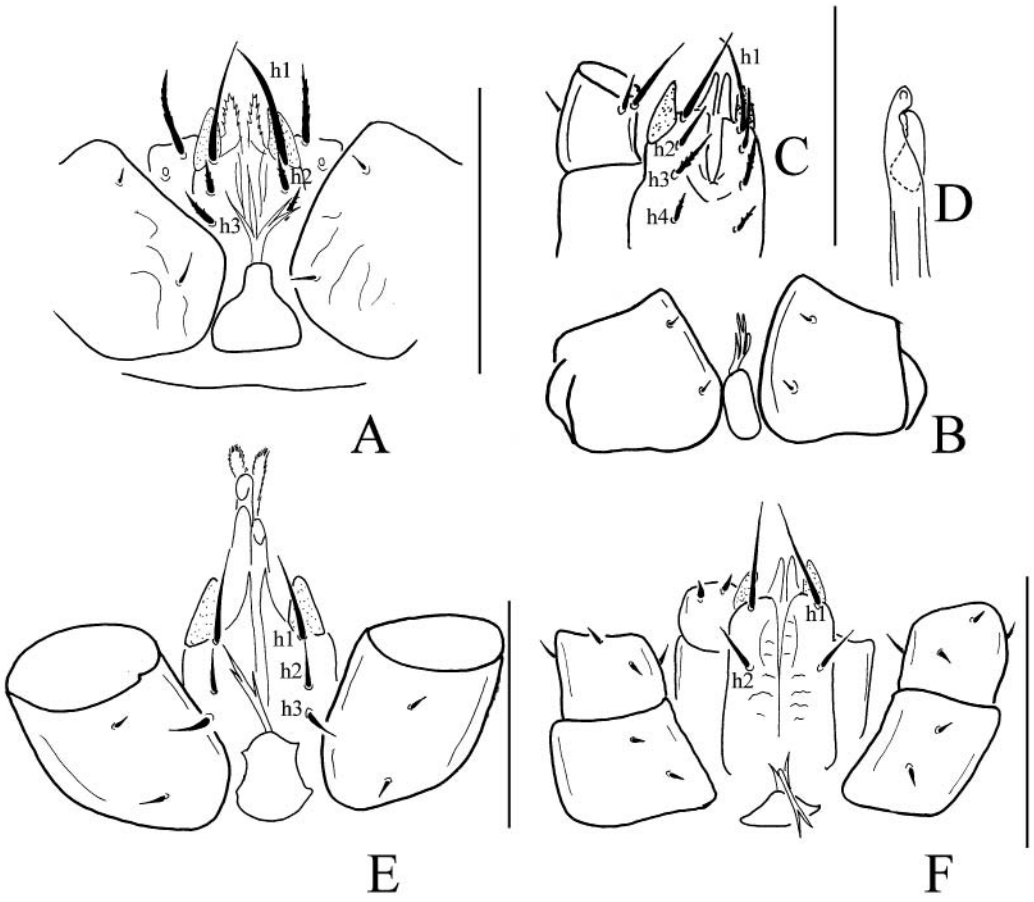


FIGURE 2: *Uropoda gressitti* Hirschmann, 1972: A – tritosternum, coxae I and ventral view of gnathosoma of female; B – tritosternum and coxae I of deutonymph; C – ventral view of gnathosoma of deutonymph; D – chelicerae of deutonymph; E – tritosternum, coxae I, apical part of chelicerae and ventral view of gnathosoma of protonymph; F – tritosternum, coxae and trochanter I, ventral view of gnathosoma of larva. Scale bar = 100 μm.

RESULTS

Uropoda gressitti Hirschmann, 1972

Uropoda (Phaulodinychus) gressitti Hirschmann 1972: 89-91, Figure 78.

Uropoda gressitti: Wiśniewski and Hirschmann 1993: 215., Wiśniewski 1993a: 286., Wiśniewski 1993b: 423.

Material examined — South Georgia, Maiviken, summer samples, "Block A", 01 January 1982: two females: A5/1b/2, two females: A2/1a/2, six females: A1/2a/2, six females, one larva and one protonymph: A3/2a/2, six females and one deutonymph: A1/1a/2. South Georgia, Maiviken, summer samples, "Block B", 11 January 1982: two females B1/2a/3; one female: B4/1a/3, one larva, three deutonymphs and seven females: B6/1a/3 and two deutonymphs B3/1a/3.

