

Notes on the distribution and taxonomy of the Ecuadorian Uropodina mites (Acari: Mesostigmata)

J. KONTSCHÁN¹

Abstract. Comments on the generic and subgeneric concept of Neotropical *Uroseius* Berlese, 1888 species are presented. The family Cillibidae is discussed with resurrections of the genus *Ungulaturopoda* Hirschmann, 1984 and the subgenus *Laqueaturopoda* (*Hiramatsulaqueata*) Hirschmann, 1984. Three new species; *Uroseius loksai*, *Uropoda ecuadorica*, and *Clivosurella pilosa* spp. nov. are described and an invasive European Uropodina species *Uropoda minima* Kramer, 1882 is recorded for the first time from the Neotropical region.

Keywords. Acari, Uropodina, new species, new records, taxonomy, Ecuador.

INTRODUCTION

Uropodina is a characteristic group of soil dwelling mites in the tropical region, where they reach their maximum diversity in soil, leaf litter, moss, and other habitats of the tropical rain forests (Lindquist *et al.*, 2009).

Due to the intensive Hungarian researches and collections in the last three decades (Zicsi & Csuzdi, 2008) regarding the Uropodina fauna, Ecuador became a well-explored country. Currently, without the uropodids of the Galapagos Archipelago, 58 Uropodina mite species are recorded for this country (Wiśniewski, 1993; Kontschán, 2008a, b, 2010a).

In the present paper the new results on the Neotropical Uropodina mites resulted by working on the unsorted soil samples of the Hungarian Natural History Museum are presented. I listed herein nine species from Ecuador of which three proved to be new to science.

MATERIAL AND METHODS

Specimens were cleared in lactic acid. Drawings were made with the aid of a drawing tube. Mites are stored in alcohol and deposited in the mite collection of the Natural History Museum Geneva (NHMG) and the Soil Zoology Collec-

tions of the Hungarian Natural History Museum, Budapest (HNHM). All measurements are given in micrometers (μm).

TAXONOMY

Family TRACHYTIDAE Trägårdh, 1938

Uroseius (*Uroseius*) *rotondus* Hiramatsu, 1981

(Figures 1–5)

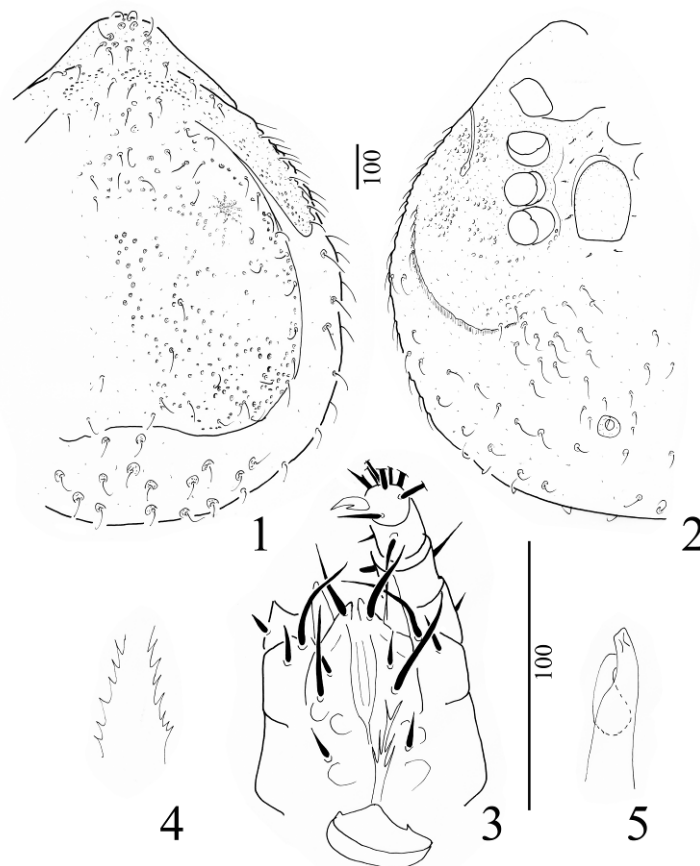
Material examined. Seven females. ECU 1989, B140. Ecuador, 10 km leaving La Libertad to Tulcan, 3400 m a.s.l. (Prov. Carchi). Old quarry, completely overgrown with vegetation; litter and soil from under shrubs. 25. IV. 1989, leg. Loksa, I. & Zicsi, A.

Short description. Length of idiosoma 1000–1100 μm , width 980–990 μm . Idiosoma oval, posterior margin rounded.

Dorsal idiosoma (Fig. 1). Marginal and dorsal shield fused anteriorly, marginal shield reduced, posterior margins reaching level of coxae IV. Dorsal and marginal shields covered by oval pits and bearing smooth and needle-like setae. Membranous cuticle on posterior area of dorsal side bearing smooth and needle-like setae placed on small platelets.

Ventral idiosoma (Fig. 2). Sternal setae short and needle-like, ventral setae long and needle-

¹Dr. Jenő Kontschán, Department of Zoology, Hungarian Natural History Museum, H-1088 Budapest, Baross u. 13, Hungary. E-mail: jkotschan@gmail.com



Figures 1–5. *Uroseius (Uroseius) rotondus* Hiramatsu, 1981, female. 1 = dorsal view, 2 = ventral view, 3 = tritosternum, palp and ventral view of gnathosoma, 4 = basal part of epistome, 5 = chelicera

like. Sternal and ventral shields smooth, only the peritrematal area covered by oval pits. Metapodal line undulate and well-developed. Genital shield oval, without anterior process and ornamentation.

Gnathosoma (Fig. 3). Corniculi horn-like, internal malae very short, hypostomal setae smooth, h1 and h3 long, h2 and h4 short. Tritosternum with wide basis, epistome with serrate margins (Fig. 4), fixed digit of chelicerae longer than movable digit, internal sclerotised node absent (Fig. 5).

***Uroseius (Uroseius) loksai* sp. nov.**

(Figures 6–15)

Material examined. Holotype. Female. ECU 1989, B24. Ecuador, between Pifo and Papallacta,

4100 m a.s.l. S0°22'29", W78°08'10" (Prov. Pichincha). 14. IV. 1989. Withered leaves and soil under dicotyledon plant with big leaves (and lilac flowers). Leg. Zicsi, A. & Loksa, I. *Paratype*. One female (NHMG) Locality and date same as for the holotype.

Description. Female. Length of idiosoma 880–960 µm, width 540–580 µm (n = 2). Shape oval, posterior margin rounded.

Dorsal idiosoma (Fig. 6). Dorsal shield reduced, covering only the central region of idiosoma. Marginal shield absent. Dorsal shield covered by small oval pits and bearing smooth and needle like setae (ca. 22–26 µm). Setae on membranous cuticle similar in shape and length to setae

of dorsal shield. Near margin of ventral shield several smooth and needle-like setae can be found, placed on small platelets on membranous cuticle (Fig. 7).

Ventral idiosoma (Fig. 8). Sternal shield without sculptural pattern. Sternal setae smooth and needle-like, St1 short and localized between coxae II (ca. 7–9 μm), St2 and St3 near anterior margin of genital shield, (ca. 20–30 μm), St4–5 similar in length to St2–3, and placed near anterior margin of coxae IV, St6 similar in shape and length to latter, but situated near posterior margin of coxae IV. Ventral shield with long (ca. 32–34 μm), smooth and needle-like setae. Adanal setae similar in shape to ventral setae, but ca. 7–10 μm long. Stigmata situated between coxae II and III. Peritremes straight (Fig. 7). Genital shield scutiform, without sculptural pattern and with spine like process on its apical margin. Base of tritosternum wide, tritosternal laciniae divided into three smooth branches (Fig. 9).

Gnathosoma (Fig. 10). Corniculi horn-like, internal malae short and smooth. Hypostomal setae as follows: h1 smooth, long (ca. 50–60 μm) and placed near the anterior margin of gnathosoma, h2 smooth, needle-like and three times shorter (ca. 15–20 μm) than h1, h3 similar in shape and length (ca. 55–60 μm) to h1, h4 needle-like, smooth and short (ca. 10–12 μm). Epistome marginally ser-

rate, fixed digit of chelicerae longer than movable digit, without internal sclerotized nodes (Fig. 11).

