

ARTÍCULO:

Cyriocosmus venezuelensis sp. n. from Venezuela (Araneae: Theraphosidae: Theraphosinae)

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ARTÍCULO:

Cyriocosmus venezuelensis sp. n. from Venezuela (Araneae: Theraphosidae: Theraphosinae)

Radan Kaderka

Abstract:

Cyriocosmus venezuelensis sp. n. from Venezuela, State of Lara and Carabobo, is described, diagnosed and keyed. The new species can be distinguished from all other congeners by its uniformly coloured carapace, dark ventral band on the abdomen and by the paraembolic apophysis in male palpal bulb being half the length of the embolus. *Cyriocosmus rogerioi* Pérez-Miles & Weinmann, 2009 is placed in the synonymy of *C. pribiki* Pérez-Miles & Weinmann, 2009, from which it does not differ in any characters of specific significance.

Key words: Araneae, Mygalomorphae, Theraphosidae, Theraphosinae, *Cyriocosmus*, South America, Venezuela, Peru, taxonomy, new synonymy

Taxonomy: *Cyriocosmus venezuelensis* sp. n., *Cyriocosmus rogerioi* Pérez-Miles & Weinmann 2009 = *C. pribiki* Pérez-Miles & Weinmann 2009 syn. nov.

Cyriocosmus venezuelensis sp. n. de Venezuela (Araneae: Theraphosidae: Theraphosinae)

Resumen:

Se describe y diagnostica *Cyriocosmus venezuelensis* sp. n. de los estados de Lara y Carabobo, en Venezuela. Esta se diferencia del resto de sus congéneres por presentar el cefalotórax uniformemente coloreado, el abdomen con una franja ventral oscura y por tener la apófisis paraembólica de los bulbos de los pedipalpos de los machos, la mitad de la longitud de los émbolos. Se ofrece una clave para diferenciar esta nueva especie del resto de las especies de *Cyriocosmus* Simon, 1903. *Cyriocosmus rogerioi* Pérez-Miles & Weinmann, 2009 se coloca en la sinonimia de *C. pribiki* Pérez-Miles & Weinmann 2009, de la que no difiere en ningún carácter taxonómicamente significativo.

Palabras clave: Araneae, Mygalomorphae, Theraphosidae, Theraphosinae, *Cyriocosmus*, América del Sur, Venezuela, Perú, taxonomía, sinonimia nueva.

Taxonomía: *Cyriocosmus venezuelensis* sp. n., *Cyriocosmus rogerioi* Pérez-Miles & Weinmann 2009 = *C. pribiki* Pérez-Miles & Weinmann 2009 syn. nov.

Introduction

Hapalopus sellatus from the upper Amazon and *Hapalopus elegans* from Orinoco region, Venezuela, were described by Simon in 1889. The genus *Cyriocosmus* Simon, 1903 was established for both mentioned species, with *Cyriocosmus sellatus* as the type species (Simon, 1903). The genus *Cyriocosmus* is exclusive to tropical South America (Schiapelli & Gerschman de Pikelin, 1973) including northern Argentina, Brazil, Bolivia, Colombia, Paraguay, Peru, Tobago, Trinidad and Venezuela. Revisions and phylogenetic analyses of this genus were recently made by Pérez-Miles (1998) and Fukushima *et al.* (2005).

Fourteen species belonging to *Cyriocosmus* have been described: *C. bertae* Pérez-Miles, 1998, *C. blenginii* Pérez-Miles, 1998, *C. chicoi* Pérez-Miles, 1998, *C. elegans* (Simon, 1889), *C. fasciatus* (Mello-Leitão, 1930), *C. fernandoi* Fukushima, Bertani & da Silva, 2005, *C. leetzi* Vol, 1999, *C. nogueiranetoi* Fukushima, Bertani & da Silva, 2005, *C. perezmilei* Kaderka, 2007, *C. pribiki* Pérez-Miles & Weinmann, 2009, *C. ritae* Pérez-Miles, 1998, *C. rogerioi* Pérez-Miles & Weinmann, 2009, *C. sellatus* (Simon, 1889), *C. versicolor* (Simon, 1897).

Material and methods

The material was obtained by searching a dry forest up to the altitude of around 600 meters above sea level during daytime manual collecting. The types were separately preserved in 75% ethanol and housed in the depository of NMPC. All material was examined and measured by a binocular microscope Leica S6D with the magnification range from 6.3x up to 40x and an ocular graticule 10 mm/ 0.1 mm.

All measurements were taken according to the central axis of structures and are given in millimetres. The measurement of the total body length including cephalothorax and abdomen without spinnerets was made using a calliper. The measurements of the leg and palpal segments were taken dorsally.

The eye measurements were taken from the widest spans of the lens, AME in almost dorsal view, ALE, PLE and PME in dorsolateral view.

The extent of tarsal and metatarsal scopulae was expressed as a percentage of the total length of the segment.

The leg spination was described using a following method. Each leg segment was divided into four quadrants (dorsal, ventral, prolateral and retrolateral) and each quadrant described separately in a dorsal and ventral view. An unequal numbers of spines of the same leg segments on the right and left side were expressed by parentheses.

The spermathecae were separated from the exuvia of the female paratype and preserved in 75% alcohol without the uterus externus.

The terminology of male palpal bulb structures follows Bertani (2000) except tegular protuberance (TP) which is discussed.

The abdominal urticating hairs were removed from the area of urticating hairs by pincette, placed in alcohol and examined and measured by binocular microscope Olympus BH2-RFCA and after dehydration in critical point dryer CPD 030 (BAL-TEC) and latter gold coating in ion sputtering device SCD 030 (BAL-TEC) examined by a scanning electron microscope JEOL JSM-6380LV. The terminology of urticating hairs follows Cooke *et al.* (1972). The barbs of urticating hairs whose tips are oriented to the body are considered as reversed.

