

Description of six new species of *Anapistula* Gertsch (Araneae, Symphytognathidae) from Brazil

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Summary

Six new species of *Anapistula* are described: *Anapistula ayri* from Manaus, state of Amazonas, *A. aquytabuera*, from Petrópolis, state of Rio de Janeiro, *A. pocaruguera*, from Iporanga, state of São Paulo, *A. guyri*, from São Domingos, state of Goiás, *A. yhyqyryra*, from Viamão, state of Rio Grande do Sul, and *A. bebuia* from Porto Nacional, state of Tocantins, all in Brazil. A distribution map for all the new species is also presented.

Introduction

The spider family Symphytognathidae is a small family that currently comprises only six genera: *Anapistula* Gertsch, *Anapogonia* Simon, *Globignatha* Balogh & Loksa, *Patu* Marples, *Symphytognatha* Hickman, and *Curimagua* Forster & Platnick. The family is diagnosed by the combination of chelicerae fused at least at their base and female pedipalp reduced to one segment or absent (Forster & Platnick, 1977). However, most symphytognathids also share several other characters that are useful for recognising them, e.g. minute body size, absence of booklungs, fusion of labium and sternum, and shortening of the metatarsi.

Forster & Platnick (1977) draw attention to the small number of known species, and suggest that these spiders are probably extremely widespread but are rarely collected in large numbers owing to their minute size and litter habitat. They are usually collected only when specifically searched for or when Berlese funnels, Winkler extractors or pitfall traps are used.

Of the six symphytognathid genera, three include species recorded from Brazil: *Globignatha rohri* (Balogh & Loksa) and *Symphytognatha brasiliiana* Balogh & Loksa, both described from the state of Pará, and *Anapistula* spp., recorded in the states of Amazonas (Höfer, 1990) and São Paulo (Gnasparini & Trajano, 1994). The genus *Anapistula* is diagnosed by the presence of four eyes in two diads and an only slightly elevated pars cephalica (Forster & Platnick, 1977). So far, it includes 11 species, of which only two are Neotropical (Platnick, 2001) and only *Anapistula secreta* Gertsch has been recorded from Brazil (Höfer & Brescovit, 2001).

In this paper we describe six new species of *Anapistula* from Brazil, increasing the number of Neotropical species to eight. Thus Brazil is now responsible for over 87% (7 species) of the known Neotropical fauna and 41% of the world fauna of this genus. The remaining 59% is distributed among the Australian (5 species — 29%), African (3 species — 18%), Oriental (1 species — 6%) and Neotropical (1 species — 6%) zoogeographical

regions. Considering that our samples were restricted to certain areas and that most of the country's litter fauna remains virtually unknown, it is probably correct to state that Brazil has one of the highest diversities of species of this genus. Nevertheless, further sampling is still necessary, not only in Brazil but in other geographical regions, in order to permit discussions on fauna composition and species diversity of this genus and family worldwide.

Material and methods

The material used in this study belongs to the following institutions: IBSP=Instituto Butantan, São Paulo (A. D. Brescovit); INPA=Instituto Nacional de Pesquisas da Amazônia, Manaus (C. Magalhães); MCN=Museu de Ciências Naturais, FZB/RS, Porto Alegre (E. H. Buckup); MCTP=Museu de Ciência e Tecnologia da PUC/RS, Porto Alegre (A. A. Lise); and MZSP=Museu de Zoologia da Universidade de São Paulo, São Paulo (R. Pinto da Rocha). Most of the specimens were collected with Winkler extractors, Berlese funnels and pitfall traps.

Descriptions follow Forster & Platnick (1977). Male palp illustrations were made under a light microscope Axiolab MC 80DX. Female epigynum illustrations were made under a stereomicroscope Leica MZ12. The epigynes were submerged in clove oil to study internal structures. The SEMs were obtained with a JEOL (JSM 840A) scanning electron microscope from the Laboratório de Microscopia Eletrônica do Departamento de Física Geral do Instituto de Física da Universidade de São Paulo (USP). All measurements are in mm.

Anapistula ayri sp. n. (Figs. 1–3, 13–14)

Type material: Holotype ♂ from Embrapa, Estrada de Itacoatiara, km 30, Manaus, Amazonas, 3 March 1998, R. Ott & H. Höfer coll., deposited in IBSP 32792. Paratypes: 1♂, 3 April 1998 and 1♀, 31 March 1998, deposited in INPA; 1♂, 2 April 1998, 1♀, 3 March 1998 and 2♀, 3 April 1998, deposited in IBSP 32791, 32790 and 32793; all with same data as holotype.

Etymology: The specific name is an adjective taken from the Brazilian “Tupi-guarani” Indian language. It denotes minute size.