Female

n=32; Figures 1, 2: Length of idiosoma 530 – 560 μm, width 390 – 410 μm. Shape of idiosoma oval.

Dorsal idiosoma — (Figure 1A): Marginal and dorsal shields fused anteriorly. All dorsal setae smooth and needle-like (ca. 11 – 12 μm). Marginal setae similar to dorsal setae in shape and length. Dorsal shield covered by small alveolar pits (Figure 1B), this kind of ornamentation missing from marginal shield.

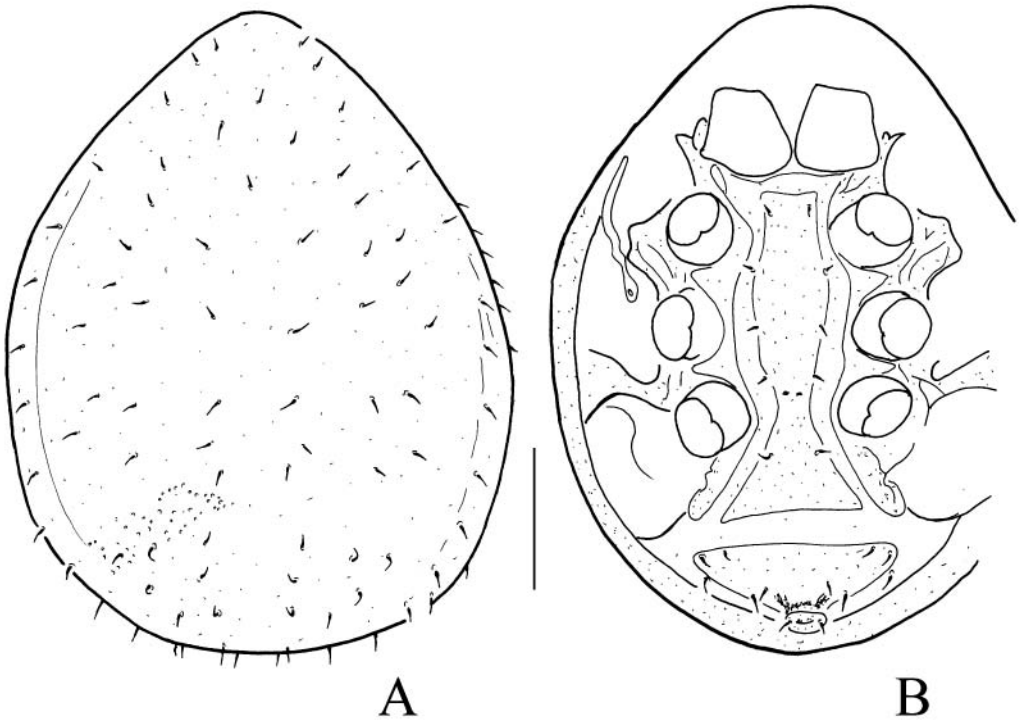


FIGURE 3: *Uropoda gressitti* Hirschmann, 1972 (deutonymph): A – dorsal view; B – ventral view. Scale bar = 100 μm.

Ventral idiosoma — (Figure 1C): Sternal setae short (ca. 6 – 7 μm), smooth and needle-like. St1 placed near anterior margin of genital shield, St2 near posterior margin of coxae II, St3 near central region of coxae III and St4 near anterior margin of coxae IV, St5 situated near posterior border of genital shield. Surface of sternal shield mostly smooth, but reticulate pattern present near the basis of genital shield. Ventral shield with small alveolar pits and undulate line ornamentation, all ventral setae smooth and needle-like (ca. 13 – 15 μm). Adanal setae setae smooth and needle-like, first pair of part adanal setae (ca. 7 – 8 μm) shorter than second pair (ca. 23 – 25 μm). Genital shield linguliform, without process and with oval pits. Genital shield placed between coxae II and IV.

Peritremes S-shaped — (Figure 1D).

Tritosternum — (Figure 2A) with wide basis, tritosternal laciniae divided into four smooth branches.

Gnathosoma — (Figure 2A): Corniculi horn-like, internal malae serrate. Hypostomal setae h1 long (ca. 43 μm) and smooth, h2 (ca. 10 μm) serrate, h3 similar to h2 in length and shape, h4 two times shorter than h3 their margin serrated (not illustrated in Figure 2A). Fixed digit of chelicerae longer than movable digit and bearing a single tooth. Cheliceral internal sclerotised node absent. Trochanter of palp bearing two serrated setae on ventral part. Epistome with pilose margin and with two apical branches.