The photographs of preserved material were taken with a Canon G5 mounted directly on the eye piece of a binocular microscope Leica S6D illuminated with incorporated LED ringlight. The photographs of live specimens were taken with a Canon IXUS 850 IS. The scanning electron micrograph (SEM) was made with a scanning electron microscope JEOL JSM-6380LV.

Abbreviations: AME = anterior median eyes, ALE = anterior lateral eyes, PME = posterior median eyes, PLE = posterior lateral eyes, OQ = ocular quadrangle (including lateral eyes), p = prolateral, r = retrolateral, d = dorsal, v = ventral, a = apical, c = central, b = basal. PA = paraembolic apophysis, PS = prolateral superior keel, E = embolus, TP = tegular protuberance, TA = tegular apophysis. NMPC = National Museum (Natural History), Praha, Czech Republic, RKCP = Radan Kaderka

private collection, Czech Republic, SMFD = Senckenberg Museum, Frankfurt, Germany.

OTHER MATERIAL EXAMINED: *Cyriocosmus perezmilei* Kaderka, 2007, male holotype from Bolivia, San Buenaventura, Beni province, October 14, 2004, Radan Kaderka col. (NMPC P6E-2983); *Cyriocosmus perezmilei* Kaderka, 2007, seven mature males and two larvae from Bolivia, San Buenaventura, Beni province, offsprings of male holotype and female paratype (males RKCP 0174, RKCP 0175, RKCP 0176, RKCP 0177, RKCP 0178, RKCP 0179, RKCP 0180; larvae RKCP 0181, RKCP 0182); *Cyriocosmus pribiki* Pérez-Miles & Weinmann, 2009, male holotype from Peru, Amazonas, Tingo, Gualap, October 22, 1996, F. Pribik col. (SMFD 60237); *Cyriocosmus rogerioi* Pérez-Miles & Weinmann, 2009, male holotype from Peru, Amazonas, Gualap, Chachapoyas, October 22, 1996, F. Pribik col. (SMFD 60239); *Cyriocosmus* sp., male from Venezuela, State of Táchira, March 2006, V. Fura and B. Velas col. (RKCP 0054).

Taxonomy

ORDER: Araneae Clerck, 1757

INFRAORDER: Mygalomorphae Pocock, 1892

FAMILY: Theraphosidae Thorell, 1870

SUBFAMILY: Theraphosinae Thorell, 1870

GENUS: *Cyriocosmus* Simon, 1903

GENERIC TYPE: *Cyriocosmus sellatus* (Simon, 1889)

GENERIC DIAGNOSIS: Differs from all known genera of Theraphosinae by the presence of the PA in male palpal bulb morphology and by the presence of spermathecae with two separated spiral seminal receptacles mostly terminated with caliciform extensions, in combination with the presence of the type III urticating hairs on dorsal abdomen.

Cyriocosmus venezuelensis sp. n.

Figures 1-14, Tables I-II

TYPES: MALE HOLOTYPE, NMPC P6E-2997, from: Venezuela, State of Lara, Carora, 9°54'58"N, 70°15'13"W (dry forest), February 2006, V. Fura and B. Velas col.; one FEMALE PARATYPE, NMPC P6E-2999 and one MALE PARATYPE, NMPC P6E-2998, the same locality, date and collector as holotype.

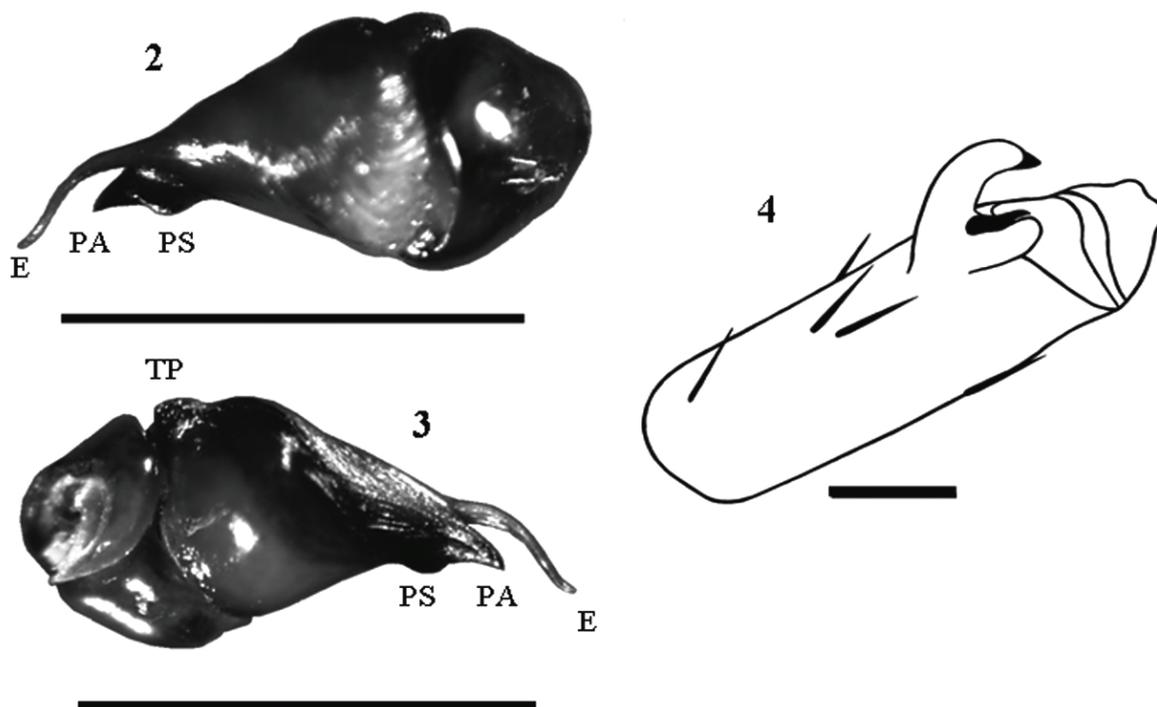
ETYMOLOGY: The specific name is derived from distribution area covering the Venezuelan states of Lara and Carabobo.