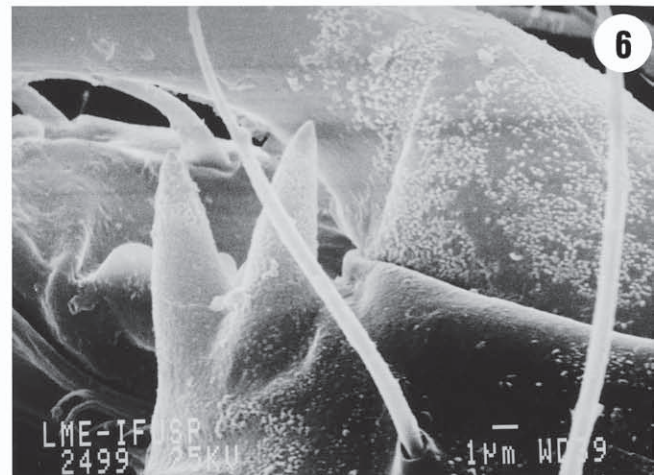
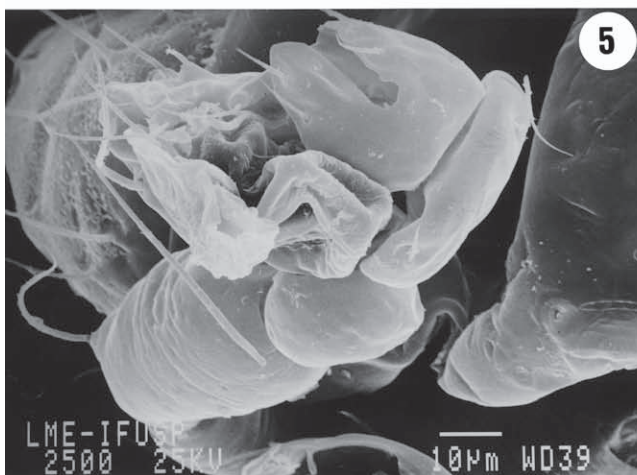
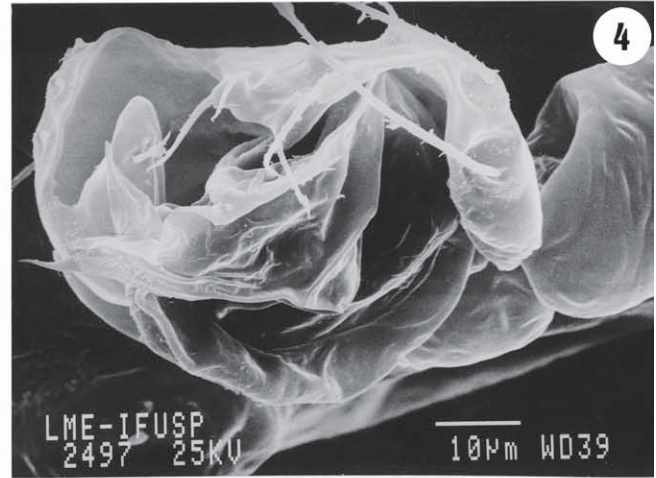
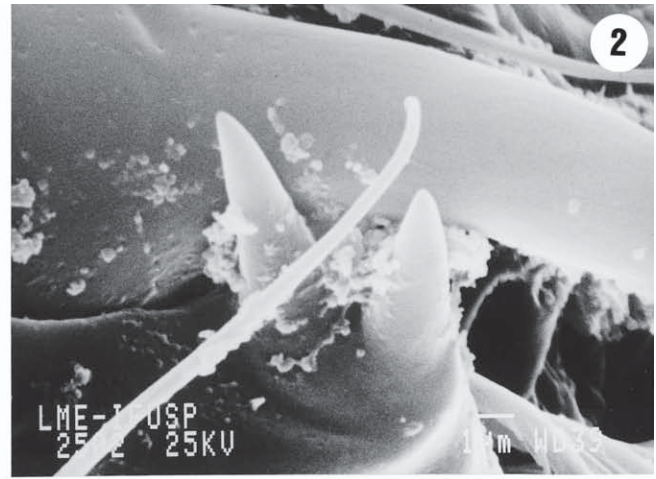
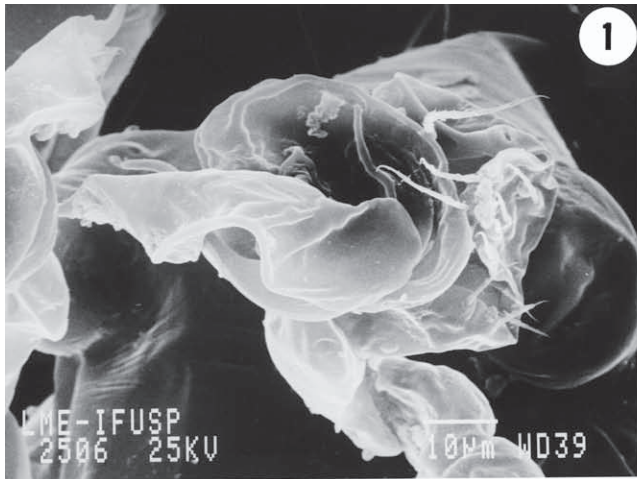
Diagnosis: The male of *Anapistula ayri* differs from the other Brazilian species by the twisted apical region of the conductor and by the large rounded median tegular projection (Figs. 1, 13). The female differs by the presence of a small triangular projection on the spermathecae and by the sinuous posterior border of the epigynal plate (Fig. 14).