Legs (Figs 12–15). All legs with ambulacral claws and bearing smooth and serrate or simple and robust setae.

Male, nymphs and larvae unknown.

Etymology. The new species is dedicated to Dr. Imre Loksa (1923–1992), associate professor of Department of Systematic Zoology and Ecology of the Eötvös Loránd University, who collected many soil samples in Ecuador.

Remarks. The common characters of the *Uroseius* (*Uroseius*) species are the smooth h4 setae and the short h2 setae (not reaching the basis of h1) on gnathosoma. Currently nine species are known on the basis of adults from the subgenus *Uroseius* (*Uroseius*), one of them from Java and five species from Europe and Asia. The remaining three species were described from Ecuador. Interestingly the new species seems closely related to *Uroseius* (*Uroseius*) *hunzikeri* Schweitzer, 1922 (Europe), but the dorsal setae are pilose and dorsal shield is covered by large and irregular pits in the known species, while dorsal setae are smooth and the dorsal shield possesses small, oval pits in the new species. The most important distinguishing characters of the South-American species are summarized in Table 1.

Table 1. Characteristic differences between the three South-American *Uroseius* (*Uroseius*) species

	<i>U. (U.) loksai</i> sp. n.	<i>U. (U.) rotundus</i> Hiramatsu, 1981	<i>U. (U.) tuberosus</i> Hirschmann & Hiramatsu, 1977
Shape of idiosoma	oval	rounded	oval
Ventral setae	smooth	smooth	pilose
Ornamentation on ventral shield	alveolar	lacking	lacking
Setae on margins of idiosoma	smooth and short	smooth and short	pilose and long
Caudal idiosomal protuberance	absent	absent	present
Genital shield of female	scutiform, with spine-like anterior process	linguliform	scutiform, with short process

On the basis of the gnathosomal processes, Hiramatsu (1981) placed *U. rotundus* into the subgenus *Uroseius* (*Uroseius*) and I placed the new species into this subgenus as well. However several other characters of these species differ from all other *Uroseius* (*Uroseius*) species: (1) pygidial shield is present in other *Uroseius* (*Uroseius*) species, but it is missing from *U. (U.) rotundus* and *U. (U.) loksai*; (2) the metapodal shield is separate from the ventral and sternal shield, while all three mentioned shields are fused to each other in the two Ecuadorian species. According to my observations on the specimens studied, I suppose that these two species do not belong to the subgenus *Uroseius* (*Uroseius*) nor *Uroseius* (*Apioseius*), therefore, in the future, it might be necessary to establish a new subgenus for them

however, only after a thorough revision of the Neotropical *Uroseius* species.

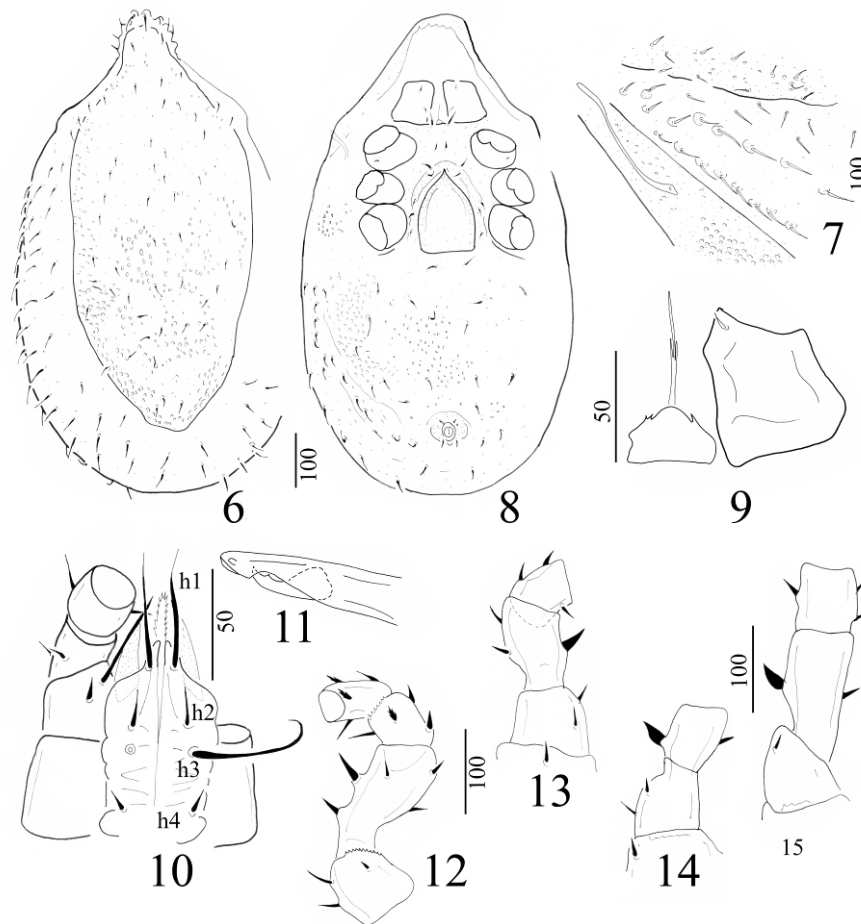
Family NENTERIIDAE Hirschmann, 1979

***Nenteria longispinosa* Hirschmann, 1985**

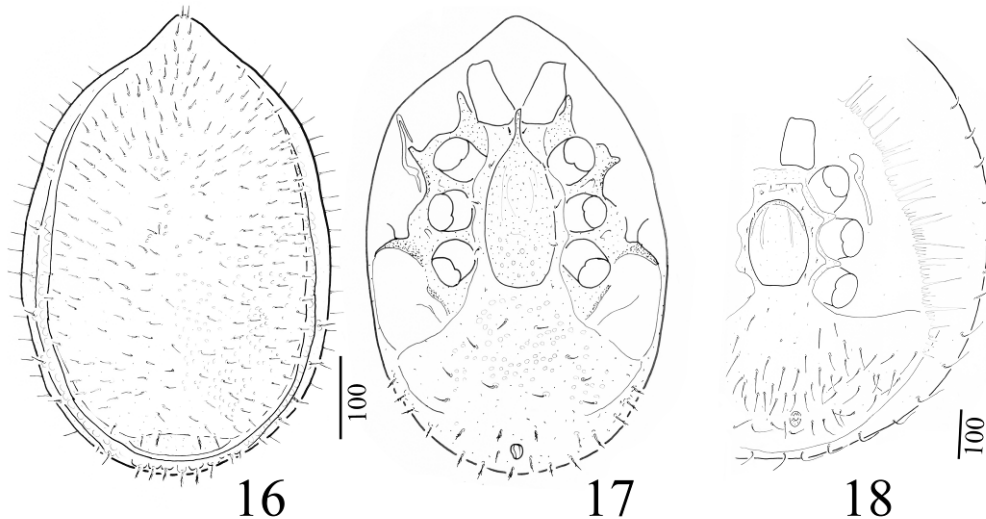
(Figures 16–17)

Material examined. One female. ECU 1986, B67. Ecuador, Pululagua crater and its surroundings, (Prov. Pichincha). 12. II. 1986. Eroded hollow in the direction of Mitad del Mundo, moss under bushes growing on the sides of the hollow, leg. Zicsi, A. & Loksa, I.

Distribution. Ecuador (Wiśniewski & Hirschmann, 1993).



Figures 6–15. *Uroseius* (*Uroseius*) *loksai* sp. nov., female. 6 = dorsal view, 7 = peritreme, 8 = ventral view, 9 = tritosternum and coxae I, 10 = ventral view of gnathosoma, 11 = chelicerae, 12 = leg I, 13 = leg II, 14 = leg III, 15 = leg IV



Figures 16–18. *Nenteria longispinosa* Hirschmann, 1985, female (16–17). 16 = dorsal view, 17 = ventral view, 18 = ventral view of *Trichocylliba mahunkai* Hirschmann, 1973, female

Family TRICHOCYLLIBIDAE Hirschmann, 1979

***Trichocylliba mahunkai* Hirschmann, 1973**

(Figure 18)

Material examined. One female. ECU 1987, B136. Ecuador, Antisana volcano, road leading west, downwards to Pintag, 17. IV. 1987. 2900 m a.s.l., from moss and scale-moss, leg. Zicsi, A. & Loksa, I.

