

## Revision and phylogenetic analysis of the neotropical genus *Cyriocosmus* Simon, 1903 (Araneae, Theraphosidae)

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### Summary

On the basis of the study of all types and additional material from Argentina, Bolivia, Brazil, Peru, Trinidad & Tobago, and Venezuela the genus *Cyriocosmus* Simon, 1903 is revised and a phylogenetic analysis is made. As a result of this study five new species are described: *Cyriocosmus butantan*, *C. chicoi*, *C. ritae*, *C. bertae* and *C. blenginii*. *Cyriocosmus nigriventris* Mello-Leitão, 1939 is transferred to *Metriopelma*. *Erythropticila plana* Fischel, 1927 is synonymised with *C. elegans* (Simon, 1889). The eight species included in *Cyriocosmus* are diagnosed and keyed. A data set of nine taxa and 11 characters was analysed. The four most parsimonious trees found for the weighted data, and the strict consensus tree, are presented.

### Introduction

In 1889 Simon described *Hapalopus sellatus* Simon (1889: 218) from the upper Amazon and *Hapalopus elegans* Simon (1889: 210) from the Orinoco region, Venezuela. The genus *Cyriocosmus* was established later by Simon (1903: 929) for both species, with *Cyriocosmus sellatus* as type species. He based this genus mainly on the presence of a bifid apophysis on the palpal bulb, unique in Theraphosidae and shared by *C. sellatus* and *C. elegans*. Mello-Leitão described two additional species, *C. nigriventris* Mello-Leitão (1939: 44) from Falcon, Venezuela and *C. semifasciatus* Mello-Leitão (1939: 46) from Trinidad. Schiapelli & Gerschman (1973) studied *Cyriocosmus* but were unable to examine the types of *C. nigriventris* or *C. semifasciatus*. These authors transferred *Cyclosternum versicolor* Simon (1897: 3), a species from Paraguay and northern Argentina, to *Cyriocosmus*; they also synonymised *Pseudohomoeomma fasciatum* Mello-Leitão (1930: 57) from Cuminá, Brazil, and *C. semifasciatus*, with *C. elegans*. Raven (1985) synonymised *Erythropticila* Fischel, 1927 from Venezuela with *Cyriocosmus*.

On the basis of the study of all types and additional material from Argentina, Bolivia, Brazil, Peru, Trinidad & Tobago, and Venezuela the genus *Cyriocosmus* is here revised, and five new species are described: *Cyriocosmus butantan*, *C. chicoi*, *C. ritae*, *C. bertae* and *C. blenginii*. *Cyriocosmus nigriventris* is transferred to *Metriopelma*, new combination. *Erythropticila plana* Fischel, 1927 is synonymised with *C. elegans*. The genus *Cyriocosmus* now comprises eight species from tropical South America (including northern Argentina, Brazil, Bolivia,

Paraguay, Peru, Venezuela and Trinidad) which are here diagnosed and keyed. A phylogenetic analysis of the species of *Cyriocosmus* was carried out and four most parsimonious trees for weighted data were found, with maximum fit of 51.0 (57%) and length of 18 steps. These trees and the strict consensus tree are presented.

### Material and methods

**Abbreviations:** AME=anterior median eyes, ALE=anterior lateral eyes, PME=posterior median eyes, PLE=posterior lateral eyes, OQ=ocular quad-angle (including lateral eyes); d=dorsal, p=prolateral, r=retrolateral, v=ventral; AMNH=American Museum of Natural History, New York; BMNH=Natural History Museum, London; IB=Instituto Butantan, São Paulo; MACN=Museo Argentino de Ciencias Naturales, Buenos Aires; MNHN=Muséum National d'Histoire Naturelle, Paris; NMBS=Naturhistorisches Museum, Basel, Switzerland; SMNK=Staatliches Museum für Naturkunde, Karlsruhe, Germany. All measurements are in mm.

**Taxa:** Eight species of *Cyriocosmus* considered in the present revision are included as terminal taxa for the analysis. The genera *Homoeomma* Ausserer, *Paraphysa* Simon, *Grammostola* Simon (as *Phrixotrichus* Simon) and *Plesiopelma* Pocock, included in the clade 43 of Pérez-Miles *et al.* (1996) were used as outgroup.

**Characters:** The character distribution is shown in Table 7. Multistate characters were categorised as non-additive. (0) Embolus (identified on the basis of positional and comparison criteria, see Figs. 4, 10, 16, 22, 26; the spermophor is not clearly visible by direct observation): long=0, short=1. (1) Paraembolic apophysis (identified in the same way as embolus): absent=0, short=1, medium=2, long=3. (2) Retrolateral palpal tibia: without spiniform features=0, with a field of spiniform hairs=1, with megaspines=2. (3) Retrolateral cymbium: without a field of spines=0, with a field of spines=1. (4) Tibia I: not incrassate=0, incrassate=1. (5) Labial cuspules: numerous=0, reduced=1. (6) Dorsal abdominal pattern: normal (more or less homogeneous)=0, distinct (striped)=1. (7) Ventral abdominal pattern: normal (more or less homogeneous)=0, distinct (with a band)=1. (8) Paraembolic apophysis: with normal apex (Figs. 10, 16, 22, 26)=0, with wide apex (Fig. 4)=1. (9) Tarsal scopulae: divided=0, entire=1. (10) Tibial apophysis of leg I: normal (two branches with base not widely fused, Figs. 12, 19, 24, 27)=0, distinct (base widely fused, Fig. 7)=1.

**Computer assisted methods:** A data matrix of 9 taxa (including the outgroup) and 11 characters (Table 7) was analysed. Cladistic analysis was carried out using an Ms-Dos computer program, Pee-Wee 2.5.1 (Parsimony Implied Weights), developed by Goloboff (1993a,b). To find the most parsimonious (with high fit) trees the command "mult\*15" was used to randomise the order of the taxa, create a weighted Wagner tree, and submit the tree to branch-swapping using tree-bisection reconnection processes. Up to 20 trees are retained in the initial stage of the search. The process is repeated up to

15 times (the program abandons a replication if a tree with a superior fit is detected) (see Goloboff, 1993).

### Genus *Cyriocosmus* Simon, 1903

*Cyriocosmus* Simon, 1903: 924; Mello-Leitão, 1923: 156; 1939: 46 (nec *C. nigriventris*); Bonnet, 1956: 1340; Schiapelli & Gerschman, 1973: 64.

*Pseudohomoemma* Mello-Leitão, 1930: 57; Bucherl, da Costa & Lucas, 1971: 125; Schiapelli & Gerschman, 1973: 61.

*Erythroipoicila* Fischel, 1927: 72; Raven, 1985: 152.

*Type species: Cyriocosmus sellatus* (Simon, 1889).