Description: *Male* (holotype): Coloration: carapace cream; sternum, labium, endites and chelicerae whitish; abdomen light brown; legs white. Total length, not including chelicerae, 0.46. Carapace 0.22 long, 0.20 wide, 0.10 high. Abdomen 0.24 long, 0.20 wide, 0.25 high, covered with slender bristles. No bristles or sockets visible on carapace. Clypeus projecting forward. Four

eyes in two diads. Ratio of eyes (anterior lateral/posterior lateral) 1.5. Posterior lateral eyes separated by 3 times their diameter, lateral eyes of each side contiguous. Chelicerae with two large, pointed promarginal teeth (Fig. 2). Legs covered with setae and bristles, no spines. Leg formula 1423. Leg measurements: I: femur 0.20/patella 0.10/tibia 0.14/metatarsus 0.08/tarsus 0.18/total 0.70. II: 0.16/0.08/0.12/0.08/0.18/0.62. III: 0.16/0.08/0.10/0.08/0.14/0.56. IV: 0.18/0.10/0.12/0.08/0.18/0.66. Spinnerets: anterior laterals with two large major ampullate gland spigots; posterior medians incon-

spicuous; posterior laterals with few aciniform gland spigots (Fig. 3).

Female (IBSP paratype): Coloration: carapace, sternum, labium, endites and chelicerae very light brown; abdomen cream; legs light brown. Total length, not including chelicerae, 0.60. Carapace 0.28 long, 0.26 wide, 0.14 high. Abdomen 0.32 long, 0.40 wide, 0.36 high, as in male. No bristles or sockets visible on carapace. Clypeus slightly projecting. Four eyes in two diads. Ratio of eyes 1.5. Posterior lateral eyes separated by 3.5 times their diameter, lateral eyes of each side



Figs. 1–6: **1–3** *Anapistula ayri* sp. n. **1** Male left palp, ventral view; **2** Chelicerae, cheliceral teeth, promarginal view; **3** Spinnerets, ventral view. **4–6** *Anapistula bybyqyra* sp. n. **4** Male left palp, ventral view; **5** Tibial apophysis; **6** Chelicerae, cheliceral teeth, promarginal view.

contiguous. Legs covered with setae and bristles, no spines. Leg formula 1423. Leg measurements: I: femur 0.26/patella 0.10/tibia 0.16/metatarsus 0.12/tarsus 0.18/total 0.82. II: 0.22/0.10/0.12/0.08/0.18/0.70. III: 0.14/0.10/0.10/0.08/0.16/0.58. IV: 0.22/0.10/0.18/0.10/0.16/0.76. Epigynum with pair of spermathecae with small lateral triangular projection, connected to short median epigynal duct (Fig. 14).

Variation: Three males: total length 0.40–0.46; carapace length 0.18–0.22; femur I length 0.18–0.22. Seven females: total length 0.54–0.66; carapace length 0.24–0.28; femur I length 0.18–0.26.