Distribution. Bolivia (Wiśniewski & Hirschmann 1993) and Ecuador.

Remarks. This is the first record from Ecuador.

Family TETRASEJASPIDAE Hirschmann, 1979

***Tetrasejaspis ecuadorensis* Kontschán 2008**

(Figures 19–20)

Material examined. Two females. ECU 1986, B4. Ecuador, between Quito and Nono (Prov. Pichincha), 8 km to Nono, 3280 m a.s.l., 4. II. 1986. Moss from the stems of shrubs at the gorge entrance. leg. Zicsi, A. & Loksa, I.

Distribution. Ecuador (Kontschán 2008).

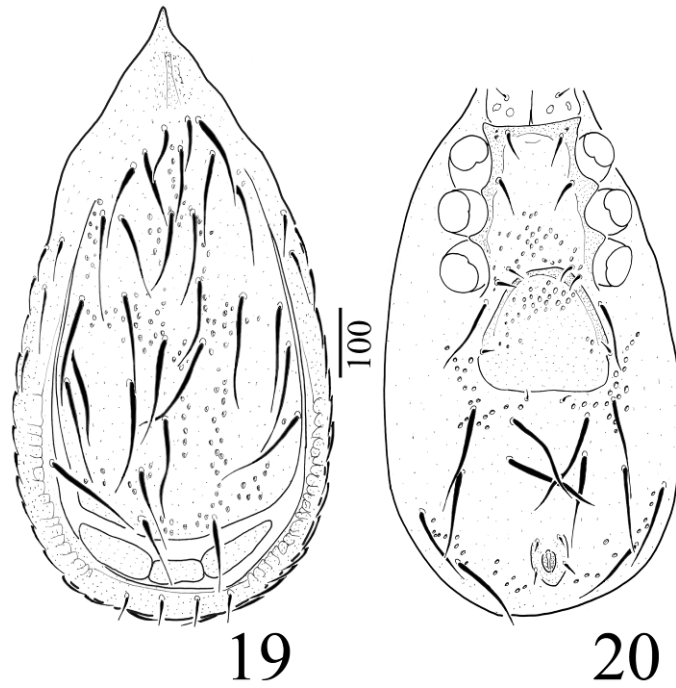
Family UROPODIDAE Kramer, 1881

***Uropoda minima* Kramer, 1882**

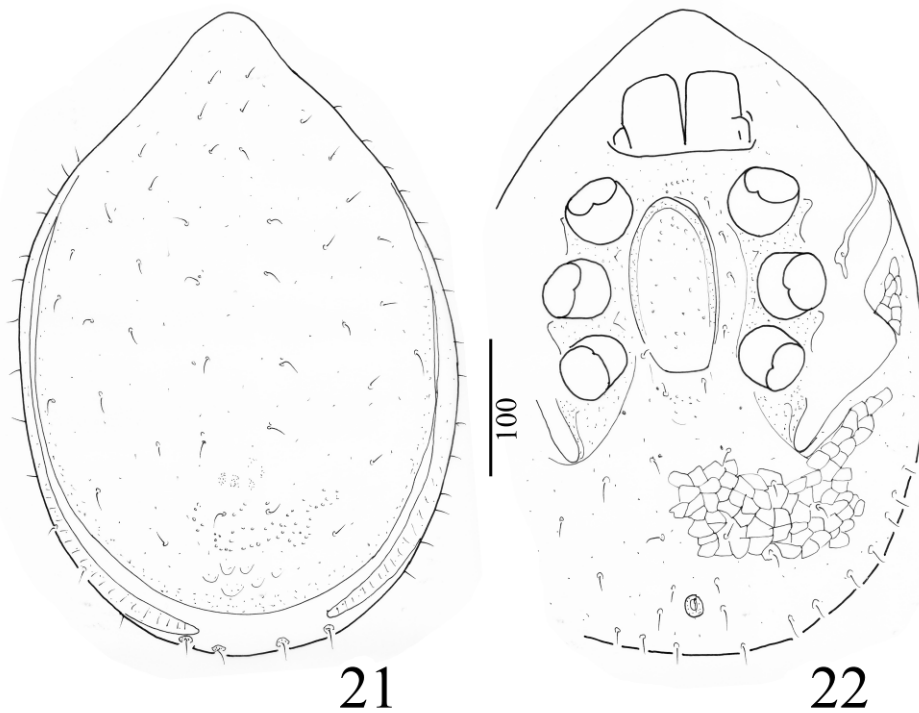
(Figures 21–22)

Material examined. Seven females. ECU 1989, B141. Ecuador, 10 km leaving La Libertad to Tulcan, 3400 m a.s.l. (Prov. Carchi), moss and cushion-vegetation. 25. IV. 1989, leg. Loksa, I. & Zicsi, A.

Remarks. *U. minima* is a widely distributed Palearctic species which occurs in most of the countries of Europe (Wisniewski & Hirschmann 1993). Till now, this species have not been found outside Europe. The occurrence of a Palearctic species in the tropical region is not an unknown phenomenon regarding soil animals. Several Palearctic earthworm species are listed from Ecuador from high elevation (Zicsi & Csuzdi 1988) where the climate is similar to that of Europe. Soil animals originated from the Palearctis usually arrive with soil, among the roots of plants (Mischis *et al.* 2006) and sometimes they can find suitable habitat in the tropical zone, mostly in the cooler mountain biotopes. Up to now not any imported Uropodina mites have been recorded, this is the first one which is considered as an invasive species in the tropics.



Figures 19–20. *Tetrsejaspis ecuadorensis* Kontschán 2008, female. 19 = Dorsal view, 20 = ventral view



Figures 21–22. *Uropoda minima* Kramer, 1882, female. 21 = dorsal view, 22 = ventral view

***Uropoda ecuadorica* sp. nov.**

(Figures 23–32)

Material examined. Holotype. Female. ECU 1989, B144. Ecuador, 14 km leaving La Libertad, towards Tulcan, 3500 m a.s.l. (Prov. Carchi), N0°49'17", W77°43'55". 25. IV. 1989. Bushes and ferns in *Espeletia*-vegetation; litter and soil. leg. Zicsi, A. & Loksa, I. *Paratypes.* One female and two males (HNHM), one male (NHMG). Locality and date same as for the holotype.

Description. Female. Length of idiosoma 1080–1120 µm, width 820–830 µm (n=2). Shape oval, posterior margin rounded.

Dorsal idiosoma (Fig. 23). Marginal and dorsal shields fused anteriorly. Dorsal shield covered by small alveolar pits and bearing long (ca. 300–350 µm), narrow, needle-like dorsal setae. Caudal part of dorsal shield bearing a wide dorsal protuberance. Marginal shield with reticulate sculptural pattern, its setae placed on small protuberances and divided into two branches, one of the branches short and smooth, the other one long and marginally serrate (Fig. 24), apically pilose or blade-like (Fig. 26). Wide and serrate setae situated on margins of the body (Fig. 25).

Ventral idiosoma (Fig. 27). Sternal and ventral shields without sculptural pattern. Sternal setae St1, St2 and St3 short (ca. 14–17 µm), smooth and needle-like, situated near anterior margin of genital shield. St4 wide, long (ca. 130–140 µm) and placed on level of anterior margin of coxae III. St5 as long as St4, narrow and situated near basal line of genital shield. Ventral setae V1 and V2 long (ca. 220–240 µm) and narrow, V3, V4 and V5 shorter (ca. 120–130 µm) and wide, their position can be seen on Fig. 27. Adanal setae wide and phylliform, postanal setae absent. Stigmata situated between coxae II and III. Peritremes bow-shaped. Genital shield wide, oval, with reticulate sculptural pattern and short, spine-like anterior processes. Base of tritosternum narrow,

lacinae divided into two short and two long branches, their margins serrate (Fig. 28).

