

The Anyphaenidae of the Galápagos Archipelago and Cocos Island, with a redescription of *Anyphaenoides pluridentata* Berland, 1913

L. Baert

Koninklijk Belgisch Instituut voor Natuurwetenschappen,
Vautierstraat 29, 1040 Brussels, Belgium

Summary

Descriptions are given of the three *Anyphaenoides* species found on the Galápagos archipelago, *A. pacifica* (Banks, 1902), *A. octodentata* (Schmidt, 1971) and *A. katieae* sp.n. A new species, *A. cocos*, is described from Cocos Island. A redescription is given of the type species, *A. pluridentata* Berland from Ecuador. From the same type-material a new species, *A. brescoviti*, is described from Peru. *A. octodentata* seems to be a recent introduction to the Galapagoan fauna.

Introduction

Since 1982 sampling campaigns for Galápagos arthropods have been regularly undertaken by Belgian (L. Baert, K. Desender, J.-P. Maelfait), Canadian (S. Peck *et al.*) and Austrian (H. & I. Schatz) teams. The material collected has been progressively studied.

The spider collection from Cocos Island belonging to the Natural History Museum of Los Angeles County, sent to me by Charles Hogue, revealed the presence of *Anyphaenoides* on the island. It is described as a new species.

The type-material of *A. pluridentata* Berland, which originated from two localities, was revealed to pertain to two different species. The Ecuadorian material belongs to *A. pluridentata*, while the Peruvian specimens are described as *A. brescoviti* n.sp.

Abbreviations used in the text: MOQ=median ocular quadrat; AW=front width of MOQ; PW=back width of MOQ; AP=distance between anterior median and posterior median eyes. L=length of Ti III; D=diameter of Ti III, Lsp=length of apical spine of Ti III. Spination: d=dorsal, pl=prolateral, rl=retrolateral, *=double row of spines, p=on prolateral side, r=on retrolateral side. R.B.I.N.Sc=Royal Belgian Institute of Natural Sciences.

Anyphaenoides pacifica (Banks, 1902) (Figs. 1–4)

Aysha pacifica Banks, 1902: 58 (descr. ♂, ♀).

Teudis (?) pacifica: Roth & Craig, 1970: 116 (nom.).

Anyphaenoides pacifica: Baert, 1987: 149 (descr. ♂, ♀); Brescovit, 1992: 751 (descr.).

Diagnosis: Males of *A. pacifica* can be recognised by the short retrolateral tibial apophysis of the palp and the presence of a tooth at the base of the embolus, and females by their vulval structure with kidney-shaped spermathecae and a mitre-like atrium.

Male: Total length 3.85–6.28 mm; carapace 1.69–2.75 mm long, 1.29–2.27 mm wide. Colour: carapace yellow-brown, clypeus brown; suffused with black in faint lateral bands; chelicerae chestnut-brown; sternum orange-yellow; labium and gnathocoxae brown; legs yellow, faintly annulated, coxae whitish; abdomen

creamy with black chevrons on both sides of median creamy band. Eyes: MOQ: AW/PW=0.71–0.83; AW/AP=0.71–0.87. Chelicerae: 4 promarginal teeth, 7 retro-marginal denticles; L/W=2.36–2.93. Legs: Spination: femora Id3pl2, IId3pl1, III-IVd3pl1rl1; patellae III-IVrl1; tibiae Iv2*, IIpl1v2*, IIIId1pl2rl2v3p+2r, IVd2pl2rl3v3*; metatarsi Iv1* IIpl1v1*, IIIId2p+1rpl3rl3v3p+2r, IVd2p+1rpl3rl3v3*. Measurements Ti: I 1.49–2.63, II 1.18–2.20, III 0.78–1.37, IV 1.25–1.98. Ti III: L/D=4.1–5.1; Lsp/D=2.00–2.87. Mt and Ta of legs I and II with long hairs. Male palp (Figs. 1–3): Tibia with 3 spines.

Female: Total length 4.0–6.0 mm; carapace 1.69–2.04 mm long, 1.25–1.70 mm wide. Colour: as male. Eyes: MOQ: AW/PW=0.71–0.79; AW/AP=0.73–0.83. Legs: Spination: femora Id3pl2, IId3pl1, III-IVd3pl1rl1; patellae IVrl1; tibiae Iv2*, IIpl1v2r, IIIpl2rl2v3p+1r, IVpl2rl2v3p+2r; metatarsi I-IIv1*, III-IVd3p+2rpl2rl2v3*. Measurements Ti: I 1.14–1.45, II 0.94–1.18, III 0.57–0.86, IV 1.10–1.41. Ti III: L/D=3.2–3.7; Lsp/D=1.7–2.0. Epigynum: Fig. 4.