Legs — Bearing smooth and simple setae, the first leg with claws.

Deutonymph

n=6; Figure 3: Length of idiosoma 440 – 460 μm, width 340 – 350 μm. Shape of idiosoma oval.

Dorsal idiosoma — (Figure 3A): Dorsal setae and ornamentation similar to that of female.

Ventral idiosoma — (Figure 3B): Sternal shield without ornamentation. Sternal setae smooth and

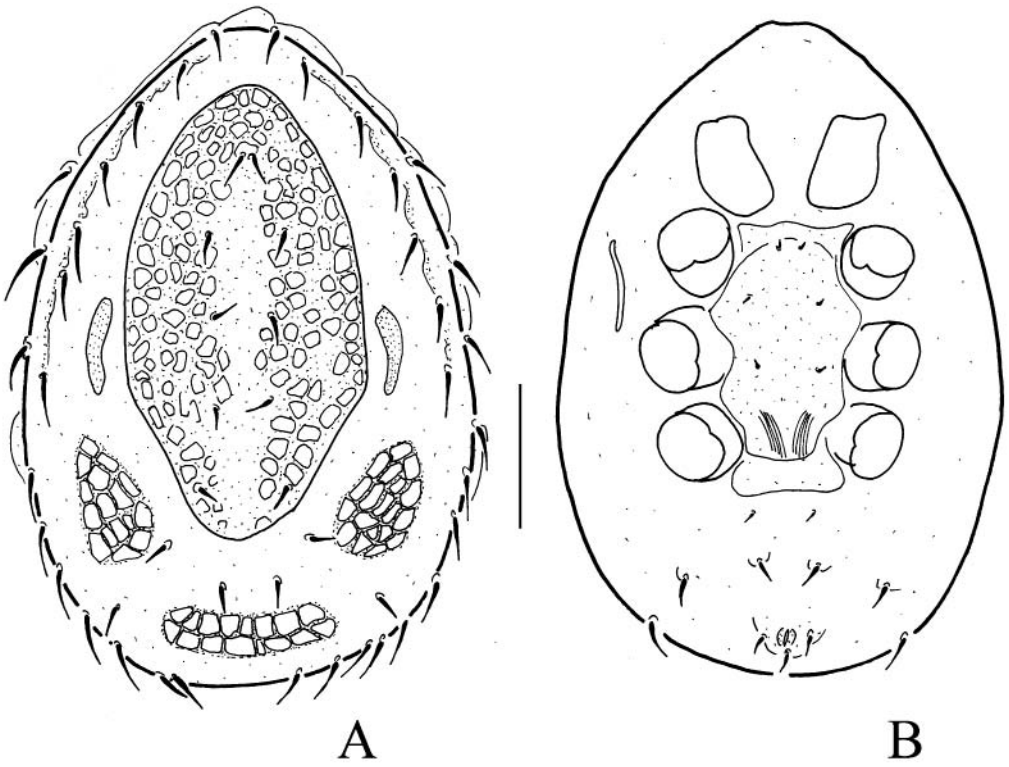


FIGURE 4: *Uropoda gressitti* Hirschmann, 1972 (protonymph): A – dorsal view; B – ventral view. Scale bar = 100 μm.

needle-like (ca. 7 – 8 μm), St1 placed on level of anterior margin of coxae II, St2 on level of posterior margin of coxae II, St3 on level of central region of coxae III, St4 on level of anterior margin of coxae III, St5 on level of posterior margin of coxae IV. Ventrianal shield without ornamentation and bearing four pairs of smooth and needle-like setae (ca. 10-11 μm). Only one pair smooth and needle-like adanal setae (ca. 8 – 9 μm) present. Tritosternum with narrow basis, its laciniae smooth and divided into four branches (Figure 2B).

Gnathosoma — (Figure 2C): Corniculi horn-like, internal malae smooth. Hypostomal setae h1 long (ca. 40 μm) and smooth, h2 smooth (ca. 17 μm), h3 as long as h2 but their margins serrate, h4 marginally serrate (ca. 11 μm). Chelicerae similar to that of female (Figure 2D). Trochanter of palp bearing two smooth setae on ventral part. Epistome similar to that of female.