Gnathosoma (Fig. 28). Corniculi horn-like, internal malae long, their apical part pilose. Visible hypostomal setae are the follows: h1 long (ca. 60 µm), smooth and placed near the anterior margin of gnathosoma, h2 marginally serrate and 1.25 times shorter (ca. 48 µm) than h1, h3 two times shorter (33 µm) than h1 and marginally serrate, h4 not clearly visible (covered by coxae I). Epistome, chelicerae and setae of palp not clearly visible (covered by coxae I).

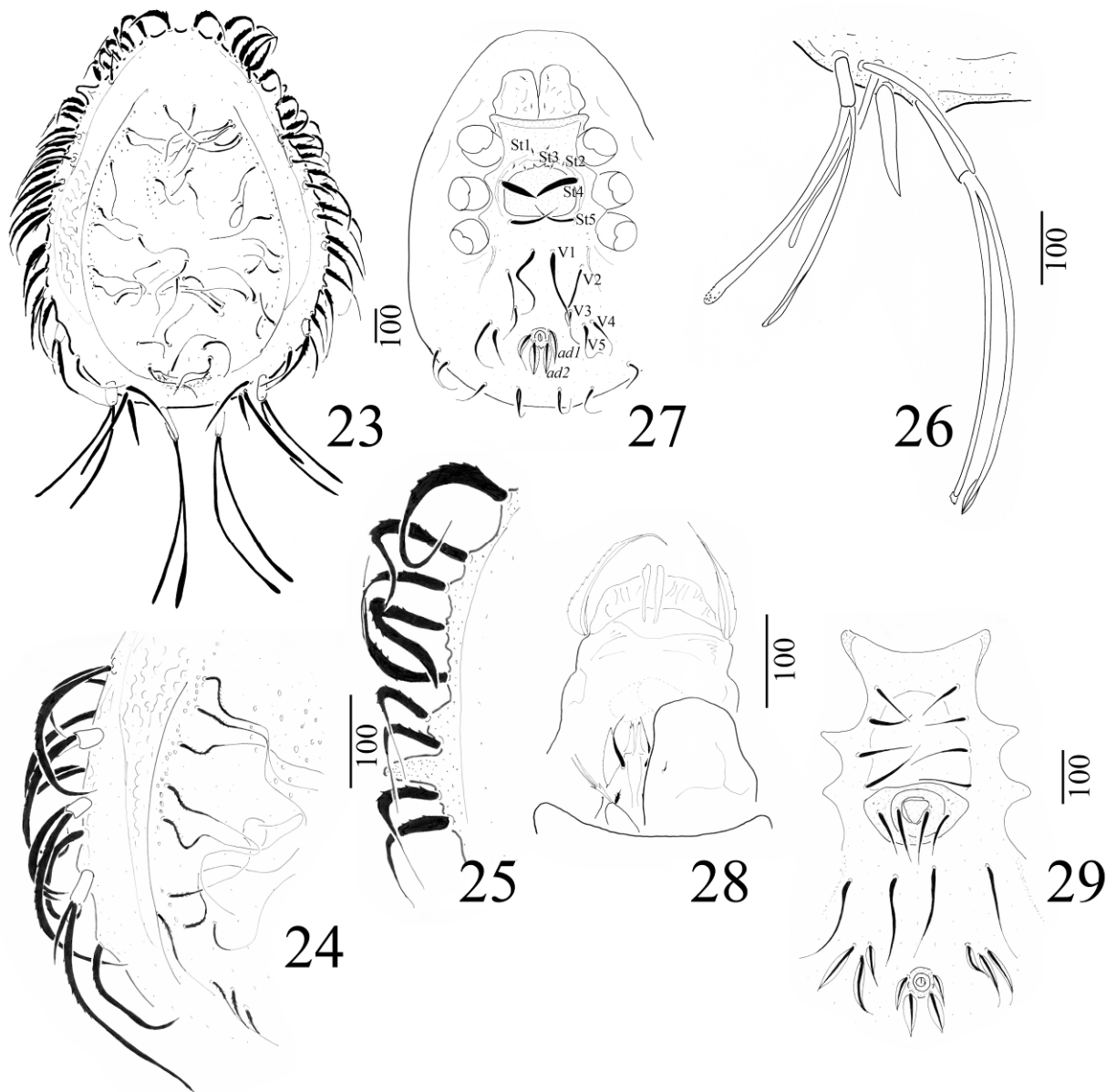
Legs. Each legs with ambulacral claws, and with long, smooth and serrate setae (Figs 30–32).

Male. Length of idiosoma 1050–1080 µm, width 780–810 µm (n=3). Shape of idiosoma, ornamentation and chaetotaxy of dorsal parts as in female (Fig. 29). Sternal setae long (ca. 80–115 µm), narrow and needle-like, their position depicted on Fig. 29. Ventral and adanal setae same as in female. Genital shield oval and bearing one pair of setae, placed between coxae IV. Ventral ornamentation and legs similar to those of female. Gnathosoma not clearly visible (covered by coxae I).

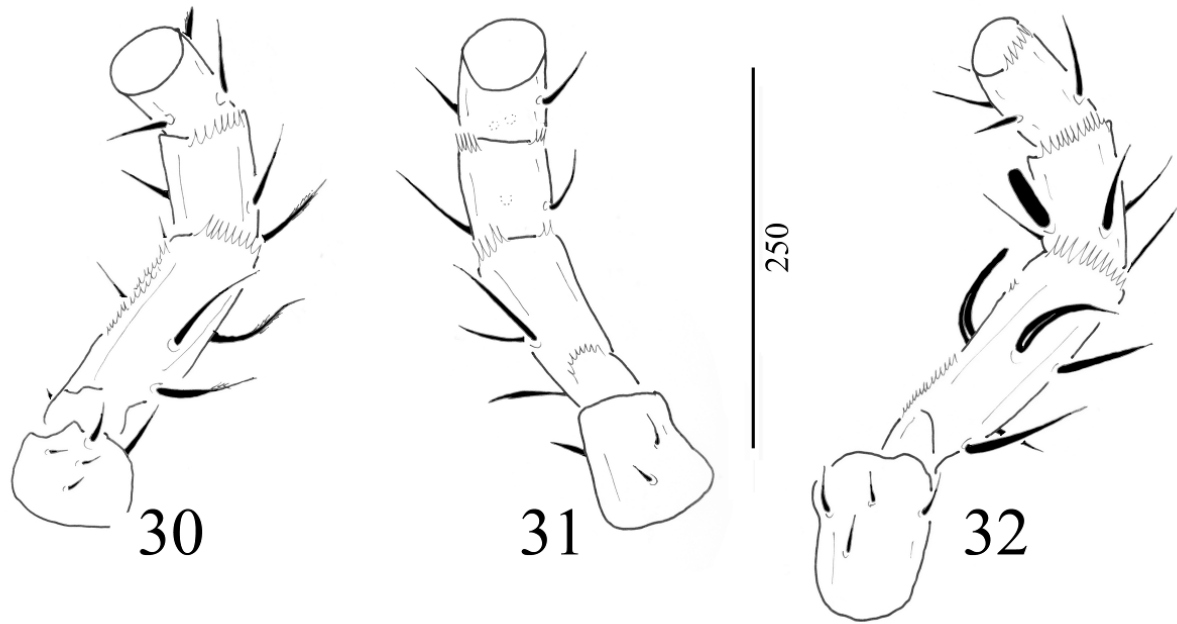
Nymphs and larvae unknown.

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

Remarks. The new species belongs to the *Uropoda multipora* species group (on the basis of the presence of endometapodal line, apical part of peritremes situated on protuberances and the setae are placed on marginal shields). Currently this group contains five Neotropical species. Apart from the new species it contains *U. efferata* Hiramatsu, 1981 from Ecuador, *U. multipora* Hirschmann & Zirngiebl-Nicol, 1969 from Panama, *U. stolidasimilis* Hirschmann & Hirschmann, 1978 and *U. stolidasimilis* Hiramatsu & Hirschmann, 1979 from Peru (Wiśniewski and Hirschmann 1993). The most important distinguishing characters of the species are summarized in Table 2.



