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First record of *Chelonuropoda* in Peru, with the description of a new species (Acari: Mesostigmata: Oplitidae)

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Abstract

A new *Chelonuropoda* species is discovered and described from Peru. The new species, *C. peruensis* sp. nov., is very similar to *C. similibispirata* Hirschmann & Zirngiebl-Nicol based on the shape of peritremes, but the dorsal and ventral setae situated in small rounded depression in the new species and these depressions are missing in *C. similibispirata*. Also, notes on intraspecific variation of the shape of peritremes and short zoogeographic comments are given.

Key words: Uropodina; Neotropical region; taxonomy; morphology.

Introduction

The genus *Chelonuropoda* was established by Sellnick (1954) for the species *Chelonuropoda bispirata* Sellnick, 1954 collected in Brazil, described on the basis of nymphs and adults. Ten years later, Hirschmann & Zirngiebl-Nicol (1964) transferred the species to the genus *Oplitis* Berlese, 1884 based on the shape of the internal malae. Later, Hirschmann (1991) the earlier mentioned „*C. bispirata*” species (Hirschmann & Zirngiebl-Nicol 1964) described as a new one (*Oplitis nicolae* Hirschmann, 1991). In the same work, he created a new species group for these species as *Oplitis bispirata*-group. Besides these taxonomical actions, Hirschmann & Zirngiebl-Nicol (1973a, b) described two other new species (*Oplitis athiasae* and *Oplitis similibispirata*). Recently, Kontschán (2006, 2009a) resurrected the genus *Chelonuropoda* and described two new species from Angola (*C. cheloniforma* Kontschán, 2006) and Kenya (*C. africana* Kontschán, 2009). Kontschán & Starý (2012) gave a new diagnosis for the genus, summarized all knowledge about the *Chelonuropoda* species, discovered and described new species from Madagascar, Ivory Coast and Brazil, and presented a new key to the known *Chelonuropoda* species.

During the survey of the Peruvian Uropodina we found an unusual *Chelonuropoda* species which is described herein.

Material and Methods

Chelouropoda specimens were collected in Peru, Departamento de Huánuco, Rio Yuyapichis, ACP Panguana, 9°37'S, 74°56'W, 230-260m, 23.IV.-09.V.2016., leg. S. Friedrich, F. Wachtel & D. Hauth. Mite specimens were cleared in lactic acid and investigated on half covered excavated slides. The illustrations were made with the aid of a drawing tube on a Leica 1000 scientific microscope. The specimens are stored in ethanol and deposited in Museo de Historia Natural, Universidad Nacional Mayor de San Marcos, Lima, Peru (MUSM) and Zoologische Staatssammlung München, München, Germany (ZSM). Abbreviations: h = hypostomal setae, St = sternal setae. All measurements and the scales in the figures are given in micrometres (μm).

Taxonomy

Genus *Chelonuropoda* Sellnick, 1954

Chelonuropoda Sellnick, 1954: 195–196.

Chelonuropoda: Hirschmann & Zirngiebl-Nicol 1964: 4, Hirschmann 1979: 67, Wiśniewski 1993: 373, Kontschán 2006: 9, Kontschán 2009: 737–738, Kontschán & Starý 2012: 742–743.

Oplitis bispirata-group: Hirschmann 1991: 10–12.

Diagnosis (after Kontschán & Starý 2012, modified). Idiosoma large ($> 1000 \mu\text{m}$), oval, posterior margin rounded. Anterior region of marginal shield wide and fused with dorsal shield. Dorsal shield bearing two C- or O-shaped, strongly sclerotized lines at level of coxae IV. Dorsal and ventral setae are smooth and needle-like, sometimes associated with oval pits. Genital shield of female linguliform, without anterior process. Metapodal region with a deep transversal furrows bordered with two rows of wide and phylliform setae. Dorsal, marginal and ventral shields hypertrichous. Corniculi horn-like, laciniae with several long branches. Hypostomal setae h3 longer than others. Tritosternum with a narrow base, laciniae with three or four pilose branches. Epistome triangular and marginally pilose. Leg I with claw.