Distribution: A very widespread species over the whole Galápagos archipelago from the coastal arid zone up to the *Scalesia* zone: Española, Fernandina, Floreana, Isabela volcanoes (Alcedo, Cerro Azul, Darwin, Wolf), Marchena, Pinta, Pinzon, Rábida, Santiago, San Cristóbal, Santa Cruz and Seymour Norte.

Distribution on the continent: Trinidad, Venezuela, Colombia, Ecuador, Peru and northern Brazil (Brescovit, 1992).

Anyphaenoides octodentata (Schmidt, 1971) (Fig. 5)

Anyphaena octodentata Schmidt, 1971: 410 (descr. ♂, ♀).

Anyphaenoides octodentata: Brescovit, 1992: 748 (descr.).

Material examined: Galápagos Islands, Isla Santa Cruz, Charles Darwin Research Station, near meteorological station, supralittoral zone, 13–28 April 1991, 2♂ (pitfall trap); CDRS, building, April 1991, 1♂; CDRS, near meteorological station in supralittoral zone, 28 April–15 May 1991, 2♀ (leg. Baert, Desender & Maelfait). Isla San Cristóbal, Puerto Baquerizo, arid zone, alt. 10 m, 11–23 February 1989, 1♂ 2 juv♂ 1 juv♀; Isla Santa Cruz, CDRS above Barranco, alt. 40 m, arid zone, 1–30 May 1991, 1♂, 1–30 June 1991, 3♀ (in both latter cases together with *A. pacifica*); 3 km W of Bellavista, Finca Vilema, alt. 200 m, 1–30 April 1992, 1♂ (leg. S. Peck). Isla Santa Cruz, CDRS, supralittoral zone, 28 April–18 May 1991, 1♂ 1♀; arid zone, alt. 20 m, 3–14 May 1991, 1juv♂ (leg. J. Heraty). Isla Santa Cruz, CDRS, Barranco, alt. 10 m, 10 February–10 March 1991, 1♂; Bellavista, culture zone, alt. 160 m, 2–11 September 1991, 1♂, 4juv (leg. S. Abedrabbo). Isla Santa Cruz, Media Luna, alt. 600 m, 21 June–21 July 1992, 1♂ (leg. J. Palacios).

Diagnosis: Males of *A. octodentata* can be recognised by the medially dilated retrolateral palpal apophysis, and females by the vulval structure with spherical spermathecae and an anteriorly situated conical atrium.

Male: Total length 4.35–5.26 mm; carapace 1.69–2.24 mm long, 1.29–1.69 mm wide (7 specimens).

Colour: carapace with creamy dorsum flanked by greyish suffused bands, edges yellow-brown; chelicerae yellow-brown, darkened distally; sternum yellow-brown with orange-brown margins; legs uniformly creamy; abdomen creamy with faint grey pattern (in some specimens absent or uniform light grey). Eyes: MOQ: AW/PW=0.69–0.71; AW/AP=0.76–0.83. Chelicerae: 5 promarginal teeth, 7 retromarginal denticles; L/W=2.41–2.84 (♂ from San Cristóbal has shorter and more robust chelicerae L/W=1.17). Legs: Spination: femora I-II d3pl2, III d3pl2r1, IV d3pl1r1; patellae III-IV r1; tibiae I pl1r1v3*, II pl2v3*, III d2pl2r12v3p+2r, IV d3p+2rpl2r12v3*. Measurements Ti: I 1.65–2.49, II 1.18–1.86, III 0.82–1.10, IV 1.29–1.84. Ti III: L/D=4.78; Lsp/D=1.75. Mt and Ta of legs I and II with long hairs. Male palp (cf. Brescovit, 1992: figs. 13, 14): Tibia with 3 dorsal apical spines.

Female: Total length 4.07–6.20 mm; carapace 1.76–2.16 mm long, 1.29–1.57 mm wide (6 specimens). Eyes: MOQ: AW/PW=0.68–0.76; AW/AP=0.76–0.83. Chelicerae: L/W=1.74–2.82. Legs: Spination: femora Id3pl2, IId3pl1, III-IV d3pl1r1; patellae III-IV r1; tibiae Iv2*, II pl2v1p+2r, III-IV pl2r12v3p+1r; metatarsi I-II v1*, III-IV d3p+2rpl2r12v3*. Measurements Ti: I 1.25–1.65, II 1.06–1.29, III 0.75–0.94, IV 1.29–1.57. Ti III: L/D=3.8–3.9; Lsp/D=1.5–2.1. Epigynum: Fig. 5.