Protonymph

n=1; Figure 4: Length of idiosoma 340 μm, width 270 μm. Shape of idiosoma oval.

Dorsal idiosoma — (Figure 4A): Podonotal, pygidial and two bigger, lateral shields covered by irregular pits, in the contrary surface of two smaller lateral shields smooth. Podonotal shield with five pairs of smooth and needle-like setae (ca. 18 – 20 μm). Other setae on dorsal idiosoma smooth and needle-like (ca. 15 – 17 μm on central area and ca. 29 – 33 μm near margins of idiosoma).

Ventral idiosoma — (Figure 4B): Sternal shield without ornamentation. Sternal setae smooth and needle-like (ca. 5 – 6 μm), St1 placed on level of ventral region of coxae II, St2 on level of posterior margin of coxae II, St3 on level of posterior margin of coxae III, St4 and St5 absent. One pair of shorter (ca. 7 – 8 μm) and two pairs of longer (ca. 12 – 13 μm) (which placed on small protuberances), smooth

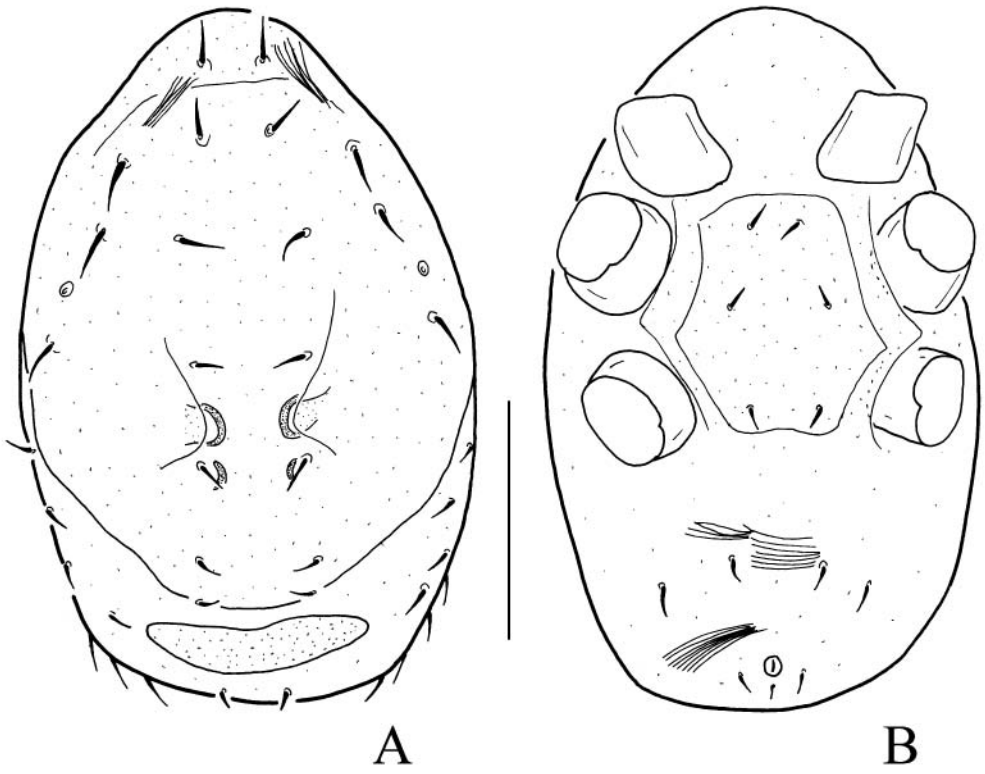


FIGURE 5: *Uropoda gressitti* Hirschmann, 1972 (larva): A – dorsal view; B – ventral view. Scale bar = 100 μm.

and needle-like ventral setae present on membranous cuticle. Anal shield with one pair of adanal setae (ca. 11 – 12 μm) and one postanal seta (ca. 12 μm).

Tritosternum with narrow basis, its laciniae smooth and divided into three branches (Figure 2E).

Gnathosoma — (Figure 2E): Corniculi horn-like, internal malae smooth. Hypostomal setae h1 long (ca. 38 μm) and smooth, h2 ca. 13 μm and smooth, h3 similar in shape and length to h2, h4 not clearly visible covered by coxae I. Chelicerae with longer fixed digit. Epistome similar to that of female.

Larva

n=2; Figure 5: Length of idiosoma 270 – 310 μm, width 180 – 210 μm. Shape of idiosoma oval.