Type species. *Chelonuropoda bispirata* Sellnick, 1954 by original designation.

Distribution. The species of this genus are recorded from Brazil, Chad, Bolivia (Wiśniewski 1993), Angola (Kontschán 2006), Kenya (Kontschán 2009a), Madagascar and Ivory Coast (Kontschán & Starý 2012).

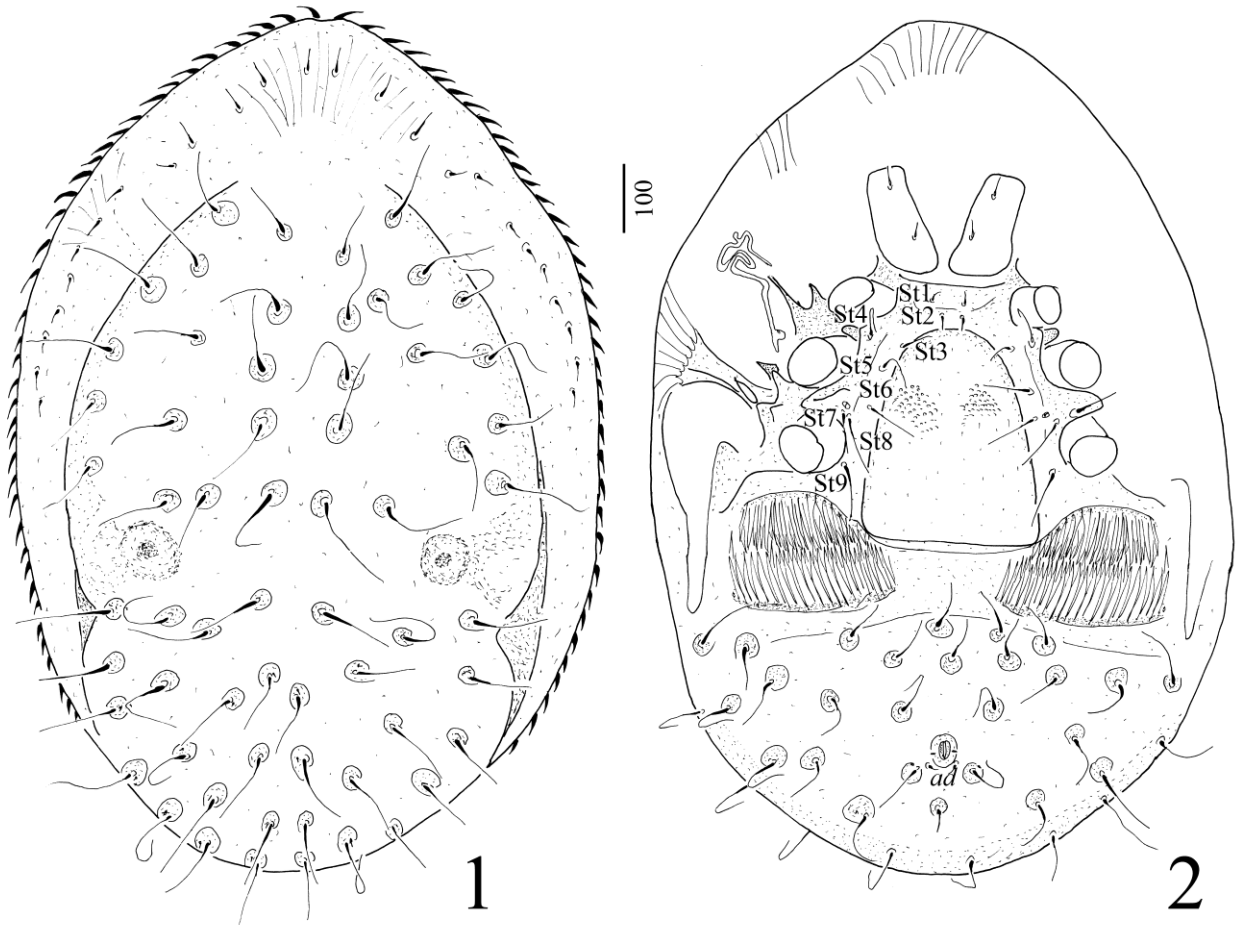
Chelonuropoda peruesis sp. nov. (Figs 1-16).