Figures 23–29. *Uropoda ecuadorica* sp. nov., female. 23 = dorsal view, 24 = setae on marginal shield, 25 = setae on margins of body, 26 = setae on caudal region, 27 = ventral view, 28 = ventral view of gnathosoma, tritosternum and coxae I, 29 = intercoxal and ventral region of male



Figures 30–32. *Uropoda ecuadorica* sp. nov., female. 30 = Leg II, 31 = leg III, 32 = leg IV

Table 2. Characteristic differences between the species of *Uropoda multipora*-group

	<i>U. ecuadorica</i>	<i>U. multipora</i>	<i>U. stolidi</i>	<i>U. stolidasimilis</i>	<i>U. efferata</i>
<i>Genital shield of female</i>					
Ornamentation	absent	reticulate	absent	reticulate	absent
Shape (length:width)	wider (1:1.4)	narrower (1:0.8)	wider (1:1.5)	wider (1:1.4)	wider (1:1.2)
<i>Sternal setae</i>					
St1	as long as St2, smooth	longer than St2, pilose	as long as St2, pilose	as long as St2, smooth	as long as St2, pilose
St3	as long as other sternal setae	as long as other sternal setae	longer than other sternal setae	as long as other sternal setae	longer than other sternal setae
<i>Male</i>					
Sternal setae	needle-like	St1 pilose, St2–St5 needle-like	phylliform,	needle-like	unknown
St1	as long as St2	as long as St2	longer than St2	shorter than St2	unknown

Family CILLIBIDAE Trägårdh, 1944

Diagnosis. Flattened mites with usually yellow colour. Idiosoma round or oval, marginal shield

complete, not reduced on caudal area. Dorsal, ventral and marginal setae needle-like, genital shield of female oval or linguliform. Surface of idiosoma smooth, rarely ornamented. Sternal se-

tae short and needle-like. Genital shield of male bearing one pair of smooth eugenital setae. Peritremes L-shaped, R-shaped or hook-like on prestigmatid part. Poststigmatid part reduced. Coxae I not touching together, pedofossae present, but not deep. Leg I without claws or with weakly developed claws. Tritosternum with narrow basis, laciniae with four–six branches. Corniculi horn-like. Hypostomal setae h1 long and smooth, other setae shorter, h4 apically pilose or serrate. Chelicerae without internal sclerotised node.

Remarks. Currently four genera belong to the family Cillibidae. The genus *Cilliba* v. Hayden, 1827 is distributed in Europe and the Middle-East, the genus *Laqueaturopoda* Hirschmann, 1979 (with its two subgenera *Laqueaturopoda* Hirschmann, 1979 and *Hiramatsulaqueata* Hirschmann, 1984) seems to be endemic in the Neotropical region similarly to the genus *Ungulaturopoda* Hirschmann, 1984 (Wiśniewski 1993). The fourth genus, *Australocilliba* Athias-Binche & Błoszyk, 1988 is distributed in Australia and a hitherto undescribed genus occurs in New Zealand (Kontschán in prep.).

Distribution. Species of the family Cillibidae occur in South-America, Australia, New Zealand, Europe and in the Middle-East. Species of the family are not recorded from Africa, North-America and Asia (excluding Middle-East). According to the distributional records, on the basis of the Australian, New Zealander, and South-American occurrences this family might have originated in the Gondwana and dispersed later in Europe and the Middle East.

Key to the genera and subgenera of the family Cillibidae

- 1 Genital shield of female with long anterior extension, setae h1 phylliform, leg I with small claws-----
-----genus *Australocilliba*
- Genital shield of female without anterior extension, setae h1 needle-like, leg I without claws ----- 2
- 2 Peritremes L-shaped ----- genus *Cilliba*
- Peritremes not L-shaped ----- 3
- 3 Shape of idiosoma oval, peritremes hook-like -----
-----genus *Ungulaturopoda*
- Shape of idiosoma circular, peritremes R-shaped -
-----genus *Laqueaturopoda* 4

- 4 Marginal shield entire on caudal area -----
----- subgenus *Laqueaturopoda* (*Laqueaturopoda*)
- A narrow incision present in marginal shield on caudal area -----
----- subgenus *Laqueaturopoda* (*Hiramatsulaqueata*)

***Ungulaturopoda* Hirschmann, 1984**

Diagnosis. Idiosoma oval, dorsal and marginal shields fused anteriorly. Peritremes hook-shaped. Leg I without claws.

Type species. *Ungulaturopoda ungulata* (Hirschmann & Hiramatsu, 1977), by original designation.

Remarks. *Ungulaturopoda* was established by Hirschmann (1984a) with type species *Uropoda ungulata* Hirschmann & Hiramatsu, 1977, by original designation. Later Hirschmann (1993) and his co-worker (Wiśniewski 1993, Wiśniewski & Hirschmann 1993) placed every *Ungulaturopoda* species into the large, catch-all genus *Uropoda*, forming the *ungulata* species group, which contained seven Neotropical species. In my opinion, on the basis of the shape of idiosoma and the peritremes, the genus *Ungulaturopoda* is well-defined and thus can easily be distinguished from the similar genera, therefore the genus needs to be resurrected.

Distribution. The species of *Ungulaturopoda* are recorded from Ecuador, Columbia and Costa Rica.

***Ungulaturopoda ungulata* (Hirschmann & Hiramatsu, 1977)**

(Figures 33–39)

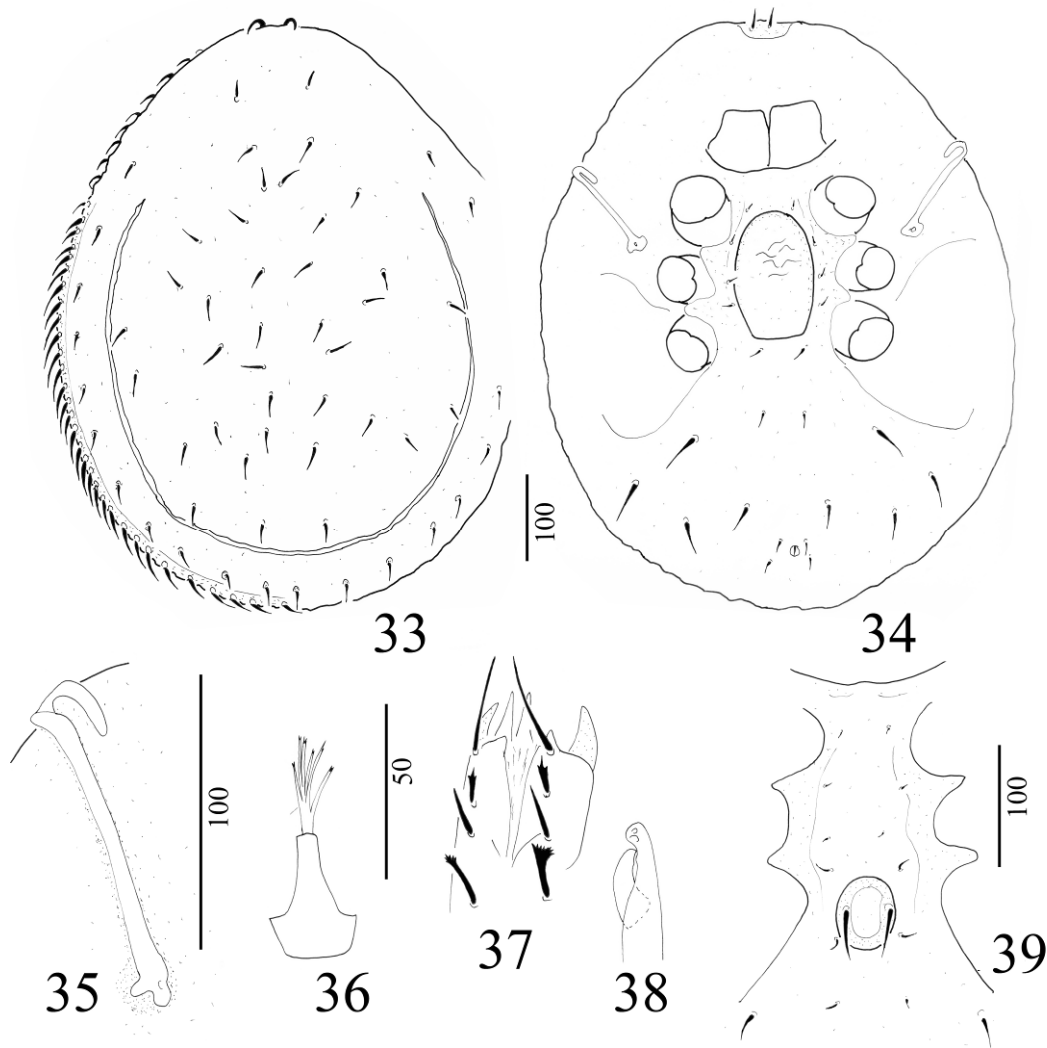
Material examined. Ecuador. Three females and seven males. ECU 1989, B142. 10 km leaving La Libertad to Tulcan, 3400 m a.s.l. (Prov. Carchi), cushion vegetation. 25. IV. 1989, leg. Loksa, I. & Zicsi, A. Four females and two males. ECU 1989, B37. Between Pifo and Papallacta, 4100 m a.s.l. (Prov. Pichincha), Moss and withered plant-debris from under bushes, 14. IV. 1989, leg. Loksa, I. & Zicsi. One female and three males. ECU 1989, B86. 30 km from Otavalo to Apuela, Otocique, 3250 m a.s.l. (Prov. Imbabura), cushion-plants, 19. IV. 1989, leg. Loksa, I. & Zi-

