

FIRST DISTRIBUTION RECORD OF *CYRIOCOSMUS ELEGANS* (SIMON, 1889) FROM GUYANA (ARANEAE: THERAPHOSIDAE)

Danniella Sherwood^{1,2,*} & Ray Gabriel¹

¹ Arachnology Research Association, London, United Kingdom

² Fundación Ariguanabo, San Antonio de los Baños, Cuba

* Corresponding author: danni.sherwood@hotmail.com

Abstract: A male specimen of *Cyriocosmus elegans* (Simon, 1889) is illustrated and complementarily described, representing the first record of the genus *Cyriocosmus* Simon, 1903 from Guyana.

Key words: Araneae, Theraphosidae, tarantula, taxonomy, systematics, morphology, Guyana.

Primer registro de *Cyriocosmus elegans* (Simon, 1889) de Guyana (Araneae: Theraphosidae)

Resumen: Se ilustra y describe complementariamente un espécimen macho de *Cyriocosmus elegans* (Simon, 1889), que representa el primer registro del género *Cyriocosmus* Simon, 1903 para Guyana.

Palabras clave: Araneae, Theraphosidae, tarántula, taxonomía, sistemática, morfología, Guyana.

Introduction

The genus *Cyriocosmus* Simon, 1903 was described by Simon (1903) to house *Hapalopus sellatus* Simon, 1889 from Brazil and *H. elegans* Simon, 1889 from Venezuela, based on the bifid apophysis on the male palpal bulb. Mello-Leitão (1930) described *Cyriocosmus fasciatus* Mello-Leitão, 1930 from Brazil. Over forty years later, Schiapelli & Gerschman (1973) completed the first generic revision, also transferring *Cyclosternum versicolor* (Simon, 1897) to *Cyriocosmus*. Pérez-Miles (1998) described five new species, *Cyriocosmus butantan* Pérez-Miles, 1998 *C. bertae* Pérez-Miles, 1998, *C. blenginii* Pérez-Miles, 1998, *C. chicoi* Pérez-Miles, 1998, and *C. ritae* Pérez-Miles, 1998 all from Brazil except *C. blenginii* which was instead described from Bolivia. In the next year, Vol (1999) described *C. leetzi* Vol, 1999 from Colombia.

Fukushima, Bertani & da Silva (2005) emphasised the importance of palpal bulb keel morphology in *Cyriocosmus*, described two new species *C. fernandoi* Fukushima, Bertani & da Silva, 2005 and *C. nogueiranetoi* Fukushima, Bertani & da Silva, 2005 and transferred *C. butantan* to the genus *Hapalopus* Ausserer, 1875. Kaderka (2007) described *C. perezmilesi* Kaderka, 2007, from Bolivia and two years later Pérez-Miles & Weinmann (2009) described a further two species, *C. pribiki* Pérez-Miles & Weinmann, 2009 and *C. rogerioi* Pérez-Miles & Weinmann 2009 from Peru. One year later, Kaderka (2010) described *C. venezuelensis* Kaderka, 2010, from Venezuela in 2010, and regarded *C. rogerioi* as a junior synonym of *C. pribiki*. Gabriel (2017) considered *Cyclosternum bicolor* (Schiapelli & Gerschman, 1945) as a senior synonym of *Cyriocosmus chicoi* based on the distinctive abdominal pattern and almost exacting dates, location, and collector for both species, thus creating the new combination *Cyriocosmus bicolor*.

The most recent taxonomic treatments of *Cyriocosmus* by Kaderka (2016, 2019) added eight new species: *C. aueri* Kaderka, 2016, *C. giganteus* Kaderka, 2016, *C. itayensis* Kaderka, 2016, *C. peruvianus* Kaderka, 2016, *C. foliatus*

Kaderka, 2019 and *C. paredesi* Kaderka, 2019 from Peru, *C. hoeferi* Kaderka, 2016 from Brazil and *C. nicholausgordoni* Kaderka, 2016 and *C. williamlamari* Kaderka, 2016 from Venezuela.

In this work, we report *C. elegans* from Guyana based on an adult male specimen from the collections of the Natural History Museum, London of which a complimentary description is given. The record presented herein represents the first for the genus in Guyana, expanding the known range of *Cyriocosmus*, which was already shown to be wide (Pérez-Miles, 1998; Fukushima *et al.*, 2005; Kaderka, 2010, 2016, 2019).