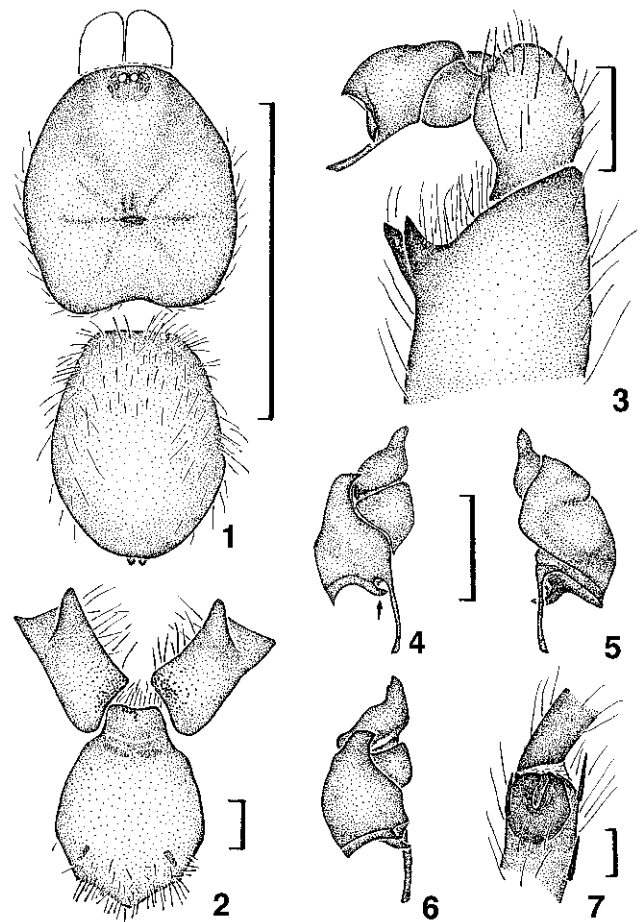
*Diagnosis:* Differs from all other genera of Theraphosinae by the presence of a paraembolic apophysis on the palpal bulb (Figs. 4, 10, 16, 22, 26) and a retrolateral process on the male palpal tibia. Females have two spiral spermathecae with a caliciform fundus (Fig. 13). Since these characters are known only from this genus within the Theraphosinae, they are interpreted as synapomorphies which support the monophyly of *Cyriocosmus*.

### Key to species

1. Striped pattern on dorsal abdomen (Figs. 8, 9, 14, 25).....2
- No such pattern on dorsal abdomen .....5
2. Ventral surface of abdomen with a longitudinal dark band (Fig. 15), females unknown. *C. ritae* sp.n.
- No such pattern on ventral abdomen .....3
3. Embolus and paraembolic apophysis of palpal bulb of very different length (see Schiapelli & Gerschman, 1973: figs. 9–10) ..... *C. elegans* (Simon)
- Embolus and paraembolic apophysis not very different in length .....4
4. Male palpal tibiae with a retrolateral field of spinose hairs, tarsal scopula entire, palpal bulb as in Fig. 26, females unknown ..... *C. blenginii* sp.n.
- Male palpal tibiae without such spinose hairs, tarsal scopula divided, palpal bulb as in Figs. 10–11 ..... *C. chicoi* sp.n.
5. Male palpal tibiae with two retrolateral megaspines (Fig. 3), females unknown ..... *C. butantan* sp.n.
- Male palpal tibiae without such megaspines .....6
6. Embolus and paraembolic apophysis of palpal bulb similar in length (see Schiapelli & Gerschman, 1973: figs. 1–2) ..... *C. sellatus* (Simon)
- Embolus and paraembolic apophysis of different length .....7
7. Palpal bulb with a wide keel on embolus (see Schiapelli & Gerschman, 1973: figs. 7–8) ..... *C. versicolor* (Simon)
- Palpal bulb without a wide keel on embolus (Figs. 22–23), females unknown ..... *C. bertae* sp.n.

### *Cyriocosmus butantan*, new species (Figs. 1–7)

*Types:* Holotype ♂ from Balbina, Presidente Figueredo, Amazonas, Brazil (IB 65) and 3♂ paratypes (IB 4948) from same locality, 13 January 1988, team of collectors from IB, deposited in IB.



Figs. 1–7: *Cyriocosmus butantan* sp.n., holotype male. **1** Body, dorsal view; **2** Sternum, labium and palpal coxae, ventral view; **3** Distal part of left palp, retrolateral view showing tibial megaspines; **4** Left palpal bulb, retrolateral view (arrow indicates the small embolus); **5** Palpal bulb, prolateral view; **6** Palpal bulb, ventral view; **7** Tibial apophysis of leg I, ventral view. Scale lines=10 mm (1), 1 mm (2–7).

*Etymology:* The species is named in recognition of the important work of the Brazilian Instituto Butantan (São Paulo) for New World arachnology.

*Diagnosis:* Differs from all other *Cyriocosmus* species by the presence of a palpal tibial apophysis ending in two megaspines (Fig. 3), in the reduced number of labial cuspules (Fig. 2) and in the palpal bulb morphology (Figs. 4–6).

*Male:* Total length, not including chelicerae or spinnerets, 14.4. Cephalothorax length 6.80, width 6.30. Anterior eye row slightly procurved, posterior row slightly recurved. Eye sizes and interdistances: AME 0.38, ALE 0.30, PME 0.25, PLE 0.25; AME-AME 0.10, AME-ALE 0.05, PME-PME 0.60, PME-PLE 0.05, ALE-PLE 0.10; OQ length 0.70, width 1.05; clypeus 0.15 high. Fovea transverse, straight, width 0.70. Labium length 0.83, width 1.26, with 7 cuspules, maxillae with 67 cuspules. Sternum length 2.87, post-sternal sigilla small, narrow. Chelicerae with 9 teeth on promargin. Tarsi I–IV densely scopulate, scopulae undivided. Metatarsi ascopulate. Palpal tibia with prolateroventral, distal, bi-spined apophysis (Fig. 3). Tibia of leg I with prolateral double apophysis (Fig. 7). Palpal bulb with long paraembolic apophysis and short embolus (Figs. 4–6).

	I	II	III	IV	Palp
Femur	5.7	5.3	5.0	6.0	3.7
Patella	3.3	3.2	2.7	2.6	2.2
Tibia	4.3	3.7	3.3	5.1	3.3
Metatarsus	3.5	4.1	5.0	7.6	—
Tarsus	2.8	2.7	2.9	3.5	1.4

Table 1: *Cyriocosmus butantan* sp.n. Male holotype, length of leg and palpal segments.

Length of leg and palpal segments in Table 1. Spination: femora I–IV and palp, 0; patellae I–III and palp, 0; IV 1p; tibiae I 1r, 2v; II 1p, 3v; III 2p, 2r, 4v; IV 3p, 3r, 7v; palp 3p, 2v; metatarsi I 2p, 1r, 5v; II 1p, 4v; III 2p, 3r, 3d, 6v; IV 3p, 5r, 10d, 8v; tarsi I–IV and palp, 0. Cephalothorax and legs dark to reddish brown. Abdomen light brown. Type IV urticating hairs present.

*Female*: Unknown.

*Distribution*: Known only from Balbina, Amazonas, Brazil.

### *Cyriocosmus chicoi*, new species (Figs. 8–13)

*Types*: Holotype ♀ from Samuel, Porto Velho, Rondonia, Brazil (IB 58.129-50) (without further information). Paratypes: 1♂ (IB 58.103.20) and 1♀ (IB 58.103-19) from same locality, 9 February 1988, team of collectors from IB, deposited in IB; 1♀ (MACN 6523) from Brazil, Rio Pimenta Bueno, Vellard 1936, deposited in MACN.