csi, A. Costa-Rica. One female. Cr92, B42. Vulcan Poa, 2704 m a.s.l., wet roots with soil. 21. I. 1992, leg. J. Balogh. Four females. Cr92, B50. Vulcan Poa, cloudy forest, soil, 21. I. 1992, leg. J. Balogh.

Short description. Female. Length of idiosoma 630–640 μm , width 540–550 μm (female).

Idiosoma oval, posterior margin rounded.

Dorsal idiosoma (Fig. 33). Marginal and dorsal shields fused anteriorly, marginal shield entire. Dorsal and marginal shields without ornamentation and bearing smooth and needle-like setae.



Figures 33–39. *Ungulaturopoda ungulata* (Hirschmann & Hiramatsu, 1977), female. 33 = dorsal view, 34 = ventral view, 35 = peritreme, 36 = tritosternum, 37 = ventral view of gnathosoma, 38 = chelicera, 39 = intercoxal area of male

Ventral idiosoma (Fig. 34). Sternal setae short and needle-like, ventral setae long and needle-like. Sternal and ventral shields smooth, without sculptural pattern. Genital shield oval, without anterior process and with a few reticulate pattern.

Peritremes hook-shaped (Fig. 35). Tritosternum with narrow basis, laciniae divided into six branches (Fig. 36).

Gnathosoma (Fig. 37). Corniculi horn-like, internal malae longer than corniculi, hypostomal

setae h1 and h3 smooth, h2 provided with one pair of spines laterally, h4 apically serrate. Fixed digit of chelicerae longer than movable digit, internal sclerotised node absent (Fig. 38).

Male. Length of idiosoma 620–630 µm, width 530–540 µm. Shape oval, posterior margin rounded. Dorsal idiosoma ornamentation and chaetotaxy of dorsal shield as in female.

Ventral idiosoma (Fig. 39). Sternal shield with smooth surface. Sternal setae short and needle-like. Genital shield rounded, placed between coxae IV and bearing one pair of eugenital setae. Gnathosoma similar to that of female.

Remarks. This is the first record from Costa Rica.

***Laqueaturopoda* Hirschmann, 1979**

Diagnosis. Idiosoma circular, dorsal and marginal shields fused anteriorly. Peritremes R-shaped. Leg I without claws.

Type species. *Laqueaturopoda laqueta* (Hirschmann & Hiramatsu, 1972), by original designation.

Remarks. Hirschmann (1984b) divided the genus *Laqueaturopoda* into two subgenera (*Laqueaturopoda* Hirschmann, 1979 and *Hiramatsulaqueata* Hirschmann, 1984) on the basis of presence/absence of the caudal incision in the marginal shield (see the key of Cillibidae). Later Hirschmann (1993) and his co-worker (Wiśniewski 1993, Wiśniewski & Hirschmann 1993) placed back all the *Laqueaturopoda* species into the large, catch-all genus *Uropoda*, forming the *laqueta* species group for the subgenus *Laqueaturopoda* and the *laquetasimilis* species group for the subgenus *Hiramatsulaqueata*. According to my new observations, I think the subgenus *Hiramatsulaqueata* is well-defined and thus can easily be distinguished from the subgenus *Laqueaturopoda* on the basis of the caudal incision, hence I resurrect this subgenus.

***Laqueaturopoda* (*Hiramatsulaqueata*) *cocuyensis* (Hirschmann, 1984)**

(Figures 40–47)

Material examined. Two females. ECU 1986, B160. Ecuador, 31 km from the road-junction to

Santa Barbara, on the riverside of Rio Chingual, 2480 m a.s.l. (Prov. Carchi), riverside rainforest gallery, litter and soil. 26. IV. 1989, leg. Loksa, I. & Zicsi, A.

Short description. Length of idiosoma 630 µm, width 510 µm (female). Shape of idiosoma circular.

Dorsal idiosoma (Fig. 40). Marginal and dorsal shields fused anteriorly, marginal shield with incision on caudal area. Dorsal and marginal shields without ornamentation and bearing smooth and needle-like setae.

Ventral idiosoma (Fig. 41). Sternal setae short and needle-like, ventral setae similar in shape and length to sternal setae. Sternal and ventral shield smooth, without sculptural pattern. Genital shield oval, without anterior process and with a few reticulate patterns. Peritremes R-shaped (Fig. 42). Tritosternum with narrow basis, laciniae divided into six branches (Fig. 43).

Gnathosoma (Fig. 44). Corniculi horn-like, internal malae shorter than corniculi, hypostomal setae h1 and h2 smooth, h3 and h4 apically pilose. Epistome marginally serrate on its basal part, pilose on its apical part (Fig. 45). Fixed digit of chelicerae longer than movable digit, internal sclerotised node absent (Fig. 46). Palp trochanter bearing two setae, one of them short and smooth, the other one apically divided and serrate (Fig. 47).

Remarks. This species was previously recorded from Columbia, this is the first record from Ecuador.

Family Discourellidae Baker & Wharton, 1952

***Clivosurella pilosa* sp. nov.**

(Figures 48–56)