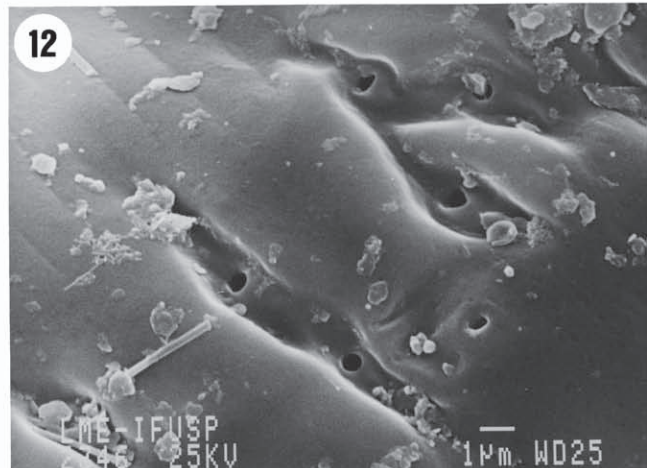
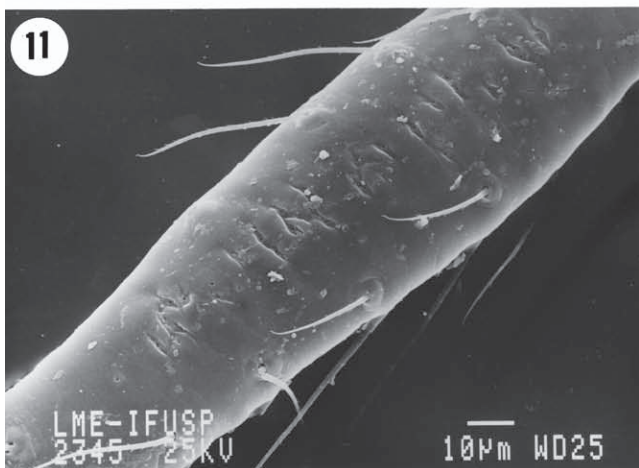
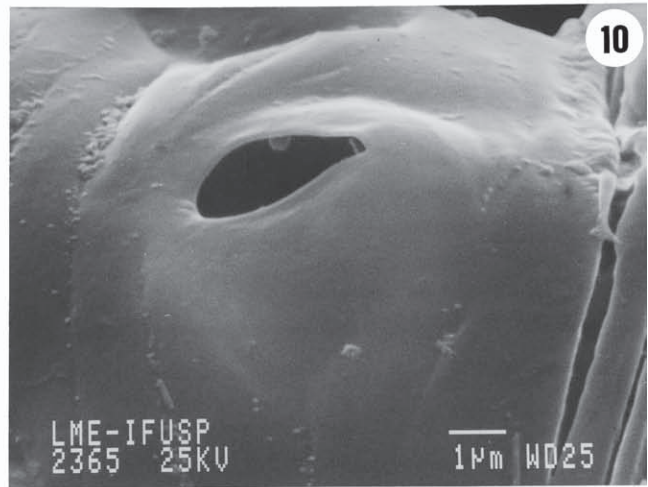
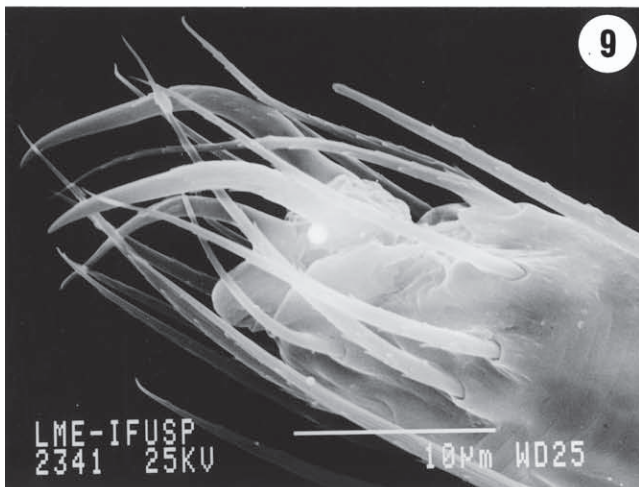
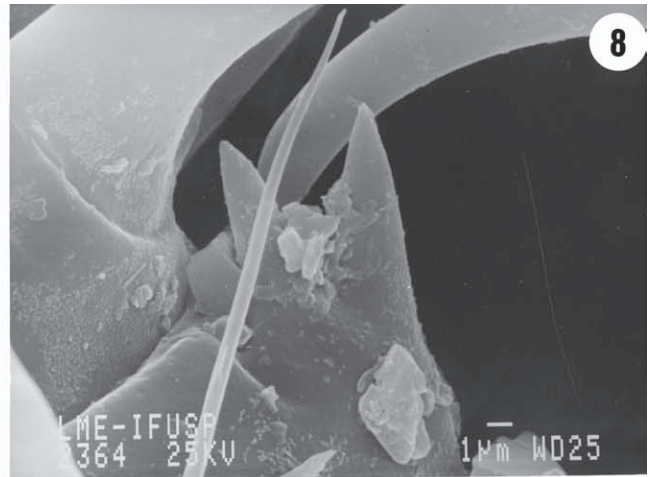
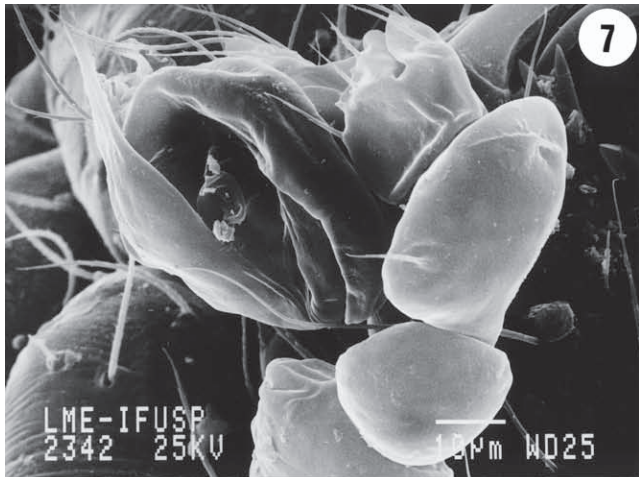
Natural history: All specimens were collected in litter using Berlese funnels.

Distribution: Northern Brazil, state of Amazonas.

Other material examined: BRAZIL: Amazonas: Manaus, Embrapa, Estrada de Itacotiara, km 30, 1♀, 3 April 1998, R. Ott & H. Höfer coll. (MCN), 2♀, 2–3 April 1998, R. Ott & H. Höfer coll. (IBSP 32794, 32795).

Anapistula aquytabuera sp. n. (Figs. 15–16)

Type material: Holotype ♂ from Petrópolis, Rio de Janeiro, 8–15 February 2002, F. S. Cunha *et al.* coll.,



Figs. 7–12: *Anapistula guyri* sp. n. **7** Male left palp, ventral view; **8** Chelicerae, cheliceral teeth, promarginal view; **9** Tarsus I, tarsal claws, lateral view; **10** Tarsal organ, dorsal view; **11** Femur III, cuticular pores, prolateral view; **12** Cuticular pores, detail.

deposited in IBSP 32554. Paratypes: 1♀, same data as holotype, deposited in IBSP 32555; 1♀, Piraputanga, Dois Irmãos do Buriti, Mato Grosso do Sul, 31 June–6 July 1999, A. D. Brescovit coll., deposited in IBSP 32556.

Etymology: The specific name is an adjective taken from the Brazilian “Tupi-guarani” Indian language. It denotes minute size.

Diagnosis: The male of *Anapistula aquytabuera* differs from the other Brazilian species by the slender conductor and widened embolus (Fig. 15). The female resembles that of *A. pocaruguara* by having a large ventral atrium in the posterior region of the epigynum, but it differs by the longer lateral branches and their slightly more apical insertion (Fig. 16).