*Etymology*: The specific name is a patronym (taken from the nickname) in honour of “Chico” Mendes (Oswaldo Teixeira Mendes Neto), a Brazilian martyr in the defence of the Amazonian rainforest.

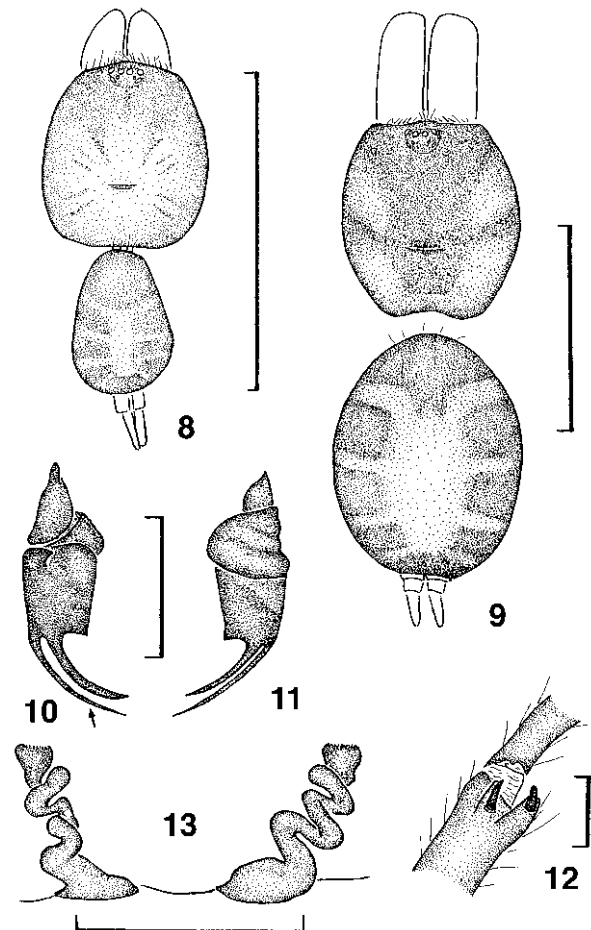
*Diagnosis*: Differs from most *Cyriocosmus* species by the dorsal abdominal pattern with four lateral clear stripes (of the same colour as the ventral surface of the abdomen) and a central dorsal clear patch (Figs. 8–9), and from *C. ritae* by the palpal tibia of males not being incrassate, by the homogeneous coloration of the ventral abdomen (with a longitudinal band in *C. ritae*) and in the palpal bulb morphology (Figs. 10–11). *C. elegans* has an abdominal pattern similar to *C. chicoi* but with three lateral stripes and a different palpal bulb morphology; *C. sellatus* and *C. versicolor* lack a striped abdomen.

*Female*: Total length, not including chelicerae or spinnerets, 23.70. Cephalothorax length 9.40, width

	I	II	III	IV	Palp
Fe	6.4–7.0 (6.7 ± 0.3)	5.7–6.5 (6.2 ± 0.4)	5.2–5.8 (5.6 ± 0.3)	6.9–7.5 (7.2 ± 0.3)	4.5–5.0 (4.8 ± 0.3)
Pa	3.7–4.5 (4.1 ± 0.4)	3.2–4.0 (3.6 ± 0.4)	3.2–3.5 (3.4 ± 0.2)	3.5–4.0 (3.8 ± 0.3)	3.0–3.5 (3.2 ± 0.3)
Ti	4.4–4.6 (4.5 ± 0.1)	3.7–4.1 (3.9 ± 0.2)	3.0–3.4 (3.2 ± 0.2)	5.2–5.5 (5.4 ± 0.2)	2.8–3.6 (3.3 ± 0.5)
Mt	3.7–4.2 (4.0 ± 0.3)	3.7–4.3 (4.0 ± 0.3)	4.0–4.5 (4.3 ± 0.3)	6.0–7.2 (6.6 ± 0.6)	—
Ta	2.3–3.1 (2.8 ± 0.4)	2.3–3.1 (2.8 ± 0.4)	2.5–3.2 (2.9 ± 0.4)	3.0–3.5 (3.2 ± 0.2)	2.7–3.0 (2.9 ± 0.2)

Table 2: *Cyriocosmus chicoi* sp. n. Three females including the holotype, length of leg and palpal segments. Range above, mean ± standard deviation below.

9.00. Anterior eye row straight to slightly procurved, posterior row slightly recurved. Eye sizes and inter-distances: AME 0.25, ALE 0.38, PME 0.27, PLE 0.30; AME-AME 0.20, AME-ALE 0.20, PME-PME 0.67, PME-PLE 0.07, ALE-PLE 0.13; OQ length 0.83, width 1.4; clypeus 0.17 high. Fovea transverse, straight, width 1.20. Labium length 1.25, width 1.82, with 52 cuspules, maxillae with approximately 173 cuspules. Sternum length 4.69, post-sternal sigilla oval, submarginal. Chelicerae with 9 teeth on promargin, 6 smaller teeth retrolaterally to that row. Tarsi I–IV densely scopulate, scopulae of tarsi I–II undivided, of III divided by narrow stripe of longer, thicker setae, of IV widely divided by such setae. Metatarsi I ascopulate, II scopulate on distal half, III–IV apically scopulate. Coxae I–II with spiniform setae on proteral face. Length of leg and palpal segments in Table 2. Spination: femora I–IV and palp, 0; patellae I–IV and palp, 0; tibiae I 0; II 1v; III 3p, 1r, 2v; IV 2r, 2v; palp 3v; metatarsi I 1v; II 1v; III 3p, 3r, 5v; IV 5p, 3r, 4v, 3d; tarsi I–IV and palp, 0. Cephalothorax and legs reddish brown, foveal and cephalic zones darker; femora to tarsi darker than coxae and trochanters. Abdomen dark brown with four lateral-radial clearer stripes (of same colour as ventral



Figs. 8–13: *Cyriocosmus chicoi* sp.n., male and female types from Rondonia. **8** Male, body, dorsal view; **9** Female, body, dorsal view; **10** Male left palpal bulb, retrolateral view (arrow shows embolus); **11** Palpal bulb, proteral view; **12** Male tibial apophysis of left leg I, ventral-proteral view; **13** Female spermathecae, dorsal view. Scale lines = 10 mm (8–9), 1 mm (10–13).

	I	II	III	IV	Palp
Femur	5.2	4.7	4.0	5.5	3.1
Patella	3.0	2.6	2.2	2.5	2.0
Tibia	3.8	3.2	2.6	4.5	2.8
Metatarsus	3.5	3.3	3.6	5.5	—
Tarsus	2.8	2.5	2.3	2.7	1.0

Table 3: *Cyriocosmus chicoi* sp.n. Male paratype, length of leg and palpal segments.

abdomen). Central dorsal patch of abdomen yellow, with type IV urticating hairs. Spermathecae as in Fig. 13.