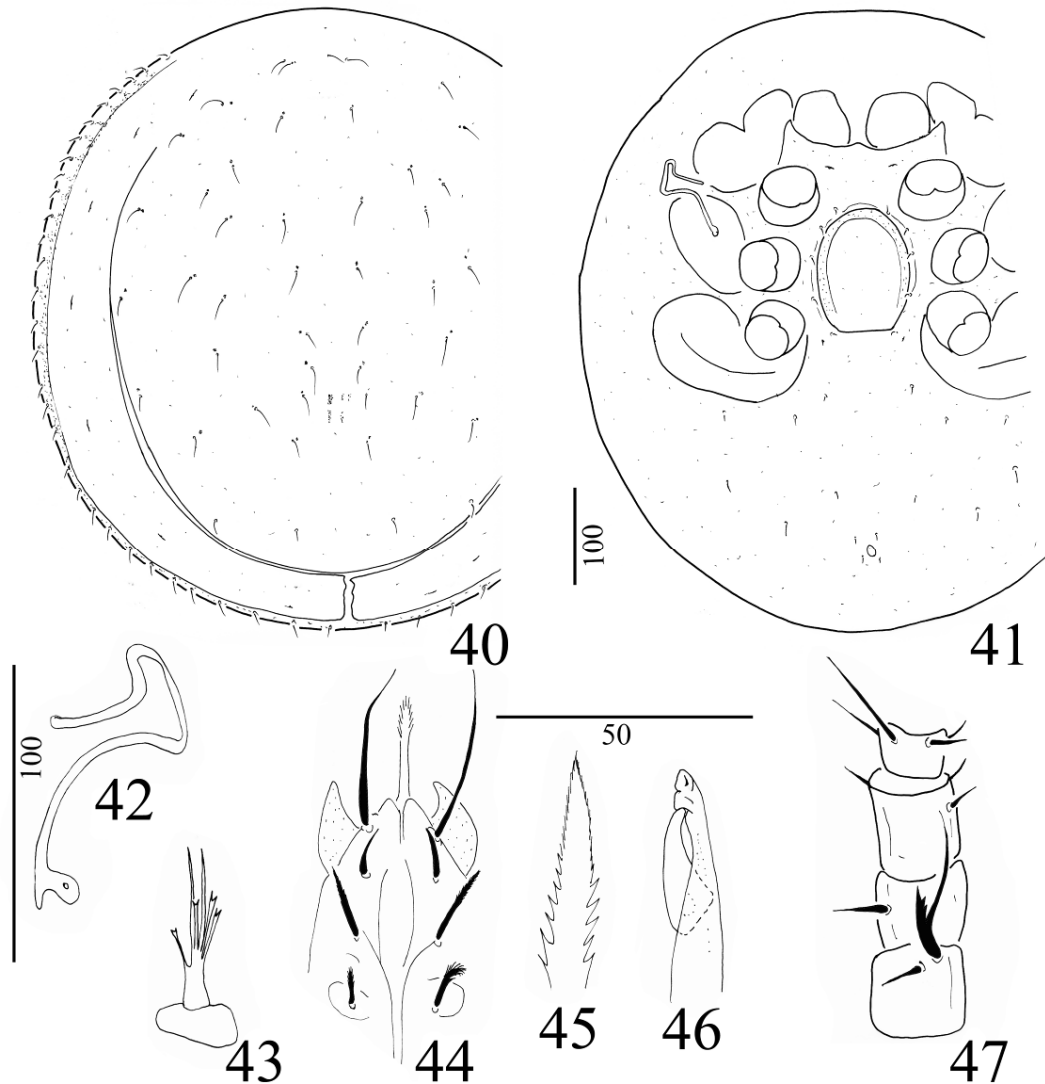
Material examined. Holotype. Female. ECU 1989, B64. Ecuador, Rio Guajalito, Las Palmeras, 1850 m a.s.l. (Prov. Pichincha), moss from rocky roadside, 18. IV. 1989., leg. Loksa, I. & Zicsi, A. Paratypes. One female and eight males, locality

and date as for the holotype. Holotype female and seven males paratypes deposited in HNHM, one female and male paratypes in NHMG.

Description. Female. Length of idiosoma 440–450 μm , width 320–330 μm (n=2). Shape pen-

tangular.

Dorsal idiosoma (Fig. 48). Marginal and dorsal shields fused anteriorly. Central region of dorsal shield elevated from the other parts of dorsum and bearing one pair of strongly sclerotized, C-



Figures 40–47. *Laqueaturopoda* (*Hiramatsulaqueata*) *cocuyensis* (Hirschmann, 1984) female. 40 = Dorsal view, 41 = ventral view, 42 = peritreme, 43 = tritosternum, 44 = ventral view of gnathosoma, 45 = epistome, 46 = chelicera, 47 = ventral view of palp

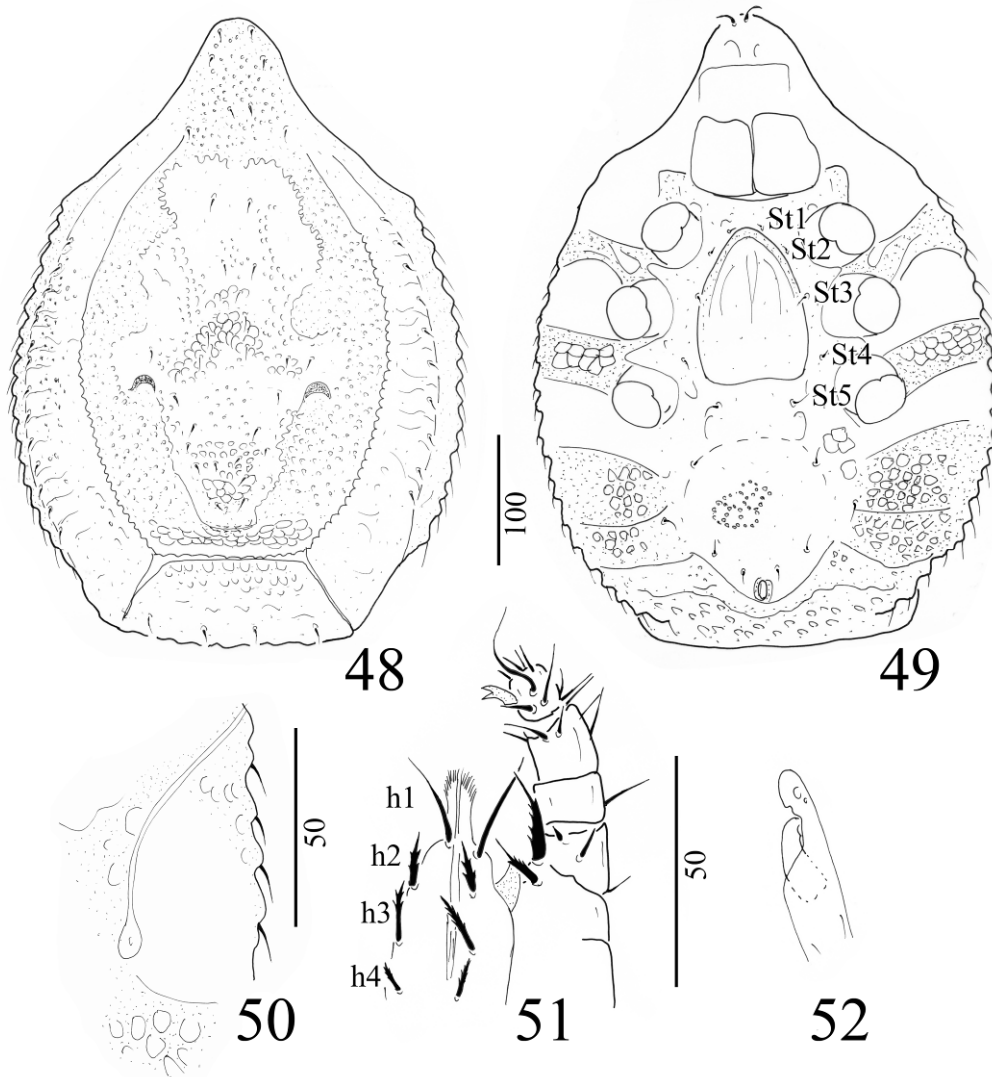
shaped lines at level of coxae IV, smooth and needle like setae (ca. 7–8 μm) and irregular, small pits. Marginal setae (ca. 7–8 μm) smooth and

needle-like as well and situated on small protuberances. Marginal shield divided into two lateral parts and one pygidial shield. Pygidial shield

trapezoid, bearing alveolar pits near anterior margin, provided with two pairs of needle-like setae (*ca.* 8–9 μm) on small protuberances.