Materials and methods

The specimen was examined under a binocular microscope. Photographs of the habitus, palpal bulb and tibial apophysis were made using a Canon EOS 6D Mark II attached to a Leica MZ12.5 stereomicroscope, with images stacked using Helicon Focus software. Description style follows Sherwood *et al.* (2020). Abbreviations, Institutes: BMNH = Natural History Museum, London, United Kingdom. Structures: ALE = anterior lateral eyes, AME = anterior median eyes, PLE = posterior lateral eyes, PME = posterior median eyes; PB = prolateral branch (of tibial apophysis), RB = retrolateral branch (of tibial apophysis). Other: coll. = collector. Leg spine terminology follows Petrunkevitch (1925) with the modifications proposed by Bertani (2001): d = dorsal, v = ventral, r = retrolateral, p = prolateral. Palpal bulb terminology follows Bertani (2000): PA = paraembolic apophysis, PS = prolateral superior keel, TH = tegular heel; with an addition proposed by Gabriel & Sherwood (2020): PC = prolateral crease. Leg formula starts with the longest leg to the shortest in order of decreasing size, e.g. 4,1,2,3. Urticating setae terminology follows Cooke, Roth & Miller (1972) and Kaderka *et al.* (2019). All measurements are in mm.

Taxonomy

Cyriocosmus elegans (Simon, 1889)

Hapalopus elegans Simon, 1889: 210.

Cyriocosmus elegans: Simon (1903): 929.

Erythropticila plana Fischel, 1927: 72, figs. 13–15.

Cyriocosmus semifasciatus Mello-Leitão, 1939: 46.

Cyriocosmus elegans: Schiapelli & Gerschman (1945): 181, pl. VIII.

Cyriocosmus elegans: Schenkel (1953): 3, figs. 3a–c.

Chaetorrhombus semifasciatus: Bücherl, Timotheo & Lucas (1971): 126, figs. 42–43.

Cyriocosmus elegans: Schiapelli & Gerschman (1973): 67, figs. 9–15.

Cyriocosmus elegans: Pérez-Miles, (1998): 100.

Cyriocosmus elegans: Bertani (2000): 30, figs. 17–18.

Cyriocosmus elegans: Schmidt (2003): 158, figs. 322–324.

Cyriocosmus elegans: Fukushima, Bertani & da Silva (2005): 9, figs. 7–8, 27, 37, 43.

Cyriocosmus elegans: Fukushima, Nagahama & Bertani (2008): 408, fig. 11.

MATERIAL EXAMINED: 1 ♂ (BMNH(E) 2009-53), British Guiana [= Guyana], coll. G. Ravenscroft, 1950.

DIAGNOSIS: *Cyriocosmus elegans* can be distinguished from males of *C. sellatus*, *C. ritae*, *C. blenginii*, *C. fasciatus*, *C. fernandoi*, *C. chicoi*, and *C. nogueiranetoi* by having a short paraembolic apophysis (elongate in *C. sellatus*, *C. ritae*, *C. blenginii*, *C. fasciatus*, *C. fernandoi*, *C. chicoi*, and *C. nogueiranetoi*), from the males of *C. versicolor*, *C. bertae* and *C. pribiki* by possessing a laterally striped opisthosoma (lateral striping absent in *C. versicolor*, *C. bertae* and *C. pribiki*), from the males of *C. leetzi* and *C. venezuelensis* by the absence of a ventral abdominal band (present in *C. leetzi* and *C. venezuelensis*), from the males of *C. aueri*, *C. peruvianus*, *C. itayensis*, *C. giganteus*, *C. foliatus* and *C. paredesi* by the presence of black colouration to the caput (carapace uniform brown in *C. aueri*, *C. peruvianus*, *C. itayensis*, *C. giganteus*, *C. foliatus* and *C. paredesi*), from the male of *C. hoeferi* by absence of white setae around edges of the carapace (present in *C. hoeferi*), from the male of *C. nicholausgordoni* by the comparatively larger PA (PA small, indistinct, in *C. nicholausgordoni*), from the male of *C. perezmilei* by having the cephalic area darker than the thoracic area (cephalic and thoracic areas homogeneously coloured in *C. perezmilei*) and further from the male of *C. fasciatus* by the heart-shaped patch on the opisthosoma (patch not heart-shaped in *C. fasciatus*). For diagnosis of females, see Fukushima, Bertani & da Silva (2005) and Kaderka (2016, 2019).