**Male:** Total length, not including chelicerae or spinnerets, 12.1. Cephalothorax length 5.60, width 5.20. Anterior eye row straight, posterior row slightly recurved. Eye sizes and interdistances: AME 0.25, ALE 0.32, PME 0.15, PLE 0.20; AME-AME 0.10, AME-ALE 0.05, PME-PME 0.48, PME-PLE 0.05, ALE-PLE 0.10; OQ length 0.50, width 1.10; clypeus 0.20 high. Fovea transverse, straight, width 0.75. Labium length 0.90, width 1.20, with 67 cuspules, maxillae with 227 cuspules. Sternum length 2.50, post-sternal sigilla small, oval. Chelicerae with 7 teeth on promargin. Tarsi I–IV densely scopulate, scopulae I–II undivided, III divided by narrow stripe of longer hairs, IV divided by wide stripe of such hairs. Metatarsi I–IV scopulate in distal third. Tibia I with prolateroventral, distal double apophysis (Fig. 12). Palpal bulb with long paraembolic apophysis and long embolus (Figs. 10–11). Length of leg and palpal segments in Table 3. Spination: femora I–II and palp, 0; III 1d; IV 1d; patellae I–IV and palp, 0; tibiae I 1p, 5v; II 2p, 7v; III 2p, 2r, 11v; IV 2d, 2p, 8v; palp 1p; metatarsi I 1v; II 1ld, 2v; III 4d, 3p, 1r, 8v; IV 4d, 1p, 8v; tarsi I–IV and palp, 0. Cephalothorax, coxae and trochanters clear brown, rest of legs dark brown. Abdomen dorsally dark brown with central patch and 4 radial-lateral stripes clear brown (Fig. 8), ventrally light brown. Type IV urticating hairs present.

**Distribution:** Samuel, Porto Velho, Rondonia, and Río Pimenta Bueno, Guaporé, Brazil.

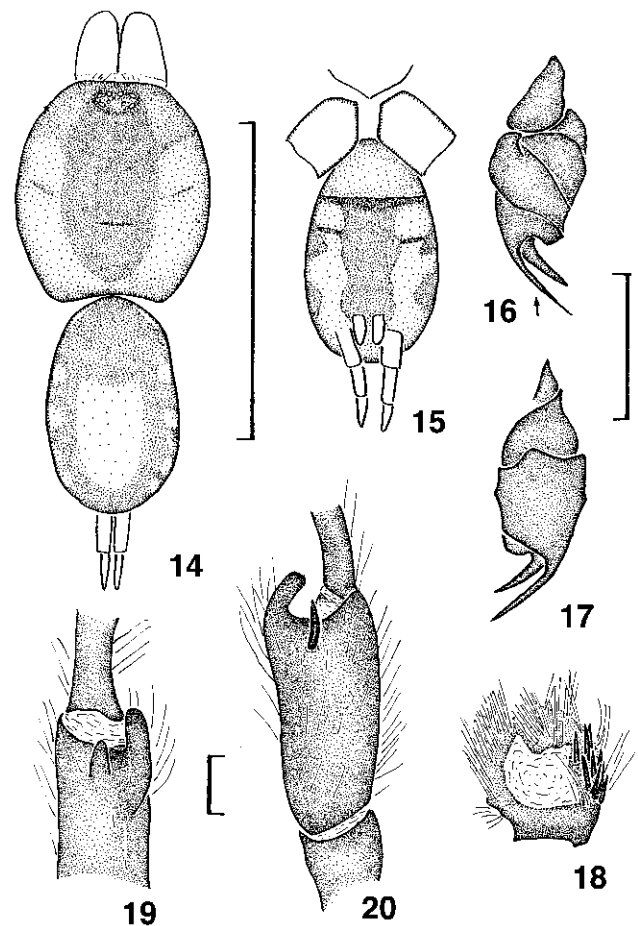
#### *Cyriocosmus ritae*, new species (Figs. 14–20)

**Type:** Holotype ♂ from Humaitá, Rio Branco, Acre, Brazil (IB 4951), 11 April 1996, team of collectors from IB/SMNK, deposited in IB.

**Etymology:** The specific name is a patronym in honour of the famous Argentinian arachnologist Rita Delia Schiapelli (1906–1976), together with B. S. Gerschman de Pikelin one of the Latin American pioneers in mygalomorph taxonomy.

	I	II	III	IV	Palp
Femur	5.7	5.2	4.4	5.7	3.0
Patella	3.1	2.8	3.4	2.7	1.9
Tibia	3.8	3.5	2.6	4.6	2.1
Metatarsus	5.8	4.1	3.7	5.8	—
Tarsus	2.7	2.3	2.3	2.2	1.5

Table 4: *Cyriocosmus ritae* sp.n. Male holotype, length of leg and palpal segments.



Figs. 14–20: *Cyriocosmus ritae* sp.n., holotype male. **14** Body, dorsal view; **15** Abdominal pattern, ventral view; **16** Left palpal bulb, retrolateral view (arrow shows embolus); **17** Palpal bulb, prolateral view; **18** Left cymbium, ventral view, showing retrolateral field of spines; **19** Tibial apophysis of left leg I, ventral view; **20** Tibia I, retrolateral view. Scale lines = 10 mm (14–15), 1 mm (16–20).

**Diagnosis:** Differs from all other *Cyriocosmus* species by the very incrassate tibiae I (Fig. 20), the palpal bulb morphology (Figs. 16–17), the spinose retrolateral area of the palpal cymbium (Fig. 18), and by the ventral pattern of the abdomen (Fig. 15).

**Male:** Total length, not including chelicerae or spinnerets, 14.2. Cephalothorax length 6.9, width 6.2. Anterior eye row slightly procurved, posterior row slightly recurved. Eye sizes and interdistances: AME 0.30, ALE 0.40, PME 0.20, PLE 0.25; AME-AME 0.13, AME-ALE 0.08, PME-PME 0.60, PME-PLE 0.03, ALE-PLE 0.10; OQ length 0.63, width 1.25; clypeus 0.15 high. Fovea transverse, straight, width 0.70. Labium length 0.95, width 1.23, with 95 cuspules, maxillae with 160–200 cuspules. Sternum length 2.9, posterior sternal sigilla small, round. Chelicerae with 8 teeth on promargin. Tarsi I–IV densely scopulate, scopulae I–II divided by thin stripe of longer conical hairs, III–IV by wide stripe of such hairs. Metatarsi scopulate on distal portion. Tibia I very incrassate, with two apophyses (Fig. 19). Palpal cymbium with retrolateral spinose area (Fig. 18). Palpal tibiae with retrolateral field of spini-form hairs. Palpal bulb with medium paraembolic apophysis and long embolus (Figs. 16–17). Length of leg

and palpal segments in Table 4. Spination: femora I–IV and palp, 0; patellae I–IV and palp, 0; tibiae I 1v; II 1p, 3v; III 2p, 1r, 5v; IV 2p, 3r, 3v; metatarsi I 0; II 1p, 2v; III 2p, 2r, 6v; IV 2p, 2r, 7v. Cephalothorax reddish brown with longitudinal subtriangular hairy patch dark brown. Coxae and trochanters of legs and palps reddish brown; patellae and distal ends of metatarsi light brown, as also tibiae of palps and cymbia; rest of legs and palps dark brown. Abdomen dark brown with central oval patch reddish brown (this field includes type IV urticating hairs) and 4 lateral stripes light brown (Fig. 14). Ventral side of abdomen light brown with longitudinal dark band, as in Fig. 15.

*Female:* Unknown.