Ventral idiosoma (Fig. 49). Ornamentation on sternal shield absent. Sternal setae short (St1–St4 *ca.* 4–5 μm ; St5 *ca.* 10 μm), smooth and needle-

like. St1 situated near anterior margin of genital shield, St2 at the level of central region of coxae II, St3 at the level of central region of coxae III, St4 at the level of anterior margin while St5 at the level of posterior margin of coxae IV. One large, circular depression present anteriorly to the anal



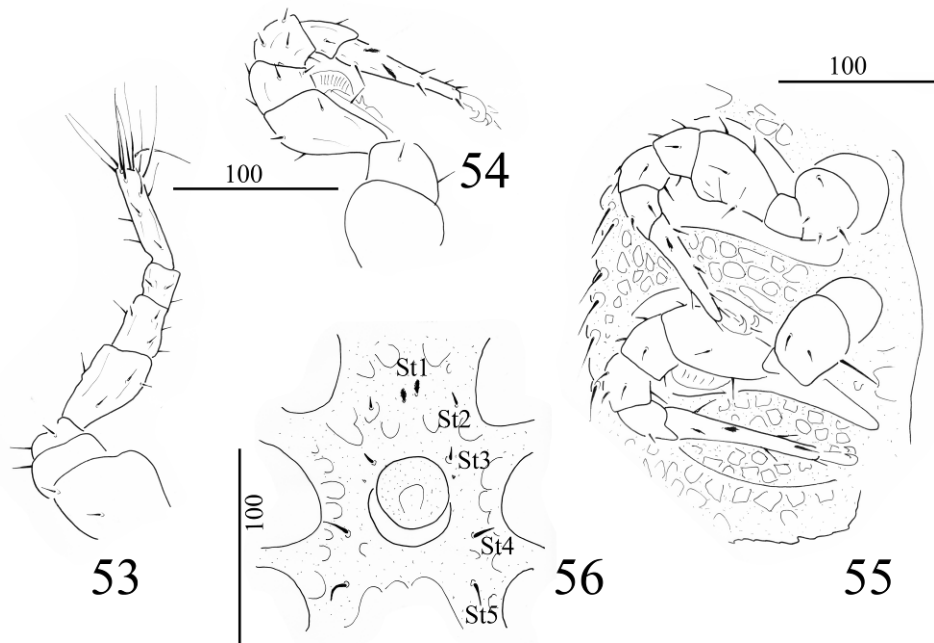
Figures 48–52. *Clivosurella pilosa* sp. nov. female. 48 = Dorsal view, 49 = ventral view, 50 = peritreme, 51 = ventral view of gnathosoma and palp, 52 = chelicerae

opening, containing several small, oval pits. Ventral setae smooth and needle-like (*ca.* 8–10 μm). Ventral shield covered by irregular pits. Stigmata situated between coxae II and III, peritremes straight (Fig. 50). Genital shield linguliform,

without ornamentation and process on its apical margin. Pedofosse well developed, deep, without furrows for tarsi IV. Base of tritosternum wide, tritosternal laciniae divided into four smooth branches.

Gnathosoma (Fig. 51). Corniculi horn-like, internal malae longer than corniculi and their margins pilose. Hypostomal setae are the follows: h1 (ca. 23 μm) smooth and situated near anterior margin of gnathosoma, h2 (ca. 11 μm) wide, h3

(ca. 14 μm) and h4 (ca. 8 μm) narrow, h2–h4 marginally serrate. Base of epistome subtriangular, with serrate margins, apical part long and smooth. Movable digit of chelicerae shorter than fixed digit (Fig. 52).



Figures 53–56. *Clivosurella pilosa* sp. nov. female. 53 = Leg I, 54 = leg II, 55 = leg III and IV, 56 = intercoxal region of male

Legs with smooth and marginally pilose setae, leg I without apical claws (Figs. 53–55).

Male. Length of idiosoma 440–460 μm , width 310–330 μm ($n = 8$). Shape pentangular. Dorsal idiosoma. Ornamentation and chaetotaxy of dorsal shields as in female. Ventral idiosoma (Fig. 56). Sternal shield with irregular pits. St1 pilose (ca. 5 μm), other sternal setae smooth and needle-like, St2–St3 short (ca. 6–7 μm), St4–St5 long (ca. 12–14 μm). Genital shield rounded, placed between coxae III, without ornamentation and setae. Gnathosoma similar to that of the female.

Nymphs and larvae unknown.

Etymology. The name of the new species refers to the first sternal setae of male.

Remarks. Kontschán (2010b) resurrected the genus *Clivosurella* and prepared a new key to the species. This new species can easily be recognised and distinguished from the other *Clivosurella* species on the basis of the presence of strongly sclerotized, C-shaped dorsal lines, and the first pilose sternal setae in the males.

REFERENCES

- ATHIAS-BINCHE, F. & BŁOSZYK, J. (1988): Australian Uropodina (Acari: Anactinotrichida). 1. *Australocilliba* gen. n. (Cillibidae). *Journal of the Australian Entomological Society*, 27: 1–8.
- HIRAMATSU, N. (1981): Gangsystematik der Parasiti-formes Teil 400. Stadium einer neuen *Uroseius* (*Uroseius*)-Art aus Ekuador. *Acarologie. Schriftenreihe für Vergleichende Milbenkunde*, 28: 100–101.

- HIRSCHMANN, W. (1984a): Stadiensystematik der Parasitiformes, Teil 4. Die Adultengattung *Ungulaturo-poda* nov. gen. Hirschmann, 1984. (Uropodidae, Atrichopygidiina). *Acarologie. Schriftenreihe für Vergleichende Milbenkunde*, 31: 45–46.
- HIRSCHMANN, W. (1984b): Stadiensystematik der Parasitiformes Teil 3. Die Adultengattung *Laqueatur-opoda* Hirschmann, 1979. Die Adultenuntergattung *Hiramatsulaqueata* nov. subgen. Hirschmann, 1984 (Uropodidae, Atrichopygidiina). *Acarologie. Schriftenreihe für Vergleichende Milbenkunde*, 31: 37–39.
- HIRSCHMANN, W. (1993): Gangsystematik der Parasitiformes Teil 550. Bestimmungstabellen der Uropodiden der Erde, Atlas der Ganggattungen der Atrichopygiina. *Acarologie. Schriftenreihe für Vergleichende Milbenkunde*, 40: 292–370.
- KONTSCHÁN, J. (2008): A review of the Neotropical family Tetrasejaspidae (Acari: Uropodina) with descriptions of three new species. *Opuscula Zoologica Budapest*, 37: 29–42.
- KONTSCHÁN, J. (2008): New and rare *Rotundabaloghia* species (Acari: Uropodina) from the tropics. *Opuscula Zoologica Budapest*, 38: 15–41.
- KONTSCHÁN, J. (2010a): Notes on *Kaszabjbaloghia* with the description of a new species from Ecuador (Acari: Mesostigmata: Uropodidae). *Zoologia, Curitiba*, 27(1): 138–145.
- KONTSCHÁN, J. (2010b): New and little known Uropodina species from Brazil (Acari: Mesostigmata). *Acta Zoologica Academiae Scientiarum Hungaricae*, 56(4): 317–334.
- MISCHIS C.C., CSUZDI, Cs. & ARGUELLO, G. (2006): A contribution to the knowledge of earthworm fauna (Annelida, Oligochaeta) from the Argentinian Patagonia. In: POP, VV. & AA. POP (eds.) Advances in earthworm taxonomy II. University Press, Cluj, pp. 173–182.
- WIŚNIEWSKI, J. (1993): Gangsystematik der Parasitiformes Teil 549. Die Uropodiden der Erde nach Zoogeographischen Regionen und Subregionen geordnet (Mit Angabe der Lande). *Acarologie. Schriftenreihe für Vergleichende Milbenkunde*, 40: 221–291.
- WIŚNIEWSKI, J. & HIRSCHMANN, W. (1993): Gangsystematik der Parasitiformes Teil 548. Katalog der Ganggattungen, Untergattungen, Gruppen und Arten der Uropodiden der Erde. *Acarologie. Schriftenreihe für Vergleichende Milbenkunde*, 40: 1–220.
- ZICSI, A. & CSUZDI, Cs. (1988): Über einige *Thamnodrilus*-Arten und andere Regenwürmer aus Ekuador (Oligochaeta: Glossoscolecidae, Lumbricidae, Megascoclecidae) Regenwürmer aus Südamerika, 3. *Opuscula Zoologica Budapest*, 23: 209–218.
- ZICSI, A. & CSUZDI, Cs. (2008): Report on the soil zoological expeditions to Ecuador and Columbia between 1986 and 1993. I. List of localities and habitats of “Berlese” samples. *Opuscula Zoologica Budapest*, 37: 71–88.