Description: *Male* (holotype): Coloration: carapace, sternum, labium, endites and chelicerae very light brown; abdomen brownish, slightly lighter than carapace; legs very light brown. Total length, not including chelicerae, 0.50. Carapace 0.20 long, 0.24 wide, 0.16 high. Abdomen 0.30 long, 0.30 wide, 0.38 high, covered with slender bristles. No bristles or sockets visible on carapace. Clypeus vertical. Four eyes in two diads. Ratio of eyes 2.0. Posterior lateral eyes separated by 2.5 times their diameter, lateral eyes of each side contiguous. Legs covered with setae and bristles, no spines. Leg formula 1423. Leg measurements: I: femur 0.30/patella 0.12/tibia 0.20/metatarsus 0.12/tarsus 0.20/total 0.94. II: 0.24/0.10/0.18/0.08/0.20/0.80. III: 0.20/0.10/0.14/0.12/0.18/0.74. IV: 0.24/0.12/0.16/0.12/0.18/0.82. Palp with semicircular, short, median tegular projection (Fig. 15).

Female (IBSP 32555): Coloration as in male but darker. Total length, not including chelicerae, 0.80. Carapace 0.26 long, 0.24 wide, 0.12 high. Abdomen 0.50 long, 0.60 wide, 0.60 high, as in male. No bristles or sockets visible on carapace. Clypeus as in male. Four eyes in two diads. Ratio of eyes 2.0. Posterior lateral eyes separated by three times their diameter, lateral eyes of each side contiguous. Legs covered with setae and bristles, no spines. Leg formula 1423. Leg measurements: I: femur 0.22/patella 0.10/tibia 0.16/metatarsus 0.10/tarsus 0.18/total 0.76. II: 0.20/0.10/0.14/0.10/0.18/0.72. III: 0.14/0.10/0.10/0.08/0.18/0.60. IV: 0.20/0.10/0.16/0.10/0.18/0.74. Epigynum with long median epigynal duct (Fig. 16).

Natural history: All specimens were collected in litter using pitfall traps and Winkler extractors.

Distribution: Central and south-eastern Brazil, states of Mato Grosso do Sul and Rio de Janeiro.

Other material examined: Only the types.

Anapistula pocaruguara sp. n. (Figs. 17–18)

Type material: Holotype ♂ from Parque Estadual Turístico do Alto Ribeira, Iporanga, São Paulo, 31 May 2001, R. Andrade coll., deposited in IBSP 32550. Paratypes: 4♀, same data as holotype, deposited in IBSP 32551 and 32552 and MZSP 20423.

Etymology: The specific name is an adjective taken from the Brazilian “Tupi-guarani” Indian language. It denotes small size and delicate body.

Diagnosis: The male of *Anapistula pocaruguara* differs from the other Brazilian species by the inconspicuous median tegular projection and by the slender pointed conductor and long and slender embolus (Fig. 17). The female differs by the median insertion of the short lateral branches of the epigynal duct (Fig. 18).

Description: *Male* (holotype): Coloration: carapace light brown; sternum, labium and endites whitish; chelicerae light brown; abdomen and legs brownish. Total length, not including chelicerae, 0.54. Carapace 0.24 long, 0.24 wide, 0.08 high. Abdomen 0.30 long, 0.30 wide, 0.35 high, covered with slender bristles. No bristles or sockets visible on carapace. Clypeus slightly projecting. Four eyes in two diads. Ratio of eyes 1.5. Posterior lateral eyes separated by four times their diameter, lateral eyes of each side contiguous. Legs covered with setae and bristles, no spines. Leg formula 1423. Leg measurements: I: femur 0.28/patella 0.12/tibia 0.20/metatarsus 0.12/tarsus 0.24/total 0.96. II: 0.22/0.12/0.16/0.10/0.22/0.82. III: 0.22/0.10/0.14/0.10/0.20/0.76. IV: 0.26/0.12/0.20/0.12/0.20/0.90. Palpal sperm duct with anterior sinuosity (Fig. 17).

Female (IBSP 32551): Coloration as in male but slightly darker. Total length, not including chelicerae, 0.66. Carapace 0.28 long, 0.28 wide, 0.14 high. Abdomen 0.36 long, 0.38 wide, 0.42 high, as in male. No bristles or sockets visible on carapace. Clypeus as in male. Four eyes in two diads. Ratio of eyes 1.5. Posterior lateral eyes separated by 3.5 times their diameter, lateral eyes of each side contiguous. Legs covered with setae and bristles, no spines. Leg formula 4123. Leg measurements: I: femur 0.24/patella 0.10/tibia 0.14/metatarsus 0.12/tarsus 0.20/total 0.80. II: 0.20/0.10/0.14/0.08/0.20/0.72. III: 0.18/0.08/0.12/0.10/0.18/0.66. IV: 0.26/0.10/0.18/0.10/0.20/0.84. Epigynum with large atrium in posterior region (Fig. 18).

Variation: Two males: carapace length 0.24–0.26; femur I length 0.22–0.28. Four females: total length 0.58–0.72; carapace length 0.24–0.28; femur I length 0.22–0.26.

Natural history: All specimens were collected close to cave entrances, in litter using Winkler extractors.

Distribution: South-eastern Brazil, southern state of São Paulo.

Other material examined: Only the types.

Anapistula guyri sp. n. (Figs. 7–12, 19)

Type material: Holotype ♂ from Lapa do Passa Três, São Domingos, Goiás, Brazil, 3–5 September 2000, C. A. Rheims & F. Pelegatti-Franco coll., deposited in IBSP 32549. Paratypes: 2♂, same data as holotype, deposited in IBSP 26068.