*Other material examined:* Rio Callería, Colonia, Peru, 10–30 September 1961 (two juvs.), Boris Malkin (deposited at AMNH).

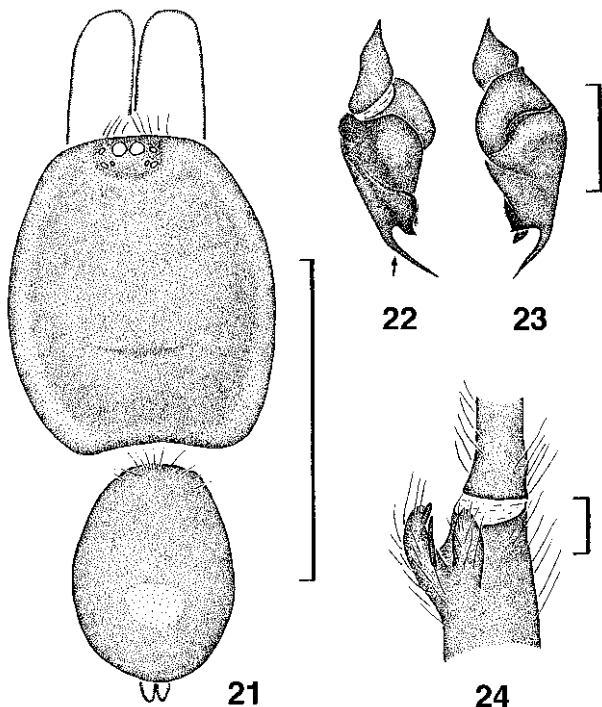
*Distribution:* Humaitá, Rio Branco, Acre, Brazil and Río Callería, Colonia, Peru.

#### *Cyriocosmus bertae*, new species (Figs. 21–24)

*Type:* Holotype ♂ from Rio Branco, Acre, Brazil (IB 4950), 22 October 1995, S. Braga, deposited in IB.

*Etymology:* The specific name is a patronym in honour of one of the greatest Latin American mygalomorph taxonomists, the Argentinian arachnologist Berta S. Gerschman de Pikelin (1905–1977).

*Diagnosis:* Differs from all other species of *Cyriocosmus* by the palpal bulb morphology (Figs. 22–23) in combination with its homogeneous coloration and by tibia I not being incrassate.



Figs. 21–24: *Cyriocosmus bertae* sp.n., holotype male. **21** Body, dorsal view; **22** Left palpal bulb, retrolateral view (arrow shows embolus); **23** Palpal bulb, prolateral view; **24** Tibial apophysis of right leg I, ventral-prolateral view. Scale lines = 10 mm (21), 1 mm (22–24).

	I	II	III	IV	Palp
<b>Femur</b>	7.6	6.5	5.8	7.6	4.8
<b>Patella</b>	4.8	4.3	3.5	4.1	2.9
<b>Tibia</b>	5.7	4.3	3.5	5.9	3.7
<b>Metatarsus</b>	5.8	4.5	4.0	7.0	—
<b>Tarsus</b>	4.0	3.8	3.5	4.1	1.8

Table 5: *Cyriocosmus bertae* sp.n. Male holotype, length of leg and palpal segments.

*Male:* Total length, not including chelicerae or spinnerets, 16.0. Cephalothorax length 9.3, width 8.4. Anterior eye row slightly procurved, posterior row slightly recurved. Eye sizes and interdistances: AME 0.37, ALE 0.43, PME 0.23, PLE 0.23; AME-AME 0.20, AME-ALE 0.17, PME-PME 0.73, PME-PLE 0.03, ALE-PLE 0.13; OQ length 0.83, width 1.5; clypeus absent. Fovea transverse, straight, width 1.33. Labium length 1.43, width 1.73, with 96 cuspules, maxillae with approximately 200 cuspules. Sternum length 4.2, posterior sternal sigilla small, very narrow. Chelicerae with 8 teeth on promargin. Tarsi I–IV densely scopulate, scopulae I–II undivided, III divided by thin stripe of thicker, longer, conical hairs, IV widely divided by band of such hairs. Metatarsi scopulate on distal portion. Tibia I with two prolateral distal apophyses (Fig. 24). Retrolateral face of palpal tibia with area of spiniform hairs. Palpal bulb with short paraembolic apophysis and long embolus (Figs. 22–23). Length of leg and palpal segments in Table 5. Spination: femora I–IV and palp, 0; patellae I–IV and palp, 0; tibiae I 1p, 1r, 3v; II 2p, 2r, 5v; III 2p, 2r, 5v; metatarsi I 0; II 1p, 5v; III 4p, 3r, 4v; IV 3p, 3r, 4v; tarsi I–IV and palp, 0. Cephalothorax, legs and abdomen dark to reddish brown, with frame of pale yellow hairs bordering lateral sides of carapace (Fig. 21). Central patch of clearer hairs on dorsal surface of abdomen (area of type IV urticating hairs).

*Female:* Unknown.

*Distribution:* Known only from Rio Branco, Acre, Brazil.

#### *Cyriocosmus blenginii*, new species (Figs. 25–27)

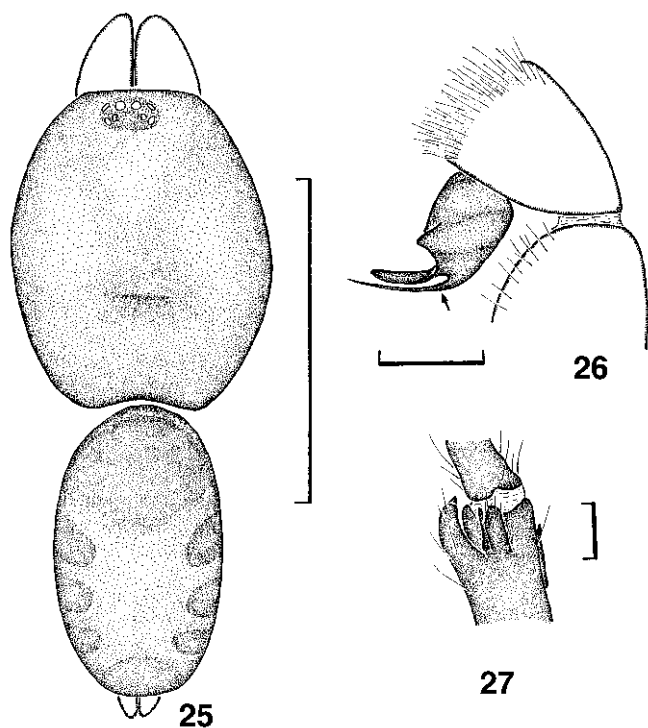
*Cyriocosmus elegans:* (in part) Schiapelli & Gerschman, 1973: 68–69.

*Type:* Holotype ♂ from Bolivia, Mamoré river (BMNH 1294.8.29.1), without further information, deposited in BMNH.

*Etymology:* The specific name is a patronym in honour of Juan Blengini, a Uruguayan amateur naturalist who encouraged me to start zoological studies.

*Diagnosis:* Differs from most species of *Cyriocosmus* by the palpal bulb morphology (Fig. 26) and from *C. chicoi* by the presence of entire tarsal scopulae and a retrolateral area of spinose hairs on the palpal tibiae.