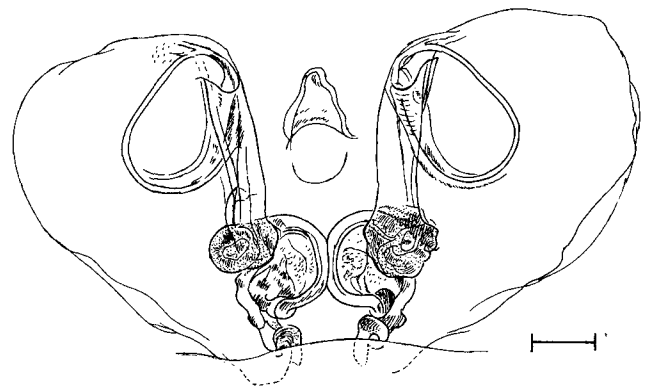
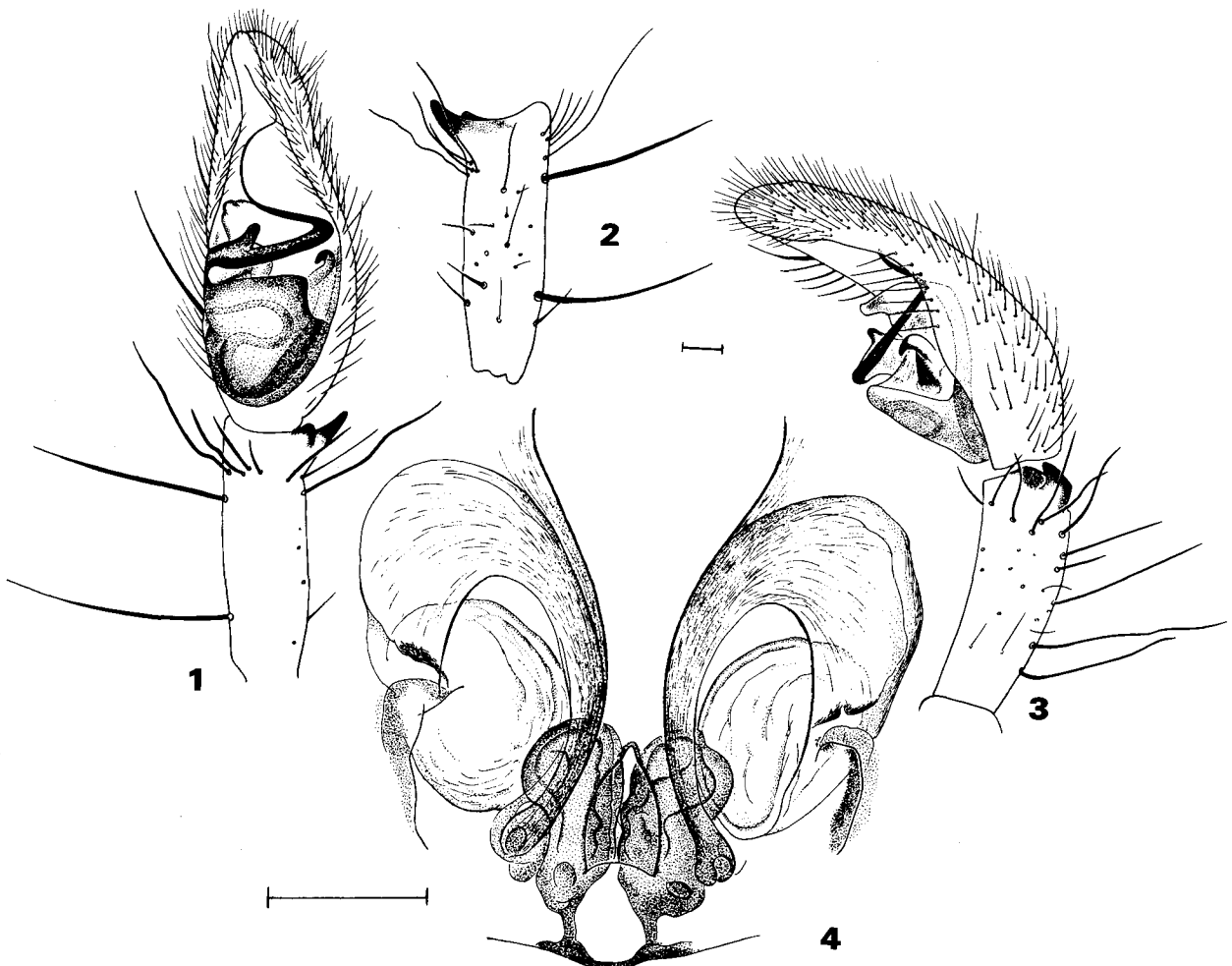
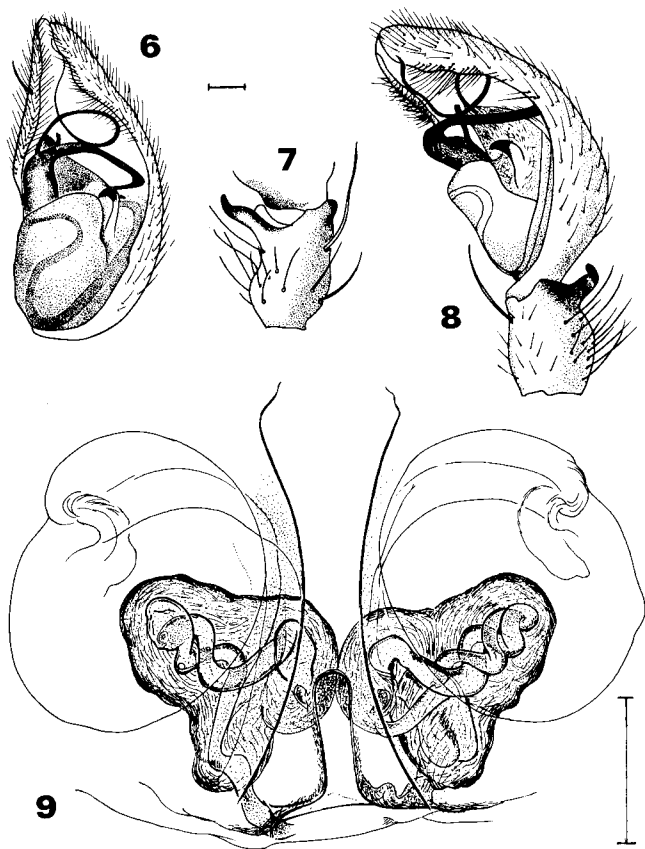