COMPLIMENTARY DESCRIPTION OF NON-TYPE MALE (BMNH): Total length including chelicerae: 11.5. Carapace: length 5.1, width 4.3. Caput: slightly raised. Ocular tubercle: raised, length 0.6, width 0.8. Eyes: ALE > AME, AME > PLE, PLE > PME, anterior eye row procurved, posterior row slightly recurved. Clypeus: narrow; clypeal fringe: long. Fo-

vea: deep, transverse. Chelicera: length 2.2, width 1.1. Abdomen: length 4.9, width 2.8. Maxilla with 80–100 cuspules covering approximately 65% of the proximal edge. Labium: length 0.7, width 1.0, with 29 cuspules mostly separated by 0.5–1.5 × the width of a cuspule. Labio-sternal mounds: joined. Sternum: length 2.4, width 2.4, with three pairs of sigilla. Tarsus I divided by line of setae, tarsi II–IV divided by band of setae. Metatarsal scopulae: I 85%; II 75%; III 41%; IV ascopulate. Lengths of legs and palpal segments: see table I, leg formula: 4,1,2,3. Spination: femur I d 0–0–1, II d 0–0–1, III d 0–0–1, IV d 0–0–1, palp d 0–0–1, tibia I v 0–0–1, II v 0–0–2, III d 0–3–0, v 0–2–2 (2 apical), IV d 1–0–2, v 2–2–2 (apical), metatarsus I v 0–0–1, II v 1–0–2, III d 2–0–2, v 2–1–3 (apical), IV d 2–2–2, v 3–1–3 (apical). Tibia I with paired tibial apophysis, RB longer than PB; PB with one short and developed megaspine with a pointed apex, RB with one short and developed megaspine with a rounded apex (Figs. 4–6). Femur III: incrassate. Palpal tibia: slightly incrassate, with two weakly developed retrolateral apophyses (Fig. 7). Palpal cymbium: unmodified. Metatarsus I: slightly bent, otherwise unmodified. Posterior lateral spinnerets with three segments, basal 0.7, median 0.5, digitiform apical 0.9. Lateral median spinnerets with one segment. Palpal bulb with weakly developed TH; embolus of moderate length, strongly curved and thin; PS weakly developed, PA present, short, PC present, constricted in anterior half (Figs. 8–11). Urticating setae: Type III present dorsally. Colour: carapace with caput dark black, the chelicerae, prolateral and lateral edge of the carapace as dark as caput (Fig. 1), abdomen with distinct pattern (Figs. 1–3), legs with white stripe along the patella to tarsus of legs and palp.

Table I: *Cyriocosmus elegans* (Simon, 1889) non-type male (BMNH(E) 2009-53), podomere lengths.

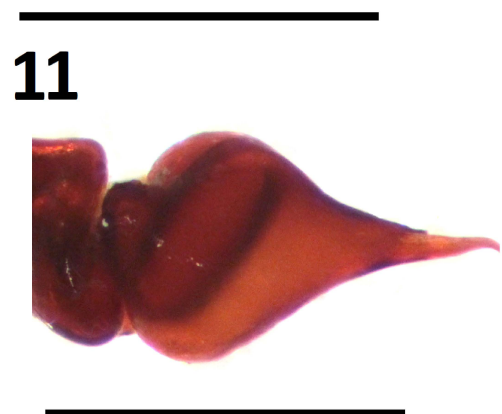
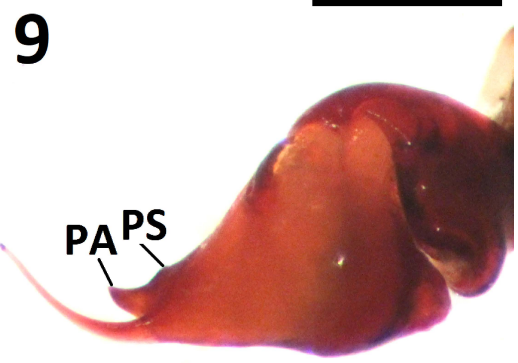
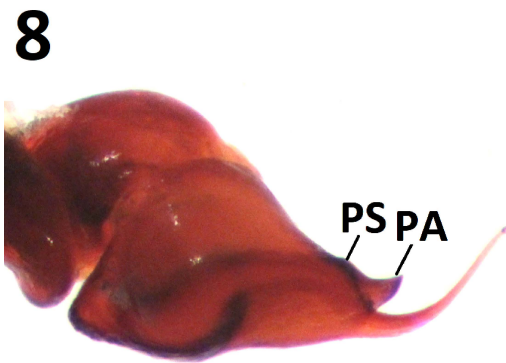
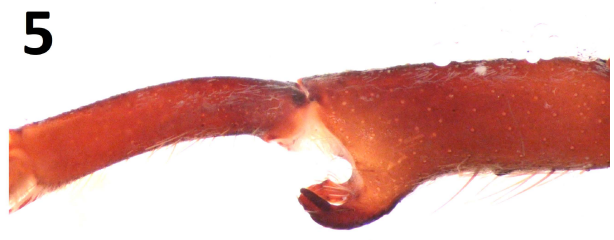
	I	II	III	IV	Palp
Femur	4.0	3.8	3.1	4.2	2.4
Patella	2.3	2.1	1.7	2	1.5
Tibia	2.6	2.3	1.8	3.2	1.8
Metatarsus	2.6	2.1	2.2	3.8	–
Tarsus	1.8	1.8	1.7	2.2	0.8
Total	13.3	12.1	10.5	15.4	5.7