*Male:* Total length, not including chelicerae or spinnerets, 18.0. Cephalothorax length 9.2, width 8.3. Anterior eye row straight, posterior row slightly recurved. Eye sizes and interdistances: AME 0.25, ALE 0.38, PME 0.20, PLE 0.30; AME-AME 0.23, AME-ALE 0.10, PME-PME 0.63, PME-PLE 0.05, ALE-PLE



Figs. 25–27: *Cyriocosmus blenginii* sp.n., holotype male. **25** Body, dorsal view; **26** Distal end of right palp, prolateral view (palpal bulb was not removed because only one present in the type, arrow shows embolus); **27** Tibial apophysis of right leg I, ventral-prolateral view. Scale lines=10 mm (25), 1 mm (26–27).

0.13; OQ length 0.75, width 1.40; clypeus 0.30 high. Fovea transverse, straight, width 0.95. Labium length 1.00, width 1.40, with 60 cuspules, maxillae with 200 cuspules. Sternum length 4.0, posterior sternal sigilla small, oval. Chelicerae with 8 teeth on promargin. Tarsi I–IV densely scopulate, scopulae undivided. Metatarsi scopulate on distal portion. Tibia I with two ventro-prolateral distal apophyses (Fig. 27). Palpal tibiae with retrolateral area of spiniform hairs. Palpal bulb with long paraembolic apophysis and long embolus (Fig. 26). Length of leg and palpal segments in Table 6. Spination: femora I–IV and palp, 0; patellae I–IV and palp, 0; tibiae I 1p, 3r, 4v; II 2p, 3r, 4v; III 4p, 3r, 5v; IV 3p, 2r, 4v; metatarsi I 1p; II 1p, 1v; III 5p, 3r, 3v; IV 4p, 4r, 5v. Cephalothorax and legs reddish brown. Abdomen dark brown with central dorsal patch and four lateral-radial stripes light brown (Fig. 25). Ventral side of abdomen light brown. Presence of urticating hairs presumed (by glabrous patch on dorsal abdomen) but not found.

*Female*: Unknown.

*Distribution*: Known only from Río Mamoré, Bolivia (northern border of Bolivia with Brazil).

	I	II	III	IV	Palp
<b>Femur</b>	7.3	6.3	6.0	7.8	4.5
<b>Patella</b>	4.3	3.7	3.1	3.5	2.7
<b>Tibia</b>	5.2	4.2	4.0	6.0	3.3
<b>Metatarsus</b>	5.5	4.5	5.2	7.7	—
<b>Tarsus</b>	3.4	3.1	3.2	3.6	1.5

Table 6: *Cyriocosmus blenginii* sp.n. Male holotype, length of leg and palpal segments.

### *Cyriocosmus sellatus* (Simon, 1889)

*Hapalopus sellatus* Simon, 1889: 218.

*Cyriocosmus sellatus*: Simon, 1903: 929; Mello-Leitão, 1923: 157; Roewer, 1942: 228; Bonnet, 1956: 1341; Schiapelli & Gerschman, 1973: 65; Pérez-Miles *et al.*, 1996: 48.

*Types*: Holotype ♀ from Upper Amazonas, Brazil; ♂ and ♀ paratypes from same locality (MNHN 8102), without further information, deposited in MNHN, examined.

*Diagnosis*: Differs from most *Cyriocosmus* species by the absence of a dorsal abdominal striped pattern, and from *C. butantan*, *C. bertae* and *C. versicolor* by the palpal bulb morphology.

*Other material examined*: San Martin, Peru, 9–21 March 1947, 1♀, F. Woytkowsky; Peru near Brazil border, 20 January 1928, 1♂, Bassler expedition; both deposited in AMNH.

*Distribution*: Types from Upper Amazonas, Brazil, and here reported for Peru.

### *Cyriocosmus elegans* (Simon, 1889)

*Hapalopus elegans* Simon, 1889: 210.

*Cyriocosmus elegans*: Simon, 1903: 929; Vellard, Schiapelli & Gerschman, 1945: 181; Roewer, 1942: 228; Schenkel, 1953: 3; Bonnet, 1956: 1341; Schiapelli & Gerschman, 1973: 67.

*Erythropticila plana* Fischel, 1927: 72. **New synonymy.**

*Pseudohomoeomma fasciatum* Mello-Leitão, 1930: 57, Bucherl, da Costa & Lucas, 1971: 118; Schiapelli & Gerschman, 1973: 67.

*Cyriocosmus semifasciatus* Mello-Leitão, 1939: 46; Schiapelli & Gerschman, 1973: 67.

*Type*: Holotype ♀ from Venezuela (MNHN 9863), without further information, deposited in MNHN, examined.

*Diagnosis*: The male differs from most other *Cyriocosmus* species by the presence of a retrolateral field of spines on the cymbium and from *C. sellatus* and *C. ritae* by the short paraembolic apophysis. The female differs from most other *Cyriocosmus* species by the abdominal striped pattern and from *C. chicoi* in size, number of labial cuspules (28–35), and spermathecal morphology.

*Other material examined*: VENEZUELA: Caracas, Vellard, 1936 (1♂, MACN 824), deposited in MACN; Zulia, 18 km W of Machiques, April 1968, 1♂, Sorkin; Caripito, 1–15 April 1942 (1♂), 15–30 May 1942 (1♂), 15–30 June 1942 (1♂), 16–31 August 1942 (1♂), Beebe & others; Bolivar, Cerro Coroba, 23 April 1955, 1♂ J. J. Wurdack. TRINIDAD: Toco, 19 April 1964 (1♂ 1♀ 1 juv.), 14 February 1965 (1♂), E. N. Kjellesvig-Waering; Port of Spain, 1 June 1965 (1♂), 2 July 1965 (1♀), 5 July 1966 (1♂), E. N. Kjellesvig-Waering; Salybia, February 1972, 1♂, J. A. L. Cooke; Caroni, Cunupia, 17 July 1979, 2♂, L. N. Sorkin, B. Farber; Nariva swamp, Bush Bush Forest, 27 December 1962, 2♂ 1 juv., W. I. T. H. G. Aitken; Arima, entrance to Guanapó Cave, 18 July 1978, 1 juv., D. A. Brody. TOBAGO: 1 August 1963, 2♂. All deposited in AMNH. BRAZIL: Cuminá (types of *Pseudohomoeomma fasciatum* Mello-Leitão, 1930) (♀ and a ♂ palp, MNRJ 24), deposited in MNRJ.

*Distribution*: Venezuela, Trinidad, and here reported for Tobago and northern Pará, Brazil.

Taxa	Characters	0	1	2	3	4	5	6	7	8	9	10
OUTGROUP		0	0	0	0	0	0	0	0	0	?	0
<i>C. sellatus</i>		0	3	1	1	0	0	0	0	0	0	0
<i>C. elegans</i>		0	1	1	1	0	0	1	0	0	0	0
<i>C. versicolor</i>		1	1	1	0	0	0	0	0	0	0	0
<i>C. butantan</i>		1	3	2	0	0	1	0	0	1	1	1
<i>C. chicoi</i>		0	3	0	0	0	0	1	0	0	0	0
<i>C. ritae</i>		0	2	1	1	1	0	1	1	0	0	0
<i>C. bertae</i>		0	1	1	0	0	0	0	0	0	0	0
<i>C. blenginii</i>		0	3	1	0	0	0	1	0	0	1	0

Table 7: Data matrix (character states in each taxon) used for the cladistic analysis.