Material examined. Holotype. Female. Peru, Departamento de Huánuco, Rio Yuyapichis, ACP Panguana, 9°37'S, 74°56'W, 230-260m, 23.IV.-09.V.2016., leg. S. Friedrich, F. Wachtel & D. Hauth (deposited in MUSM). Paratype. Three males and one female with same data as holotype, two males deposited in MUSM, one female and one male in ZSM.

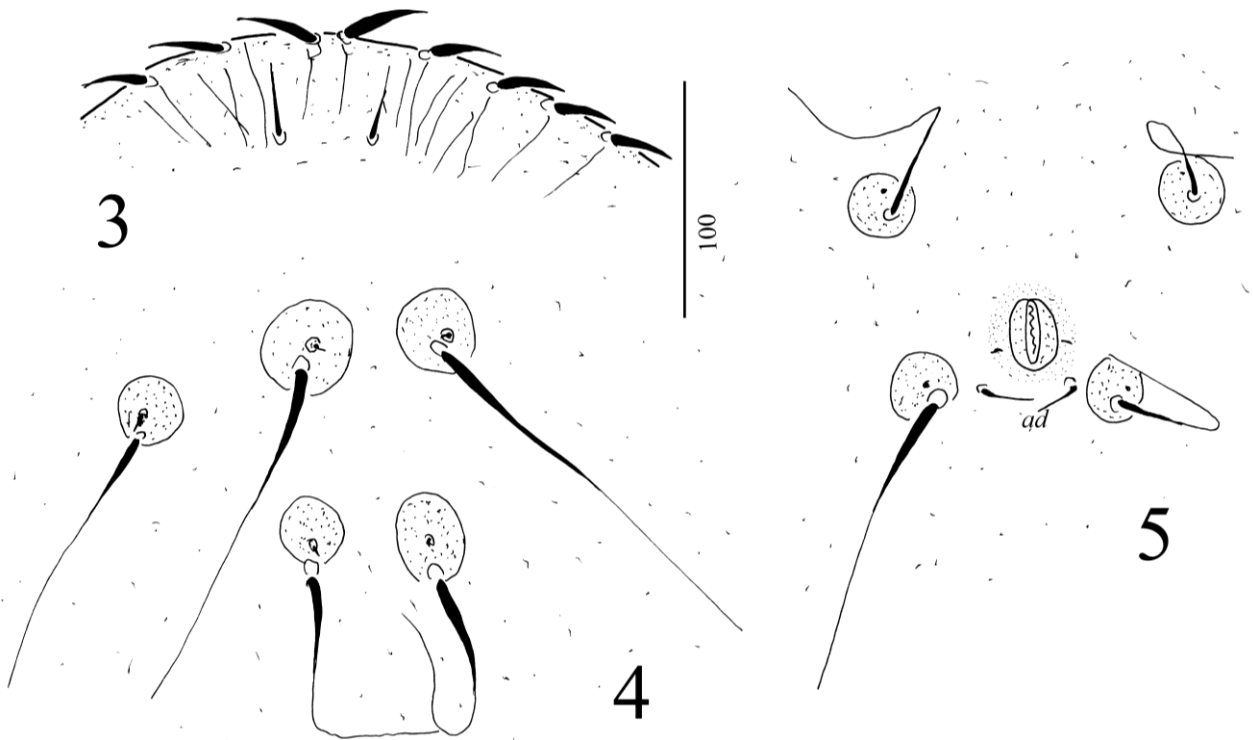
Description. Female. Length of idiosoma 1190–1200, width 760–800 ($n = 2$). Shape oval, posterior margin rounded.