Dorsal idiosoma — (Figure 5A): Podonotal and pygidial shields present, lateral shields absent. Podonotal and pygidial shields smooth, podonotal shield bearing two pairs of well sclerotised C-shaped humps. Podonotal shield with 11 pairs of smooth and needle-like setae (ca. 11 – 14 μm). Other setae on dorsal idiosoma smooth and needle-like (ca. 9 μm).

Ventral idiosoma — (Figure 5B): Sternal shield without ornamentation. Sternal setae smooth and needle-like (ca. 9 – 10 μm), St1 placed on level of anterior margin of coxae II, St2 on level of posterior margin of coxae II, St3 on level of posterior margin of sternal shield. St4 and St5 absent. One pair of smooth and needle-like ventral setae present on membranous cuticle (ca. 9 – 10 μm). One pair of adanal setae (ca. 10 μm) and one postanal seta (ca. 9 μm) present near anal opening on membranous cuticle.

Tritosternum with wide basis, its laciniae smooth and divided into four branches (Fig. 2F).

Gnathosoma — (Figure 2F): Corniculi horn-like, internal malae smooth. Hypostomal setae h1 long (ca. 39 μm) and smooth, h2 (ca. 15 μm) smooth.

Occurrences — The specimens were found in South Georgia: Maiviken, Bay of Isles, Prince Olaf Harbour and West Bay.

CONCLUSION

Hirschmann (1972) described this species based on females (the number of the studied specimens is not given in Hirschmann's original description) and the description comprises only a few sentences; several characters (epistome, tritosternum, etc.) are missing from the description. The present paper thus provides a complete description of this species based on more than 30 females; it also provides the description of immature stages. Specimens presently examined are shorter in length than the specimens described by Hirschmann (1972) (570 μm long and 450 μm wide), however any other significant differences was found in the studied specimens. During my investigation I found only the larvae, nymphs and females, hence I suggest this species could be parthenogenetic, which is typical for soil inhabiting species, forming low-density populations, especially in temperate and cool zones (Błoszyk et al. 2004). Hirschmann (1972) found this species in moss and lichen, similar to the newly collected specimens, which were caught in moist moss. To help Uropodina species identification from Subantarctic region, we proposed a key including four species. The other three Uropodina species known from this region are as follows:

Uropoda crozetensis (Richters, 1907) *Opisthope crozetensis* Richters, 1907: 284-285. Figures 10-13, on table 18 and Figures 24-26 on table 19. *Uropoda crozetensis*: Wiśniewski and Hirschmann 1993: 200., Wiśniewski 1993a: 286., Wiśniewski 1993b: 425. Distribution: Possession Islands.

Uropoda richtersi Hirschmann, 1974 *Piracarus crozetensis* Richters, 1907: 285-286. Figures 4-9 on table 18 and Figures 27-29 on table 19. *Uropoda richtersi* Hirschmann, 1974: 36-38. *Uropoda richtersi*: Wiśniewski and Hirschmann 1993: 206., Wiśniewski 1993a: 286., Wiśniewski 1993b: 424. Distribution: Possession Islands.

Notes to Richters' species: Richters (1907) found every immature stage and both sexes of these two species. Unfortunately Richters (1907) illustrated the dorsal and ventral idiosoma of these species in photos, several characters (e.g. gnathosoma, etc) are not presented in the figures, hence the identification of these species on the basis of Richters's (1907) illustrations is very problematic.

Uroobovella gressitti Hirschmann, 1972 *Uroobovella gressitti* Hirschmann, 1972: 111-112. Figures 86. *Uroobovella gressitti*: Wiśniewski and Hirschmann 1993: 167., Wiśniewski 1993a: 286., Wiśniewski 1993b: 415. Distribution: South Georgia.

Key to the females of Uropodina species of Subantarctic region

1. Idiosoma oblong, setae j1 pilose, chelicerae with internal scletotised node ..... *Uroobovella gressitti*
— Idiosoma oval, setae j1 smooth, chelicerae without nodes 2

2. Dorsal and ventral idiosoma bearing large alveolar pits ..... *Uropoda richtersi*
— Dorsal idiosoma bearing small alveolar pits ... 3

3. Genital shield of female smooth ..... *Uropoda crozetensis*
— Genital shield of female with alveolar ornamentation ..... *Uropoda gressitti*

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