DIAGNOSIS: *Cyriocosmus venezuelensis* sp. n. can be distinguished from all other congeners by its uniformly coloured carapace, dark ventral band on the abdomen and by its paraembolic apophysis reaching a half the length of the embolus.

DISTRIBUTION (figure 14): Known from the Venezuelan states of Lara and Carabobo. The occurrence is also highly presumable in the state of Yaracuy which is situ-



Figure 1. *C. venezuelensis* sp. n., Venezuela, State of Lara, Carora, male. Scale bar = 10 mm (photo by P. Just).



Figures 2-4. *C. venezuelensis* sp. n., male paratype (NMPC P6E-2998), Venezuela, State of Lara, Carora. **2-3.** Morphology of male palpal bulb, **(2)** retrolateral view, **(3)** prolateral view; E = embolus, PS = prolateral superior keel, PA = paraembolic apophysis, TP = tegular protuberance. **4.** Male tibial apophyses, ventrally prolateral view. Scale bar = 1 mm.

ated among these states mentioned above.

DESCRIPTION: MALE (figures 1-5, 8-12): Total length: 12.2, carapace length 5.9, width 5.1, chelicerae with 8 teeth on promargin (from the basal end: one small and 7 big teeth, the third up to fifth tooth are smaller). Anterior eye row procurved, posterior eye row slightly recurved in dorsal view. Eye sizes and interdistances (fig. 11): AME 0.25 (circular), ALE 0.26 (oval), PME 0.11 (oval), PLE 0.16 (oval); AME-AME 0.11, AME-ALE 0.10,

PME-PME 0.40, PME-PLA 0.02, ALE-PLA 0.11, AME-PME 0.09, OQ length 0.45, width 0.99. Ocular tubercle: length 0.65, width 0.99; clypeus absent. Fovea transverse, width 0.8, 3.9 from the anterior edge of carapace. Labium length 0.65, width 1.10, anterior quarter with 25-30 cuspules, maxilla with approximately 60-70 cuspules in anterior basal third, a few of them reaches the middle of maxilla (fig. 12). Sternum length 2.85, width 2.35, one visible pair of sternal sigilla located near coxae III (length 0.14, 0.15 from the edge of sternum).

Leg pattern: IV>I>II>III. Inncrassate leg segments: patella I, tibia I and slightly inncrassate femur III.

Scopulae: All tarsi, 100% scopulated, metatarsi I-III 50%, metatarsi IV 25% scopulated. Tarsi I undivided, tarsi II divided by a line of hairs, tarsi III, IV divided by a narrow band of contiguous hairs. Dorsal face of all tarsi with two irregular longitudinal rows of very short clavate hairs. Pad of plumose hairs on retrolateral face of femur IV is absent.

Spination: femora I p 0-0-1 (apical), II p 0-1-1 (apical), III 0, IV d 0-0-1 (apical) and femora of palps 0; patellae I-IV and patellae of palp 0; tibiae I v 1-2-1 (apical; in a close proximity to retrolateral tibial apophysis), p 0-1-0, r 0-0-1 (apical), II v 1-1-2 (apical), p 0-2-0, III v 0-3-2 (apical), p 1-1-0, r 1-1-0, IV v (1-2)-(2-3)-2 (apical), r 1-1-0 and tibiae of palps 0; metatarsi I v 0-0-1 (apical), II v 0-1-1 (apical), III v (1-2)-(1-2)-2 (apical), p 1-2-2 (apical), r 0-1-1 (apical), IV v 1-(2-3)-(1-3) (apical), p 0-1-1 (apical), r 0-2-1 (apical), d 0-(0-1)-1 (apical).

Palpal organ as in figures 2 and 3, embolus with PA reaching half of the embolus length and with smooth PS keel, lengths of embolus and PA measured from the point they are separated: embolus 0.33, PA 0.16; tegulum with distinct granulated TP on prolateral face. Retrolateral face of cymbium with basal field of spines. Presence of distinct protuberance with cluster of numerous spines on retrolateral face of palpal tibia (figs. 8-9). Two unequal tibial apophyses present on tibia I (fig. 4): longer retrolateral tibial apophysis with very short stout spine at apex, length 1.35, length from the point where the both apophyses are separated: 0.65; shorter prolateral tibial apophysis with one well-developed retrolateral spine at base and of the same length as the prolateral tibial apophysis, length 1.15, length from the point where the both apophyses are separated: 0.45. Metatarsus I not sigmoidally curved and without a protuberance on retrolateral face. When folded it is contacting the both tibial apophyses. Maxillary and trochanteral stridulatory hairs absent. Abdomen: urticating hairs of type III with short reversed barbs are located in central reddish brown glossy patch, hair length 0.20-0.24. Urticating hairs have no reversed barbs at apex, only reversed denticles. Posterior lateral spinnerets: length 2.85, digitiform, basal segment 0.65, middle segment 0.75, apical segment 1.45. Anterior median spinnerets: 0.55.