DISTRIBUTION: Guyana, Venezuela and Trinidad and Tobago

Acknowledgements

We would like to thank Jan Beccaloni (BMNH) for allowing access to the collections. DS also thanks Richard Turney (BMNH) for allowing use of facilities in the Sackler Biodiversity Imaging Laboratory. We thank Radan Kaderka (Czech Republic) and an anonymous reviewer whose comments improved the manuscript.

► **Figs. 1–11:** *Cyriocosmus elegans* (Simon, 1889) non-type male (BMNH(E) 2009-53), **1–3** habitus of preserved specimen, **1** dorsal view, **2** ventral view, **3** lateral view; **4–6** tibia and metatarsus I (left hand side) detailing tibial apophysis, **4** prolateral view, **5** retrolateral view, **6** ventral view; **7** palpal tibia, dorso-lateral view; **8–11** palpal bulb (left hand side), **8** prolateral view, **9** retrolateral view, **10** dorsal view, **11** ventral view. Scale lines = 1mm.



References

- AUSSERER, A. 1875. Zweiter Beitrag zur Kenntniss der Arachniden-Familie der Territelariae Thorell (Mygalidae Autor). *Verhandlungen der Kaiserlich-Königlichen Zoologisch-Botanischen Gesellschaft in Wien*, **25**: 125–206.
- BERTANI, R. 2000. Male palpal bulbs and homologous features in Theraphosinae (Araneae, Theraphosidae). *Journal of Arachnology*, **28**: 29–42.
- BERTANI, R. 2001. Revision, cladistic analysis, and zoogeography of *Vitalius*, *Nhandu*, and *Proshapalopus*; with notes on other theraphosine genera (Araneae, Theraphosidae). *Arquivos de Zoologia*, **36**: 265–356.
- BÜCHERL, W., TIMOTHEO DA COSTA, A. & LUCAS, S. 1971. Revisão de alguns tipos de aranhas caranguejeiras (Orthognatha) estabelecidos por Cândido de Mello-Leitão e depositados no Museu Nacional do Rio. *Memórias do Instituto Butantan*, **35**: 117–138.
- COOKE, J. A. L., ROTH, V. D. & MILLER, F. H. 1972. The urticating hairs of theraphosid spiders. *American Museum Novitates*, **2498**: 1–43.
- FISCHEL, W. 1927. Über Sudamerikanische Aviculariiden. *Zoologischer Anzeiger*, **74**: 59–74.
- FUKUSHIMA, C. S., BERTANI, R. & DA SILVA, JR., P. I. 2005. Revision of *Cyriocosmus* Simon, 1903, with notes on the genus *Hapalopus* Ausserer, 1875 (Araneae: Theraphosidae). *Zootaxa*, **846**: 1–31.
- FUKUSHIMA, C. S., NAGAHAMA, R. H. & BERTANI, R. 2008. The identity of *Mygale brunnipes* C.L. Koch 1842 (Araneae, Theraphosidae), with a redescription of the species and the description of a new genus. *Journal of Arachnology*, **36**: 402–410.
- GABRIEL, R. 2017. The revised taxonomical status of *Cyclosternum bicolor* (Schiapelli & Gerschman, 1945) (Araneae: Theraphosidae). *Journal of the British Tarantula Society*, **32**(1): 10–12.
- GABRIEL, R. & SHERWOOD, D. 2020. Revised taxonomic placement of *Pseudhapalopus* Strand, 1907, with notes on some related taxa (Araneae: Theraphosidae). *Arachnology*, **18**(4): 301–316.
- KADERKA, R. 2007. *Cyriocosmus perezmilei* sp. n. from Bolivia (Araneae: Theraphosidae: Theraphosinae). *Revista Ibérica de Aracnología*, **14**: 63–68.*