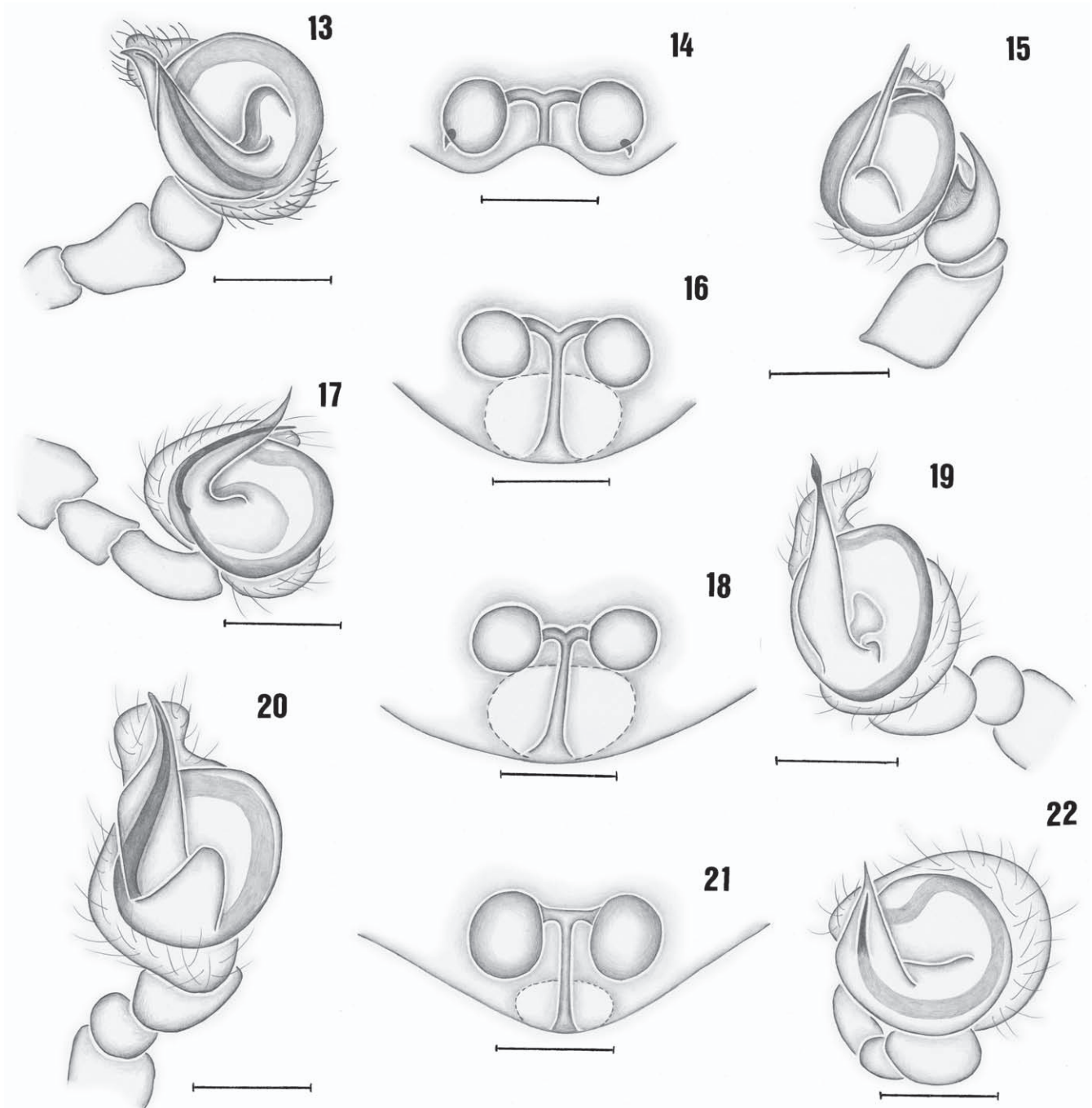
Etymology: The specific name is an adjective taken from the Brazilian “Tupi-guarani” Indian language. It denotes small size.

Diagnosis: The male of *Anapistula guyri* differs from the other Brazilian species by the presence of an apical constriction in the conductor and by the bone-like median tegular apophysis (Figs. 7, 19). The female is unknown.

Description: Male (holotype): Coloration: carapace, sternum, labium, endites and chelicerae light brown; abdomen brownish, slightly lighter than carapace; legs light brown, tibia, metatarsus and tarsus slightly darker. Total length, not including chelicerae, 0.58. Carapace 0.22 long, 0.28 wide, 0.08 high. Abdomen 0.34 long, 0.32 wide, 0.34 high, covered with slender bristles. No bristles or sockets visible on carapace. Clypeus projecting. Four eyes in two diads. Ratio of eyes 1.33. Posterior lateral eyes separated by 1.7 times their diameter, lateral eyes of each side contiguous. Chelicerae with two large, sharp teeth (Fig. 8). Legs covered with setae and bristles,

no spines. Tarsus with three claws; unpaired claw as long as others, on prominent onychium (Fig. 9). Tarsal organ with oval opening (Fig. 10). Femur III with prolateral cuticular pores inside a row of transverse grooves (Figs. 11, 12). Leg formula 1243. Leg measurements: I: femur 0.26/patella 0.12/tibia 0.18/metatarsus 0.10/tarsus 0.20/total 0.86. II: 0.22/0.10/0.14/0.10/0.20/0.76. III: 0.18/0.08/0.14/0.10/0.16/0.66. IV: 0.22/0.10/0.16/0.12/0.16/0.76. Palp with elongate conductor with apical constriction, and inconspicuous embolus (Figs. 7, 19).