Coloration and covering hairs: dorsal view: carapace uniformly covered with glossy reddish brown pubescens without dark caput; coxae and trochanters covered with reddish brown pubescens, chelicerae dark grey with basal reddish brown pubescens, femora black intermixed with long dark hairs, apically with small triangular grey spot; patellae, tibiae, metatarsi and tarsi covered with grey pubescens and long grey hairs. Patellae I, II and palpal patella with two distinct longitudinal stripes without covering pubescens, patellae III, IV with one such stripe. Abdomen covered with black pubescens intermixed with long pale hairs in posterior part except central reddish brown glossy patch in the shape of heart. Length of central reddish brown patch: 1.95, width 1.90. Presence of four fawn lateral stripes, the first pair of anterior stripes is not joined with the central patch, the

second and third ones do not also reach the central patch, the fourth short and undistinct stripe is located near spinnerets. Ventral view: labium, sternum, coxae and trochanters reddish brown; labium without covering hairs, sternum thinly covered with yellowish pubescens intermixed with long dark hairs; coxae and trochanters thinly covered with yellow pubescens intermixed with pale hairs; femora black intermixed with long grey hairs, patellae, tibiae and metatarsi dark grey and covered with thin pale pubescens and long black hairs. Ventral abdomen with longitudinal dark band and with fawn pubescens creating three well-developed lateral stripes, the fourth one is undistinct and not joined at base with the ventral fawn pubescens. Spinnerets covered with fawn pubescens.

FEMALE (fig. 5-7): Total length: 15.2, carapace length 6.7, width 6.0, chelicerae with 8 teeth on promargin. Anterior eye row slightly procurved, posterior eye row recurved in dorsal view. Eye sizes and interdistances: AME 0.26 (circular), ALE 0.42 (oval), PME 0.25 (oval), PLE 0.30 (oval); AME-AME 0.12, AME-ALE 0.10, PME-PME 0.50, PME-PL 0.00, ALE-PL 0.07, AME-PME 0.10, OQ length 0.62, width 1.05. Ocular tubercle: length 0.90, width 1.05; clypeus absent. Fovea slightly procurved, width 1.2, 4.8 from the anterior edge of carapace. Labium length 1.5, width 1.8, anterior half with about 40 cuspules, maxillae with approximately 60-70 cuspules. Almost rounded sternum, length 3.3, width 3.1, with two visible pairs of sternal sigilla located near coxae III (length 0.26, 0.25 from the edge of sternum) and between coxae II and III (length 0.10, 0.17 from the edge of sternum). Leg pattern: IV>I>II>III. Inncrassate leg segments absent except slightly inncrassate femora III.

Scopulae: All tarsi, 100% densely scopulated, metatarsi I-III 50%, metatarsi IV 25% scopulated. Tarsus I divided by a line of hairs, tarsi II-IV divided by a narrow band of contiguous hairs. Dorsal face of all tarsi with two irregular longitudinal rows of very short clavate hairs. Retrolateral face of femur IV is bare.

Spination: femora I-IV and femora of palps 0; patellae I-IV and patellae of palps 0; tibiae I v 0, II v 0, III v 0-0-2 (apical), p 0-1-0, r 1-1-0, IV v 0-0-2 (apical), r 1-1-0 (apical) and tibiae of palps v 0-0-3 (apical); metatarsi I v 1-0-1 (apical), II v 0-1-1 (apical), III v 0-1-1 (apical), p 1-1-1, r 0-1-1, IV v 2-3-3 (apical), p 0-2-1, r 0-1-1.

Spermathecae (fig. 6): two separated spiral seminal receptacles terminated with a caliciform extension. Maxillary and trochanteral stridulatory hairs absent. Palpal femur and femur I prolaterally bare. Abdomen: urticating hairs of type III with short reversed barbs are located in central reddish brown glossy patch, length 0.20-0.27 (fig. 13). Apical part of urticating hairs lacks a reversed barbs. Posterior lateral spinnerets: length 4.5, digitiform, basal segment 1.35, middle segment 1.30, apical segment 1.85. Anterior median spinnerets: 0.57. Coloration and covering hairs (fig. 7): dorsal view: carapace covered with glossy reddish brown pubescens without dark caput, coxae and trochanters covered with reddish brown pubescens, chelicerae dark grey with basal reddish brown pubescens, femora black and inter-