*Comments:* This species was reported from Rio Pimenta Bueno, Brazil, near the Bolivian border, by Schiapelli & Gerschman (1973: 69) from a female (MACN 819) collected by Vellard. This specimen could not be located, but a female (MACN 6523) collected from the same place by Vellard and labelled by Schiapelli & Gerschman as *C. elegans* was examined and is a female of *C. chicoi* according to the characters indicated in the diagnosis. Also a male from Bolivia, Mamoré river (BMNH 1924.8.29.1, examined) was identified as *C. elegans* by Schiapelli & Gerschman (1973: 68–69), but it clearly differs from this species in the palpal bulb morphology (Fig. 26) and is here described as a new species (see *C. blenginii*). For these reasons I suspect that *C. elegans* was erroneously reported from this region. The genus *Erythropticila* Fischel, 1927 was placed in the synonymy of *Cyriocosmus* by Raven (1985: 152). Although the holotype of the type species (by monotypy) *Erythropticila plana* from Venezuela is lost (Raven, 1985), the original description and figures are clear enough to lead me to establish here its specific synonymy with *C. elegans*.

***Cyriocosmus versicolor* (Simon, 1897)**

*Cyclosternum versicolor* Simon, 1897: 3; Mello-Leitão, 1923: 153; Bonnet, 1956: 1327.  
*Hapalopus versicolor*: Roewer, 1942: 231.  
*Cyriocosmus versicolor*: Schiapelli & Gerschman, 1973: 69.

*Type:* Holotype ♀ from Paraguay (MNHN 18359) deposited in MNHN, not examined.

*Diagnosis:* Differs from other *Cyriocosmus* species by the absence of a striped pattern on the abdomen in combination with its palpal bulb morphology.

*Material examined:* Males from Argentina, Salta (MACN 6525) and Santiago del Estero (MACN 6524), deposited in MACN.

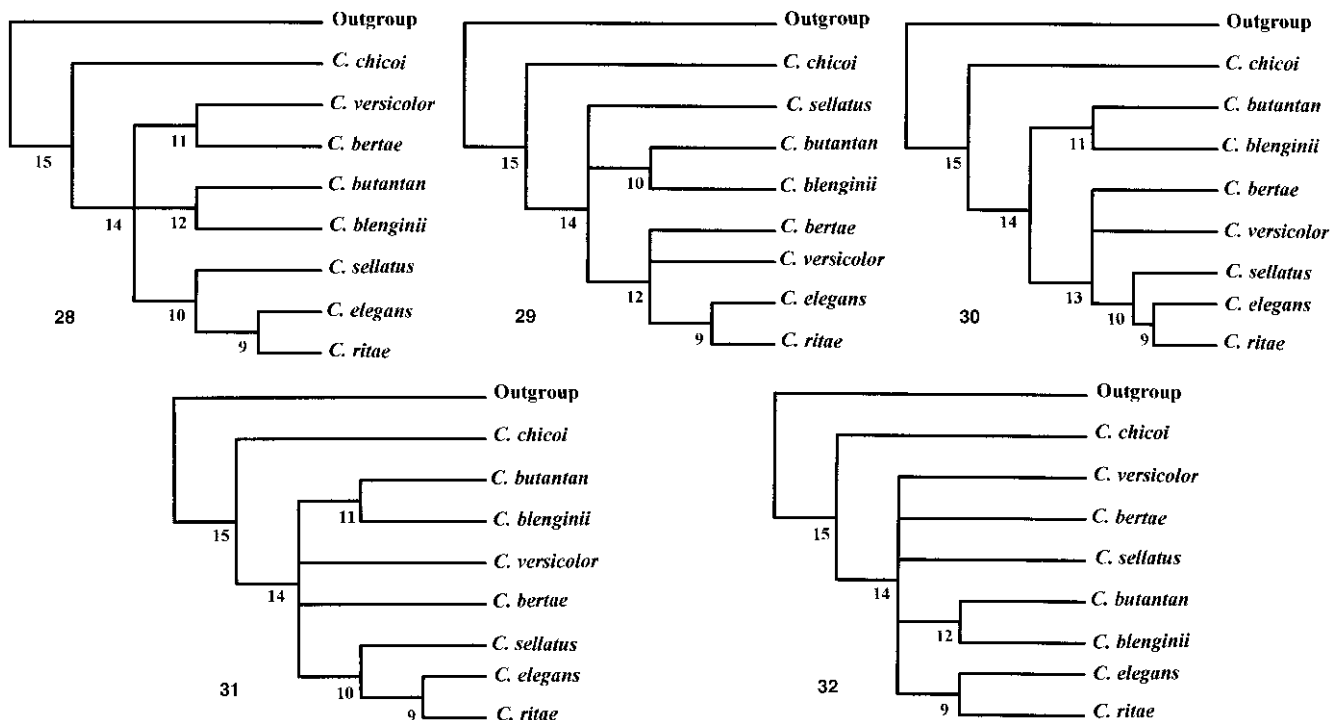
*Distribution:* Paraguay and northern Argentina.

**Misplaced species**

*Cyriocosmus nigriventris* Mello-Leitão, 1939. Holotype ♀ from Falcon, Venezuela (Kugler), deposited in Basel Museum (Switzerland), examined. It clearly differs from *Cyriocosmus* by the generic characters, especially the presence of a single oval spermatheca, and is transferred here to *Metriopelma*, as *Metriopelma nigriventris* (Mello-Leitão), **new combination**.

**Phylogenetic analysis**

Using Pee-Wee, four most parsimonious trees of maximum fit 51.0 (57%) and 18 steps were found. These trees and their strict consensus tree are shown in Figs. 28–32. Character steps and fits are given in Table 8, and synapomorphies in Table 9. The most obvious synapomorphy of the genus is the presence of a paraembolic apophysis on the palpal bulb, which was evidenced by



Figs. 28–32: Cladograms of the species of *Cyriocosmus*. **28–31** Four most parsimonious trees of maximum fit, 51 (57%) and 18 steps (see text and Tables 8 and 9); **32** Strict consensus tree of cladograms in Figs. 28–31.