Dorsal side (Fig. 1). Dorsal and marginal shields fused close to anterior margin. Anterior region of marginal shield wide, bearing short, smooth, needle-like setae (ca 30–38) on its surface and wide and phylliform setae (ca 32–43) on its margins (Fig. 3). All dorsal setae smooth, needle-like and very long (ca 85–130), apically very narrow and often curved. They placed in small, rounded depressions usually in association with short and setae-like sensory organs. (Fig 4). Two strongly sclerotized O-shaped rings present on posterolateral areas of dorsal shield and wide lateral incisions situated posterior to O-shaped rings at margin of dorsal shield.

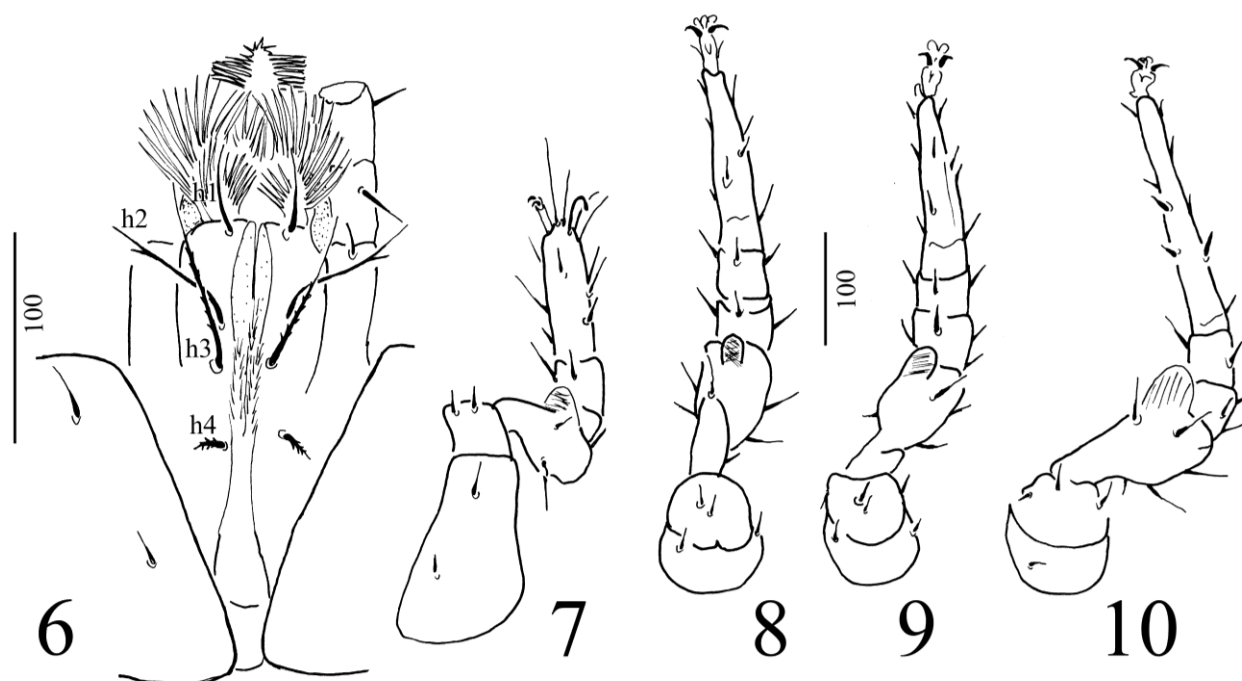
Ventral side (Fig. 2). Sternal and ventral shields without sculptural pattern, nine pairs of sternal setae smooth, needle-like. St1 and St2 short (ca 21–23), St3 longer (ca 40–45), other sternal setae very long (ca 75–90). St1 Situated close to anterior margin of sternal shield, St2 close to anterior margin of genital shield, St3 and St4 at level of anterior margin of coxae III, St5 at level of central area of coxae III, St6, St7 and St8 at level of anterior margin of coxae IV and St9 at level of posterior margin of coxae IV. One pair of lyriform poroids situated close to St6, St7 and St8. Ventral setae smooth, needle-like, very long (ca 90–115), apically very narrow and placed in small rounded depressions in association with short and setae-like sensory organs.



Figures 1–2. *Chelonuropoda peruesis* sp. nov., female, holotype. 1. Body in dorsal view. 2. Body in ventral view.