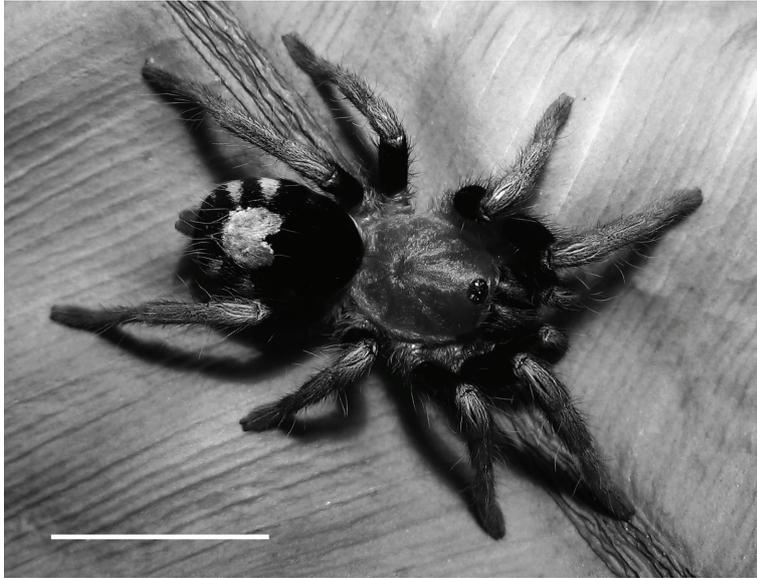
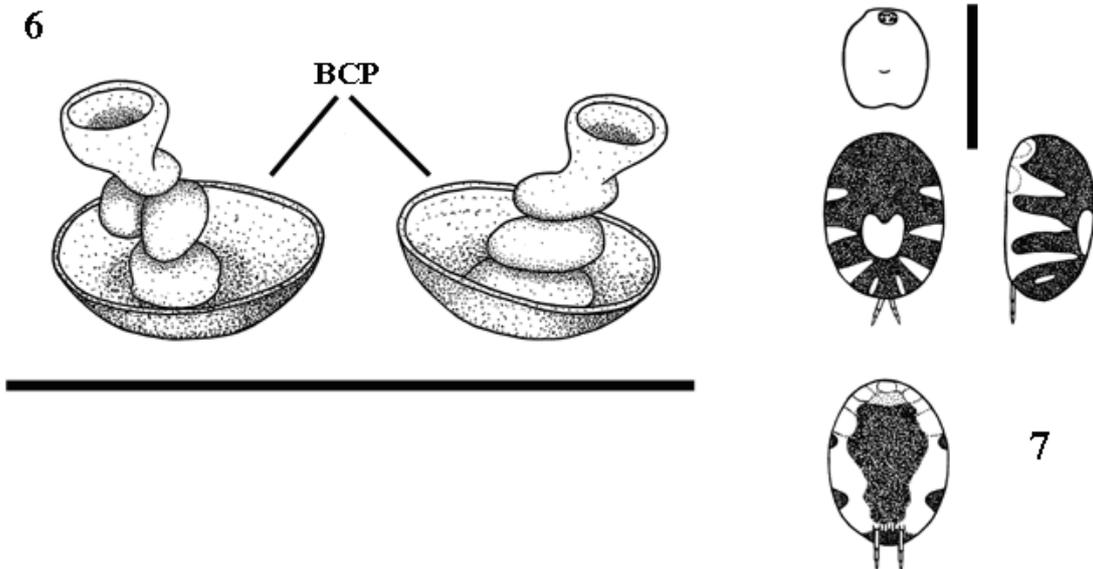


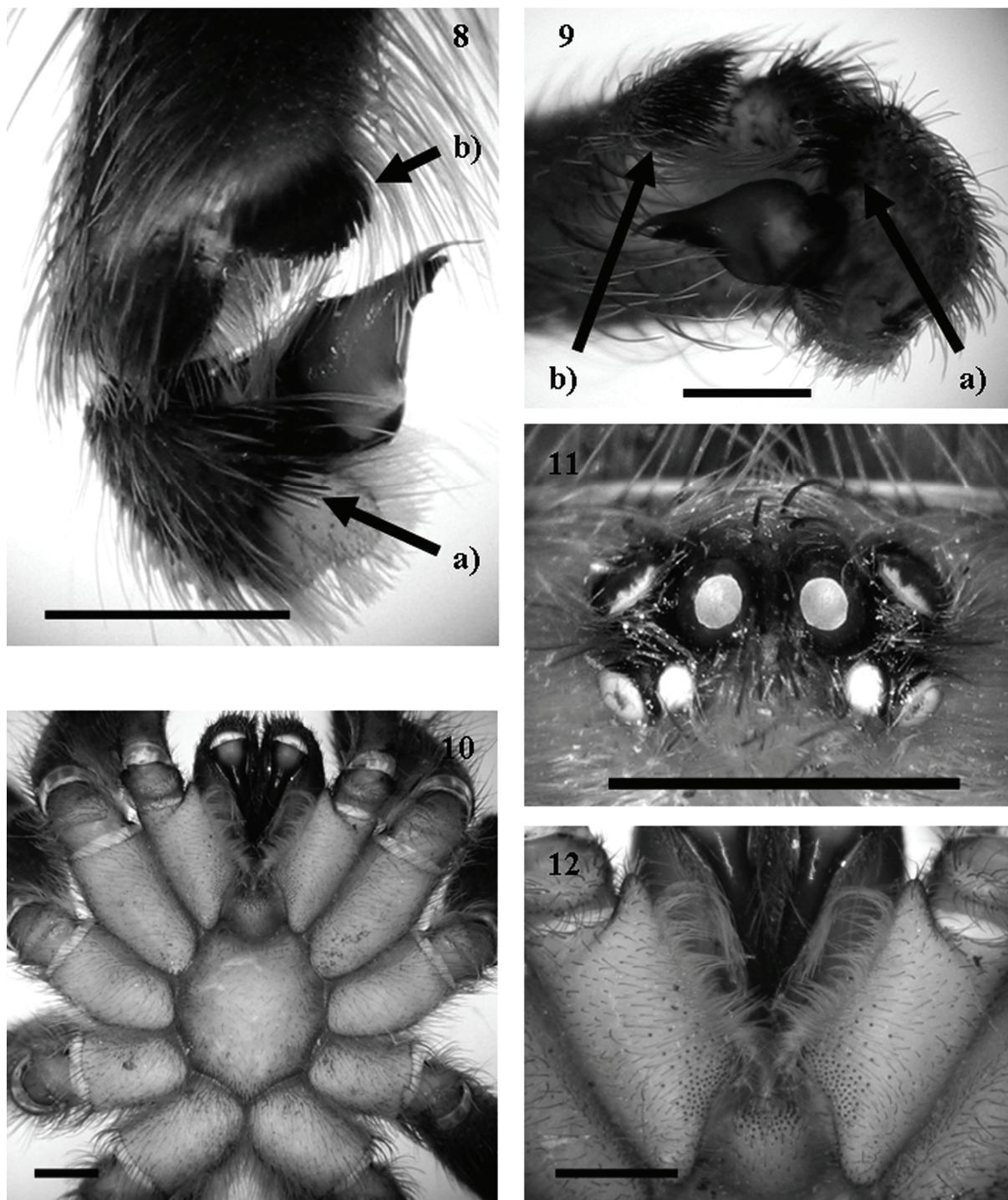
Figure 5. *C. venezuelensis* sp. n., Venezuela, State of Lara, Carora, female. Scale bar = 10 mm (photo by P. Just).