Female: Unknown.



Figs. 13–22: **13–14** *Anapistula ayri* sp. n. **13** Male left palp, ventral view; **14** Female epigynum, dorsal view. **15–16** *Anapistula aquytabuera* sp. n. **15** Male left palp, ventral view; **16** Female epigynum, dorsal view. **17–18** *Anapistula pocaruguara* sp. n. **17** Male left palp, ventral view. **18** Female epigynum, dorsal view. **19** *Anapistula guyri* sp. n., male left palp, ventral view. **20–21** *Anapistula ybyquyra* sp. n. **20** Male left palp, ventral view; **21** Female epigynum, dorsal view. **22** *Anapistula bebuia* sp. n., male left palp, ventral view.

Variation: Three males: total length 0.58–0.67; carapace length 0.22–0.34; femur I length 0.24–0.26.

Natural history: All specimens were collected in a cave, approximately 200 m from the entrance, in piles of organic material, using Winkler extractors.

Distribution: Central-eastern Brazil, state of Goiás.

Other material examined: Only the types.

***Anapistula ybyquyra* sp. n.** (Figs. 4–6, 20–21)

Type material: Holotype ♂ from Fitotécnica da Fepagro, Viamão, Rio Grande do Sul, 10 May 1996, R. Ott coll., deposited in MCTP. Paratypes: 2♂, 10 October 1995, 1♀, 7 November 1995, deposited in IBSP 32787, 32788, 32789; 1♂ 2♀, 14 February 1996, deposited in MCN; 1♀, 10 April 1996, deposited in MCTP; all with same data as holotype.

Etymology: The specific name is a noun in apposition taken from the Brazilian “Tupi-guarani” Indian language. *Ybyquyra* is the smaller son or the younger brother.

Diagnosis: The male of *Anapistula ybyquyra* differs from the other Brazilian species by the subrectangular conductor with slender apical region and very large, subtriangular median tegular apophysis (Figs. 4, 20). The female differs by the small oval atrium in the posterior region of the epigynum (Fig. 21).

Description: *Male* (holotype): Coloration: carapace, sternum, labium, endites and abdomen yellowish; chelicerae and legs slightly darker than carapace. Total length, not including chelicerae, 0.46. Carapace 0.20 long, 0.22 wide, 0.08 high. Abdomen 0.24 long, 0.20 wide, 0.32 high. No bristles or sockets visible on carapace. Clypeus projecting. Four eyes in two diads. Ratio of eyes 3.0. Posterior lateral eyes separated by six times their diameter, lateral eyes of each side contiguous. Chelicerae with two sharp teeth (Fig. 6). Legs covered with setae and bristles, no spines. Leg formula 1243. Leg measurements: I: femur 0.20/patella 0.10/tibia 0.14/metatarsus 0.08/tarsus 0.20/total 0.72. II: 0.20/0.10/0.12/0.08/0.18/0.68. III: 0.16/0.08/0.12/0.06/0.12/0.54. IV: 0.18/0.08/0.14/0.06/0.18/0.64. Palp with sulcate tibial apophysis (Fig. 5).

Female (paratype): Coloration pattern as male. Total length, not including chelicerae, 0.66. Carapace 0.24 long, 0.22 wide, 0.10 high. Abdomen 0.40 long, 0.42 wide, 0.44 high. No bristles or sockets visible on carapace. Clypeus as in male. Four eyes in two diads. Ratio of eyes 1.5. Posterior lateral eyes separated by 3.5 times their diameter, lateral eyes of each side contiguous. Legs covered with setae and bristles, no spines. Leg formula 1423. Leg measurements: I: femur 0.22/patella 0.12/tibia 0.16/metatarsus 0.10/tarsus 0.20/total 0.80. II: 0.20/0.10/0.12/0.10/0.18/0.70. III: 0.18/0.10/0.12/0.08/0.16/0.64. IV: 0.24/0.10/0.16/0.10/0.18/0.78. Epigynum with pair of oval spermathecae connected to long median epigynal duct by short straight lateral branches (Fig. 21).

Variation: Three males: total length 0.46–0.54; carapace length 0.20–0.24; femur I length 0.20–0.24. Ten females: total length 0.56–0.68; carapace length 0.20–0.30; femur I length 0.22–0.26.



Fig. 23: Distribution map of the Brazilian new species of *Anapistula* Gertsch. 1=*A. ayri* sp. n., 2=*A. aquytabuera* sp. n., 3=*A. pocaruguara* sp. n., 4=*A. guyri* sp. n., 5=*A. ybyquyra* sp. n., 6=*A. bebuia* sp. n.

Natural history: All specimens were collected in litter using Berlese funnels.

Distribution: Southern Brazil, state of Rio Grande do Sul.

Other material examined: BRAZIL: *Rio Grande do Sul*: Viamão, Fitotécnica da Fepagro, 1♂ 13♀ 4 juvs., 25 August 1995–7 July 1996, R. Ott coll. (IBSP 32777, 32778, 32779, 32780, 32781, 32782, 32783, 32784, 32785, 32786), 15♀, 12 January–7 July 1996, R. Ott coll. (MZSP 20424, 20425, 20426, 20427, 20428, 20429, 20430), 16♀ 1 juv., 10 October 1995–7 July 1996, R. Ott coll. (MCN), 17♀ 4 juvs., 27 July 1995–7 June 1996, R. Ott coll. (MCTP); Triunfo, Parque Copesul de Proteção Ambiental, 1♂ 1♀, 19 March 2001, M. A. L. Marques coll. (MCN 33745).