Figures 3–5. *Chelonuropoda peruesis* sp. nov., female, holotype. 3. Setae on margins of marginal shield. 4. Setae on dorsal shield. 5. Setae of anal region



Figures 6–10. *Chelonuropoda peruesis* sp. nov., female, holotype. 6. Ventral view of gnathosoma, palp, tritosternum, epistome and coxae I. 7. Ventral view of leg I. 8. Ventral view of leg II. 9. Ventral view of leg III. 10. Ventral view of leg IV.

Metapodal region each with deep transversal furrow bordered with two rows of phylliform setae (ca 80–95) posterior to coxae IV. One pair of short (ca 15–17) and needle-like adanal setae (*ad*) situated posterior to anal opening. Other adanal and postanal setae absent. One pair of lyriform poroids situated anterior to adanal setae (Fig. 5). Stigmata situated between coxae II and III. Peritremes mushroom-shaped with an accessory loop, but level of intraspecific variability very high (Figs 11–15). Genital shield wide (315–320 long and 230–240 wide), linguliform, with small, oval pits ordered in two groups on its surface and without anterior process. Tritosternum with wide, quadrangular basis; laciniae with three, marginally pilose branches, central one longer than other two (Fig. 6).

Legs (Figs 7–10). All segments with simple and smooth setae and a pair of claws at the tip of the ambulacral prolongation. Claws of leg I smaller than on others, flap-like prolongation visible on femora of leg I–IV. Length of legs (from the basis of coxae to the tip of tarsi): leg I 490–500, leg II 515–520, leg III 450–460, leg IV 490–500.

Gnathosoma (Fig. 6). Corniculi horn-like, laciniae with several smooth and long branches. Hypostomal setae h1 smooth (ca 42–44), h2 (ca 72–78) apically, h3 (ca 92–100) and h4 (ca 19–23 μ m) marginally serrate. Palp trochanter with one short smooth seta and one long, marginally serrate seta. Epistome triangular and apically pilose, chelicerae with one tooth on movable digit and four teeth on the fixed digit, internal sclerotized node absent, one dorsal seta present.

Male. Length of idiosoma 1160–1230, width 780–800 ($n = 3$). Shape oval, posterior margin rounded.