Figures 6-7. *C. venezuelensis* sp. n., female paratype (NMPC P6E-2999), Venezuela, State of Lara, Carora. **6.** Spermathecae. Two separated spiral seminal receptacles terminated with a caliciform extension, dorsal view. BCP = basal convex plate. **7.** Colour pattern. From top, carapace, dorsal abdomen, lateral abdomen and ventral abdomen. Scale bar = 1 mm (fig. 6). Scale bar = 10 mm (fig. 7).

mixed by long dark hairs, apically with small triangular grey spot; patellae, tibiae, metatarsi and tarsi covered with grey pubescens and long grey hairs. Patellae I, II and palpal patella with two distinct longitudinal stripes without covering pubescens, patellae III, IV with one such stripe. Abdomen covered with black pubescens intermixed with long pale hairs in posterior part except central reddish brown glossy patch in the shape of heart. Length of central patch: 3.0, width 2.6. Presence of four fawn lateral stripes, the first anterior stripes are not joined with the central patch, the second and third ones almost reach the central patch, the fourth short and na-

row stripe is located near spinnerets. Ventral view: labium, sternum, coxae and trochanters reddish brown; labium and sternum intermixed with dark hairs; coxae and trochanters covered with pale pubescens intermixed with dark and pale hairs; femora black, thinly covered with pale pubescens intermixed with dark grey hairs, patellae, tibiae and metatarsi dark grey, thinly covered with pale pubescens and dark grey hairs. Ventral abdomen with longitudinal dark band and with fawn pubescens creating three well-developed lateral stripes, the fourth one is not joined at base with the ventral fawn pubescens. Spinnerets covered with fawn pubescens.



Figures 8-12. *C. venezuelensis* sp. n., male holotype (NMPC P6E-2997), Venezuela, State of Lara, Carora. **8-9.** Male cymbium with basal field of spines (**a**) and tibia with cluster of numerous spines on apical protuberance (**b**), (**8**) retrolateral view, (**9**) ventral view. **10.** Sternum with coxae and chelicerae, ventral view. **11.** Ocular tubercle, dorsal view. **12.** Labium with maxillae, ventral view. Scale bar = 1 mm.

***C. pribiki* Pérez-Miles & Weinmann, 2009**

Figures 15-18

C. pribiki Pérez-Miles & Weinmann, 2009: 30, figs. 1-6. Holotype male, SMFD 60237, paratype females, SMFD 60238, from Tingo, Amazonas, Peru, at about 2.200-2.500 m a.s.l., 22. October 1996, F. Pribik col., male

holotype examined.

C. rogerioi Pérez-Miles & Weinmann, 2009: 32, figs. 7-11. Holotype male, SMFD 60239, from Kuelap, Chachapoyas, Peru, at about 3.000 m a.s.l., 20. October 1996, F. Pribik col., examined. Female unknown. New synonymy.

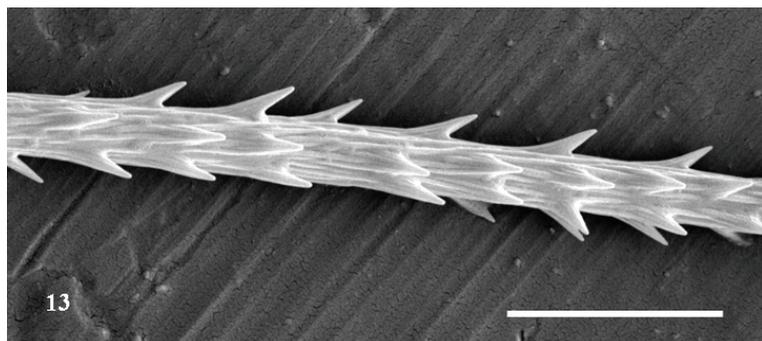


Figure 13. *C. venezuelensis* sp. n., female paratype (NMPC P6E-2999), Venezuela, State of Lara, Carora. Detail of abdominal urticating hairs of the type III, midsection with short reversed barbs (“reversed” means orientated to the base). Scale bar = 10 micrometers (photo by J. Bulantová).



Figure 14. *C. venezuelensis* sp. n., distribution map. 1-2. State of Lara. 3. State of Carabobo.

DIAGNOSIS: The males differ from all other congeners by the absence of abdominal striped pattern and the retrolateral branch of the tibial apophyses being distally incrassate and flattened. From *C. bertae* by the short PA separated from the half-oval smooth PS keel (in *C. bertae* the PS keel is serrated and more quadrangular rather than half-oval), by the absence of the frame of pale hairs on the carapace.

DISTRIBUTION: Known only from the type localities, Tingo and Kuelap near Chachapoyas, Amazonas, Peru, at 2.200-3.000 m a.s.l. All types were collected near the road from Tingo to Kuelap.

Discussion

The diagnoses of *C. pribiki* and *C. rogerioi*, new synonym are congruent, except the number of labial and maxillary cuspules. *C. pribiki* differs from *C. bertae* by the reduced number of labial cuspules (about 96 in male of *C. bertae* and 39 in male of *C. pribiki*). *C. rogerioi* differs from *C. bertae* by the reduced number of labial

cuspules as well (56 in male of *C. rogerioi*), from *C. pribiki* by the increased number of maxillary cuspules (about 200) and longer embolus of the palpal organ (Pérez-Miles & Weinmann, 2009).