- KADERKA, R. 2010. *Cyriocosmus venezuelensis* sp. n., from Venezuela (Araneae: Theraphosidae: Theraphosinae). *Revista Ibérica de Aracnología*, **18**: 87–96.*
- KADERKA, R. 2016. The Neotropical genus *Cyriocosmus* Simon, 1903 and new species from Peru, Brazil and Venezuela (Araneae: Theraphosidae: Theraphosinae). *Journal of Natural History*, **50**(7–8): 393–465.
- KADERKA, R. 2019. The genus *Cyriocosmus* Simon 1903 and two new species from Peru (Araneae: Theraphosidae: Theraphosinae). *Revista Peruana de Biología*, **26**(4): 543–550.
- KADERKA, R., BULANTOVÁ, J., HENEGER, P. & ŘEZÁČ, M. 2019. Urticating setae of tarantulas (Araneae: Theraphosidae): morphology, revision of typology and terminology and implications for taxonomy. *PLoS One*, **14**(11, e0224384): 1–43.
- MELLO-LEITÃO, C. F. de 1930. Aranhas do Cuminá. *Arquivos do Museu Nacional do Rio de Janeiro*, **32**: 51–75.
- MELLO-LEITÃO, C. F. de 1939. Araignées américaines du Musée d'histoire naturelle de Bâle. *Revue Suisse de Zoologie*, **46**: 43–93.
- PÉREZ-MILES, F. 1998. Revision and phylogenetic analysis of the neotropical genus *Cyriocosmus* Simon, 1903 (Araneae, Theraphosidae). *Bulletin of the British Arachnological Society*, **11**: 95–103.
- PÉREZ-MILES, F. & WEINMANN, D. 2009. Two new species of *Cyriocosmus* Simon, 1903, from Peru and the highest altitude record for the genus (Araneae, Theraphosidae, Theraphosinae). *Revista Ibérica de Aracnología*, **17**: 29–35.*
- PETRUNKEVITCH, A. 1925. Arachnida from Panama. *Transactions of the Connecticut Academy of Arts and Sciences*, **27**: 51–248.
- SCHENKEL, E. 1953. Bericht über einige Spinnentiere aus Venezuela. *Verhandlungen der Naturforschenden Gesellschaft in Basel*, **64**: 1–57.
- SCHIAPELLI, R. D. & GERSCHMAN, B. S. 1945. Parte descriptiva. In: Vellard, J., R. D. Schiapelli & B. S. Gerschman (eds.) Arañas sudamericanas coleccionadas por el Doctor J. Vellard. I. Theraphosidae nuevas o poco conocidas. *Acta Zoologica Lilloana*, **3**: 165–213.
- SCHIAPELLI, R. D. & GERSCHMAN de P., B. S. 1973. Género *Cyriocosmus* Simon 1903 (Araneae, Theraphosidae). *Physis B. Aires (C)*, **32**: 61–70.
- SCHMIDT, G. 2003. *Die Vogelspinnen: Eine weltweite Übersicht*. Neue Brehm-Bücherei, Hohenwarleben, 383 pp.
- SHERWOOD, D., FABIANO-DA-SILVA, W., GABRIEL, R. & LUCAS, S. M. 2020. Redescription of *Nesipelma insulare* Schmidt & Kovařík, 1996 with a revised generic diagnosis for *Nesipelma* Schmidt & Kovařík, 1996 and a transfer from *Cyrtopholis* Simon, 1892 (Araneae: Theraphosidae). *Arachnology*, **18**(5): 462–467.
- SIMON, E. 1889. Arachnides. In: Voyage de M. E. Simon au Venezuela (décembre 1887-avril 1888). 4e Mémoire. *Annales de la Société Entomologique de France*, **6**(9): 169–220.
- SIMON, E. 1903. *Histoire naturelle des araignées. Deuxième édition, tome second*. Roret, Paris, pp. 669–1080.

* Reference available at www.sea-entomologia.org