***Anapistula bebuia* sp. n.** (Fig. 22)

Type material: Holotype ♂ from Porto Nacional, Tocantins, 2001, I. Knysak & R. Martins coll., deposited in IBSP 32546. Paratypes: 2♂, same data as holotype, deposited in IBSP 32547 and 32548.

Etymology: The specific name is an adjective taken from the Brazilian “Tupi-guarani” Indian language. It denotes light weight associated with small size.

Diagnosis: The male of *Anapistula bebuia* differs from that of the other species by the triangular conductor and short, thickened embolus (Fig. 22). The female is unknown.

Description: *Male* (holotype): Coloration: carapace, sternum, labium, endites and chelicerae yellowish; abdomen orange, mottled with light brown spots; legs yellowish. Total length, not including chelicerae, 0.54. Carapace 0.28 long, 0.28 wide, 0.14 high. Abdomen 0.28 long, 0.30 wide, 0.38 high, covered with slender bristles. No bristles or sockets visible on carapace. Clypeus

projecting. Four eyes in two diads. Ratio of eyes 2.0. Posterior lateral eyes separated by 3 times their diameter, lateral eyes of each side contiguous. Legs covered with setae and bristles, no spines. Leg formula 1243. Leg measurements: I: femur 0.30/patella 0.14/tibia 0.22/metatarsus 0.14/tarsus 0.24/total 1.04. II: 0.28/0.12/0.20/0.12/0.22/0.94. III: 0.22/0.12/0.12/0.12/0.20/0.78. IV: 0.26/0.12/0.18/0.14/0.22/0.92. Palpal sperm duct with anterior sinuosity, median tegular apophysis inconspicuous (Fig. 22).

Female: Unknown.

Variation: Three males: total length 0.50–0.54; carapace length 0.22–0.28; femur I length 0.26–0.32.

Natural history: All specimens were collected in a cave, approximately 200 m from the entrance, in piles of organic litter, using Winkler extractors.

Distribution: Central-eastern Brazil, state of Goiás.

Other material examined: Only the types.

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References

- FORSTER, R. R. & PLATNICK, N. I. 1977: A review of the spider family Symphytognathidae (Arachnida, Araneae). *Am. Mus. Novit.* **2619**: 1–29.
- GNASPINI, P. & TRAJANO, E. 1994: Brazilian cave invertebrates, with a checklist of troglomorphic taxa. *Revta bras. Ent.* **38**(4): 549–584.
- HÖFER, H. 1990: The spider community (Araneae) of a Central Amazonian blackwater inundation forest (igapó). *Acta zool. fenn.* **190**: 173–179.
- HÖFER, H. & BRESCOVIT, A. D. 2001: Species and guild structure of a Neotropical spider assemblage (Araneae) (Reserva Florestal Adolpho Ducke, Manaus, Amazonas, Brazil). *Andrias* **15**: 99–120.
- PLATNICK, N. I. 2001: *The world spider catalog, version 2.0*. <<http://research.amnh.org/entomology/spiders/catalog81-87>>

Possible role of serotonin in the regulation of feeding in the tarantula *Aphonopelma hentzi* (Girard) (Orthognatha, Theraphosidae)

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Summary

Exogenous administration of 5-hydroxytryptamine (5-HT, serotonin) caused a significant decrease in body weight (12.9% weight loss) and in the number of prey consumed over a 10-week feeding period, in adult females of the tarantula *Aphonopelma hentzi*, as compared with non-treated controls (NTC) and spiders injected with physiological saline (SAL). Injection of methyltryptophan (MTP), a 5-HT antagonist, caused an increase in number of prey consumed and body weight (25.7%) as compared with NTC and SAL animals. No significant differences were found between NTC and SAL spiders with respect to changes in body weight or number of prey eaten. NTC spiders fed on crickets *ad libitum* exhibited an increase in body weight of 7.8% after 10 weeks. The possible role of 5-HT in the regulation of feeding behaviour in arthropods is discussed.

Introduction

It is well known that alterations in neurotransmitter/neuromodulator/neurohormone levels in mammals can affect the regulation of feeding and the amount of food consumed (Fernstrom & Wurtman, 1971). In addition, it has been argued that an increase in the intake of certain nutrients, such as carbohydrates, can result in an increased rate of synthesis of 5-hydroxytryptamine (5-HT, serotonin) in the blood and central nervous system (CNS) (Thibault & Booth, 1999). This increase in serotonin synthesis can then alter feeding behaviour by decreasing the animal's intake of carbohydrates.

The association between 5-HT and food consumption also occurs in insects. Cohen *et al.* (1988) demonstrated that the alteration of 5-HT levels had a significant effect on carbohydrate intake in noctuid caterpillars. As a result of a reduction in 5-HT concentrations caused by the administration of methyltryptophan, a serotonin antagonist, caterpillars increased their overall feeding rate as well as their rate of carbohydrate intake. Conversely, caterpillars ingested less food and carbohydrates when 5-HT levels were artificially increased. More recently, Cohen (2001) showed that injections of 5-HT promoted decreases in overall feeding and carbohydrate