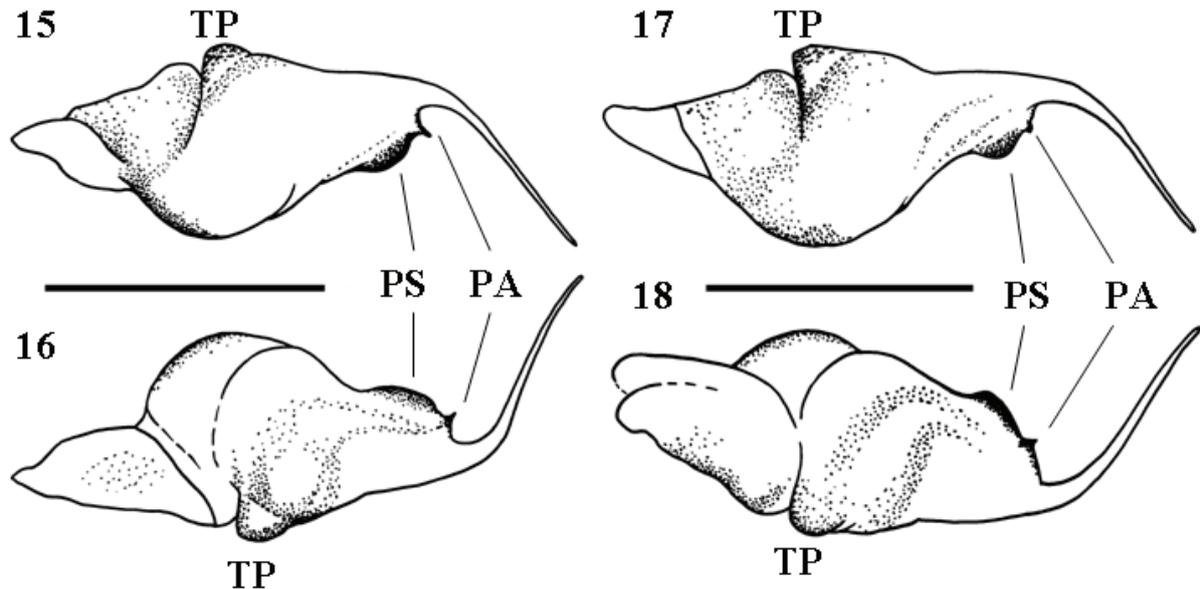
The embolus of *C. rogerioi* is approximately of the same length as in *C. pribiki* (+3 %), but if it is taken into consideration the total length of the tegulum with embolus, the relative length of embolus in *C. rogerioi* is in fact shorter, only 94% of the relative length of embolus in *C. pribiki*. The length of embolus was measured from the tip to the point from which the embolus strongly widens into the tegulum.

The number of labial or maxillary cuspules as well as artificially defined categories using a different number of cuspules is to be considered as a non-additive character for systematics of theraphosids due to its high degree of variability inside one species, one sex and between both sexes. The variability in the number of labial and maxillary cuspules using the basic statistic calculations (minimum, maximum, arithmetic mean, standard deviation) was recorded i.a. in Ortiz (2008), Reichling & West (1996) and in the Table III and IV.

The term tegular protuberance (TP) was firstly used in the description of *Cyriocosmus perezmilei* (Kaderka, 2007). The TP is a basal protuberance projecting prolaterally from the tegulum in the male palpal bulb. It is well visible as subtriangular or subsemicircular lobe in ventral or dorsal view rather than laterally.

The TA is a digitiform basal apophysis projecting from the tegulum retrolaterally (Pérez-Miles *et al.*, 1996) or

anteriorly (Gerschman de Pikelin & Schiapelli, 1972). The TP found in *Cyriocosmus venezuelensis* sp. n., *Cyriocosmus perezmilei* and also in *Cyriocosmus* sp. from Venezuela, State of Táchira is not homologous with well developed tegular apophysis (TA) which was found in species of the genus *Hommoeoma* Ausserer, 1871 and considered by Pérez-Miles *et al.* (1996) as an autapomorphy for the cited genus.



Figures 15-18. 15-16. *Cyriocosmus pribiki* Pérez-Miles & Weinmann, 2009, male holotype (SMFD 60237), Peru, Amazonas, Tingo, Kuelap, morphology of left palpal bulb, (15) retrolateral view, (16) prolateral view. 17-18. *Cyriocosmus rogerioi* Pérez-Miles & Weinmann, 2009, male holotype (SMFD 60239), Peru, Amazona, Chachapoyas, Kuelap, morphology of left palpal bulb, (17) retrolateral view, (18) prolateral view. PS = prolateral superior keel, PA = paraembolic apophysis, TP = tegular protuberance. Scale bar = 1 mm.

KEY TO CYRIOCOSMUS SPECIES

(modified from the key of *Cyriocosmus* species by Fukushima *et al.*, 2005):

FEMALES (females of *Cyriocosmus bertae*, *C. blenginii* and *C. ritae* are unknown)