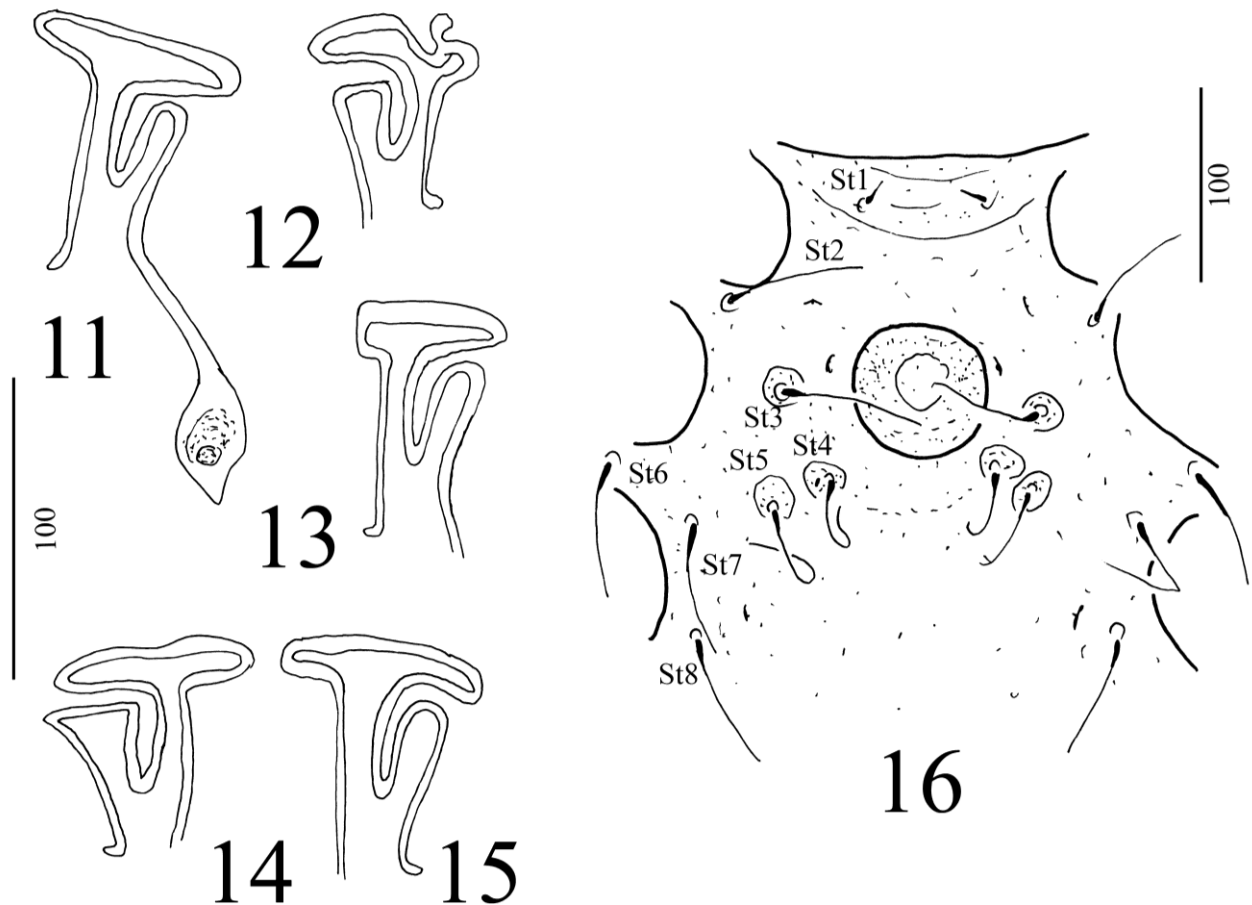
Dorsal side. Ornamentation and chaetotaxy as in female.

Ventral side. Ornamentation and chaetotaxy of ventral shield as in female. Sternal shield without sculptural pattern, the positions of eight pairs of sternal setae as in Fig. 16. St1 shorter (ca 11–13) than other sternal setae (ca 60–65). Three pairs of sternal setae (St3, St4 and St5) situated only in small rounded depressions. Three pairs of lyriform poroids situated on sternal region. Genital shield rounded and placed between coxae III. Gnathosoma and other appendages same as in female.

Nymphs and larva are unknown.

Etymology. The name of the new species refers to the country where it was collected.

Notes. On the basis of the shape of peritremes (mushroom-shaped with and accessory loop), the new species is similar to the *C. similibispirata* from Bolivia, but the dorsal and ventral setae are not situated in small rounded depressions, contrary with the new one.



Figures 11–16. *Chelonuropoda peruesis* sp. nov. 11. Peritreme of holotype. 12. Peritreme of a paratype (female). 13. Peritreme of a paratype (female). 14–15. Peritremes of same male paratype. 16. Intercoxal area of male paratype.

Discussion

The genus *Chelonuropoda* seems to be an amphiatlantic, because the species of this genus occur only in Afrotropical and Neotropical regions (Kontschán & Starý 2012). Regarding this distribution type of the genus *Chelonuropoda*, this genus must have developed during a geological period when the African and the South America land masses were connected, before the breaking up of Gondwanaland. This connection continued until the Upper Cretaceous; hence we need to suppose this genus originated during this geological period.

The shape of peritremes is very variable within the genus *Chelonuropoda*, till today several shapes of peritremes were observed in different species, like: bent-shaped, hairpin-shaped, R and P-shaped and mushroom shaped. The current new species has mushroom shaped peritremes with accessory loop and has the basic type (Fig. 11) of peritremes in very wide scale, short accessory dorsal branch (Fig. 12), asymmetric dorsal part (Fig. 13) or rectangular accessory loop (Fig. 14) were observed with this species, and the shapes of two peritremes in same species were also different (Figs 14–15).

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