Character	Tree 0		Tree 1		Tree 2		Tree 3	
	Fit	Steps	Fit	Steps	Fit	Steps	Fit	Steps
0	7.5	2(1)	7.5	2(1)	7.5	2(1)	7.5	2(1)
1	7.5	4(1)	10.0	3(0)	7.5	4(1)	7.5	4(1)
2	10.0	2(0)	10.0	2(0)	10.0	2(0)	10.0	2(0)
3	10.0	1(0)	7.5	2(1)	10.0	1(0)	10.0	1(0)
4	—	—	—	—	—	—	—	—
5	—	—	—	—	—	—	—	—
6	6.0	3(2)	6.0	3(2)	6.0	3(2)	6.0	3(2)
7	—	—	—	—	—	—	—	—
8	—	—	—	—	—	—	—	—
9	10.0	1(0)	10.0	1(0)	10.0	1(0)	10.0	1(0)
10	—	—	—	—	—	—	—	—

Table 8: Character steps (extra steps) and fits for the four most parsimonious trees found.

character 1 at the ingroup node. As far as I know this feature is unique within the Theraphosidae, which clearly suggests the monophyly of the genus. The presence of a retrolateral field of spiniform hairs or megaspines on the palpal tibiae in males (character 2) seems to be an extended synapomorphy of most species with the exception of *C. chicoi*, considered as the sister species of the rest of the genus. Both synapomorphies support the monophyly of *Cyriocosmus*. The relationship between *C. elegans* and *C. ritae* was evidenced in the four trees and was supported by the synapomorphies of characters 6 and 3. Character 6 (the dorsal abdominal striped pattern) was acquired at least three times in *Cyriocosmus*: at the ancestor of *C. elegans* and *C. ritae*, at *C. blenginii* and at *C. chicoi* where parallel events could have occurred. This parallelism could be explained by environmental pressures, considering that other mygalomorphs living in tropical jungle areas, e.g. *Chaetorhombus bicolor*, *C. longipes*, *Diplura* sp., *Ischnothele* spp. (Vellard *et al.*, 1945) show a similar pattern. *C. elegans* shares with *C. ritae* and *C. sellatus* the presence of a retrolateral field of spines on the cymbium (character 3), interpreted as synapomorphic of *elegans* and *ritae* with a parallelism in *sellatus*.

*C. butantan* and *C. blenginii* were also related in all four trees; they share the entire tarsal scopulae (character 9), a character with a priori uncertain polarity (see Table 7). A general relation between tarsal scopulae condition and body size was found in Theraphosinae by Pérez-Miles (1994) but this trend is not confirmed in these two species.

Since females are known for only two species, spermathecal morphology is not very useful for the analysis, but the caliciform fundus could be interpreted as an additional synapomorphy of the genus. The spiral spermathecal neck resembles that of *Plesiopelma* at least within the Theraphosinae, but is found in several other mygalomorph spiders. The female and male genitalia do not have a clear morphological complementarity in *Cyriocosmus*, as was suggested by Schiapelli & Gerschman (1962) for the Mygalomorphae. First, females have one spermathecal receptaculum on each side while males have two intromittent features in each palp (although the paraembolic apophysis has an uncertain function it seems likely to be inserted). Secondly, the

Taxon or node	Character changes			
	Tree 0	Tree 1	Tree 2	Tree 3
<i>C. sellatus</i>		3:0→1	1:1→3	
<i>C. versicolor</i>	0:0→1	0:0→1	0:0→1	0:0→1
<i>C. butantan</i>	0:0→1	0:0→1	0:0→1	0:0→1
	2:1→2	2:1→2	2:1→2	2:1→2
	5:0→1	5:0→1	5:0→1	5:0→1
	8:0→1	8:0→1	8:0→1	8:0→1
	10:0→1	10:0→1	10:0→1	10:0→1
<i>C. chicoi</i>	6:0→1	6:0→1	6:0→1	6:0→1
<i>C. ritae</i>	4:0→1	1:1→2	1:1→2	4:0→1
	7:0→1	4:0→1	4:0→1	7:0→1
		7:0→1	7:0→1	
<i>C. blenginii</i>	6:0→1	6:0→1	6:0→1	6:0→1
Node 9	6:0→1	3:0→1	6:0→1	6:0→1
		6:0→1		
Node 10	3:0→1	9:0→1	3:0→1	3:0→1
Node 11	1:3→1		9:0→1	9:0→1
Node 12	9:0→1	1:3→1		
Node 13			1:3→1	
Node 14	2:0→1	2:0→1	2:0→1	2:0→1
Node 15	1:0→3	1:0→3	1:0→3	1:0→3

Table 9: Synapomorphies for the four most parsimonious trees obtained.

spiral neck of the spermathecae could make insertion difficult, but this problem would be resolved if the neck is made more or less flexible by its extension during copulation.

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Bull. Br. arachnol. Soc. (1998) **11** (3), 103–106

## A new species of the genus *Xysticus* from the mountains of South Siberia and Mongolia (Araneae, Thomisidae)

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### Summary

A new species, *Xysticus austrosibiricus* sp. n., from the mountains of South Siberia and Mongolia is described, figured, diagnosed and mapped. Comparative data (figures and localities in Siberia, including a distribution map) of two closely related species, *X. obscurus* and *X. viduus*, are also given.

### Introduction

The thomisid fauna of the mountains of South Siberia, consisting of 46 species, has recently been revised by Logunov & Marusik (1994). Of the species reported by these authors, *Xysticus viduus* Kulczyński turned out to be misidentified, this record actually belonging to a new species. Moreover, *X. viduus* has been shown to display a Central European–West Siberian temperate distributional pattern (Thaler & Knoflach, 1995; current data) and has never been recorded east of the Yenisei River (see Fig. 13). The only eastern record of *X. viduus*, from Khabarovsk Province (Kurenshchikov, 1992; Kim & Kurenshchikov, 1995), was probably based on a misidentification and needs confirmation. This record may also belong to the new *Xysticus* species described herein.

The main goals of this study are (1) to describe a new species hitherto erroneously recorded from S. Siberia

as *X. viduus*; and (2) to redefine the Siberian distribution of *X. viduus* and *X. obscurus* Collett, both of which are close relatives of the new species.

The work is based on newly collected material from Siberia and Mongolia. Specimens for this study were borrowed from or are distributed among the following museums: IBPN=Institute for the Biological Problems of the North, Magadan, Russia; ISEA=Zoological Museum of the Institute for Systematics and Ecology of Animals, Novosibirsk, Russia; ZMMU=Zoological Museum of the Moscow State University, Moscow, Russia.

The format of the description and the terminology follows Ono (1988). Some rare abbreviations used are as follows: MOA=median ocular area; MOA-WA=anterior width of MOA; MOA-WP=posterior width of MOA; MOA-L=length of MOA. The sequence of leg segments in measurement data is as follows: femur+patella+tibia+metatarsus+tarsus. All measurements are in mm.

### *Xysticus austrosibiricus* sp. n. (Figs. 3, 4, 9, 10, 13)

*Xysticus viduus*: Loksa, 1965: 30; Logunov & Marusik, 1994: 194 (misidentifications).

*Type*: Holotype ♂ (ISEA), Russia, South Siberia, Tuva, c. 20 km NE of Khol'-Oozhu, East Tannu-Ola Mt. Range, Kangai-Kyry Mt., 50°48'N, 94°18'E, 2100 m, 16 July 1993 (D. V. Logunov).

*Etymology*: The specific epithet is derived from the Latin *austro-sibiricus* meaning “South-Siberian”.

*Diagnosis*: *Xysticus austrosibiricus* shows an intermediate position between *X. obscurus* and *X. viduus*, as its palpal structure is closer to that of *X. obscurus*, while the female genitalia are more like those of *X. viduus*. Males of *X. austrosibiricus* can be distinguished by the shape, relative positions and sizes of the median and apical tegular apophyses (cf. Figs. 3 and 1, 5). Additionally, the new species differs from *X. viduus* in having the retrolateral tibial apophysis of the male palp apically pointed, not truncate (cf. Figs. 4 and 2). Females differ