1. With striped pattern on dorsal abdomen 2
 - Without striped pattern on the dorsal abdomen 9
2. Three clear stripes on each side of the dorsal abdomen, a longitudinal dark band on the ventral abdomen *C. leetzi*
 - More than 3 clear stripes on each side of the dorsal abdomen 3
3. Dorsal abdomen with 4 clear stripes on each side ... 4
 - Dorsal abdomen with 5 clear stripes on each side ... 8
4. Cephalic area dark 5
 - Cephalic area of the same colour as thoracic area . 7
5. Clear central area covering approximately 80% of the dorsal abdomen *C. fasciatus*
 - Clear central area covering less than 80% of the dorsal abdomen 6
6. Clear central area covering approximately 50% of the dorsal abdomen *C. fernandoi*
 - Characteristic "heart shaped" clear central area pattern covering approximately 30% of the dorsal abdomen *C. elegans*
7. Basal and apical areas of all femora of distinctly different coloration *C. perezmilei*
 - Basal and apical areas of all femora of the same coloration, ventral abdominal area with a longitudinal dark band *C. venezuelensis* new species
8. Spermathecae with a sinuous neck, without caliciform seminal receptacle; carapace with only cephalic region dark *C. nogueira-netoi*
 - Spermathecae spiral with caliciform seminal receptacle; carapace with a blackish area covering the cephalic region and a large part of thoracic region *C. chicoi*
9. Cephalic area dark *C. versicolor*
 - Cephalic area of the same colour as the thoracic area 10
10. Fundus of seminal receptacle caliciform.. *C. sellatus*
 - Fundus of seminal receptacle globular *C. pribiki*

MALES

1. Long paraembolic apophysis 2
 - Short paraembolic apophysis 8
2. With striped pattern on the dorsal abdomen 3
 - Without striped pattern on the dorsal abdomen, tibia I and cymbium having retrolateral spiniform hairs *C. sellatus*
3. Ventral abdomen with a longitudinal dark band, tibia incrassate, metatarsus I with a median protuberance *C. ritae*
 - Without these characters 4
4. Palpal tibia with a retrolateral field of spiniform hairs 5
 - Palpal tibia without a retrolateral field of spiniform hairs 6
5. Paraembolic apophysis originating dorsally to the embolus, 5 clear stripes on each side of the dorsal abdomen *C. blenginii*
 - Paraembolic apophysis originating prolaterally to the embolus, 4 clear stripes on each side of the dorsal abdomen *C. fasciatus*
6. Paraembolic apophysis originating prolaterally to the embolus *C. fernandoi*
 - Paraembolic apophysis originating dorsally to the embolus 7
7. Carapace with a blackish area covering only the cephalic region, abdominal colour pattern having the lighter central area invaginated forward *C. nogueira-netoi*
 - Carapace with a blackish area covering the cephalic region and a large part of thoracic region, abdominal colour pattern having the anterior dark area entering the lighter central area . *C. chicoi*
8. Striped pattern on dorsal abdomen 9
 - No striped pattern on dorsal abdomen 12
9. Ventral surface of abdomen with a longitudinal dark band 10
 - Ventral surface of abdomen without a longitudinal dark band 11
10. Carapace with dark cephalic area and radially arranged spots on thoracic area, lateral stripes on abdomen joined with clear central area, weakly developed PS keel and PA *C. leetzi*
 - Carapace without dark cephalic area (uniformly coloured), lateral stripes on abdomen not joined with clear central area, well developed PS keel and PA reaching a half of the embolus *C. venezuelensis* new species
11. Cephalic area dark, well developed PS keel *C. elegans*
 - Cephalic area of the same colour as thoracic area *C. perezmilei*
12. Palpal tibia without a retrolateral field of spiniform hairs, metatarsus I contacts the retrolateral area of the retrolateral branch of the tibial apophysis when folded; cephalic area dark *C. versicolor*
 - Palpal tibia with a retrolateral field of spiniform hairs, cephalic area the same colour as thoracic area 13
13. PS keel serrated, more quadrangular rather than half-oval, metatarsus I contacts both branches of tibial apophyses when folded, presence of the frame of pale hairs on the carapace *C. bertae*
 - PS keel smooth, half-oval, metatarsus I contacts the apical area of the retrolateral branch of the tibial apophyses when folded, absence of the frame of pale hairs on the carapace *C. pribiki*

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Table I: *Cyriocosmus venezuelensis* sp. n. Male holotype. Lengths of palpal and leg segments:

	Femur	Patella	Tibia	Metatarsus	Tarsus	Total
Palp	2.5	1.8	2.2	-	0.8	7.3
Leg I	4.0	2.8	3.2	3.9	2.3	16.2
Leg II	3.9	2.4	3.0	3.0	2.3	14.6
Leg III	3.5	2.0	2.2	2.9	2.2	12.8
Leg IV	4.5	2.4	3.8	4.7	2.7	18.1

Table II: *Cyriocosmus venezuelensis* sp. n. Female paratype. Lengths of palpal and leg segments:

	Femur	Patella	Tibia	Metatarsus	Tarsus	Total
Palp	4.0	2.1	2.5	-	2.4	11.0
Leg I	4.9	3.2	4.0	2.9	2.2	17.2
Leg II	4.2	2.8	2.9	2.8	2.0	14.7
Leg III	3.6	2.3	2.2	2.6	2.0	12.7
Leg IV	5.0	2.8	3.7	4.3	2.8	18.6

Table III: *Cyriocosmus perezmilei* Kaderka, 2007. The variability of labial and maxillary cuspules in adult males.

Specimens	Length of carapace mm	Number of labial cuspules	Number of maxillary cuspules right side	Number of maxillary cuspules left side
RKCP 0174	7,8	61	163	164
RKCP 0175	7,1	64	200	192
RKCP 0176	6,3	56	195	194
RKCP 0177	6,2	65	169	166
RKCP 0178	5,5	41	144	151
RKCP 0179	6,2	75	192	184
RKCP 0180	6,8	66	201	201
Minimum	5,5	41	144	151
Maximum	7,8	75	201	201
Arithmetical mean	6,6	61	181	179
Standard deviation	0,6	7	19	16

Table IV: *Cyriocosmus perezmilei* Kaderka, 2007. The number of labial and maxillary cuspules in larvae.

Specimens	Length of carapace mm	Number of labial cuspules	Number of maxillary cuspules right side	Number of maxillary cuspules left side
RKCP 0181	1,4	11	20	21
RKCP 0182	1,5	9	21	23