Fig. 5: *Anyphaenoides octodentata* (Schmidt). 5 Epigynum, internal, ventral. Scale line=0.1 mm.

Distribution: The first capture, made near Puerto Baquerizo (San Cristóbal), dates from February 1989. From April 1991 it has been regularly found in the vicinity of the CDRS, Puerto Ayora. Earlier searches in the same localities revealed only specimens of *A. pacifica*. This indicates a recent introduction of the species in Galápagos. In September 1991 it was caught in the culture zone near Bellavista (alt. 160 m). The most recent captures were in the culture zone some 3 km W of Bellavista (alt. 200 m) in April 1992 and in the pampa



Figs. 1–4: *Anyphaenoides pacifica* (Banks). 1 Male palp, ventral; 2 Male palpal tibia, dorsal; 3 Male palp, retrolateral; 4 Epigynum, internal, ventral. Scale lines=0.1 mm.



Figs. 6–9: *Anyphaenoides katiae*, n.sp. 6 Male palp, ventral; 7 Male palpal tibia, dorsal; 8 Male palp, retrolateral; 9 Epigynum, internal, ventral. Scale lines=0.1 mm.

zone of Media Luna (often visited by tourists), alt. 600 m in June–July 1992. It appears that *A. octodentata* is rapidly spreading to the higher parts of Santa Cruz island following man's pathways.

Distribution on the continent: Venezuela, Ecuador and Peru (Brescovit, 1992).

Anyphaenoides katiae, new species (Figs. 6–9)

Type material: Holotype ♂, Galápagos Islands, Isla San Cristóbal, Cerro Mundo, alt. 550 m, guava thicket, 13–23 February 1989, together with subadult ♂ (leg. S. Peck & J. Sinclair). Paratypes: Isla San Cristóbal El Junco: 1 km E of *Miconia* ravine, 13–23 February 1989 (leg. Peck & Sinclair), 2♂ (coll. S. Peck, Carleton University, Ottawa, Canada); alt. 630 m, rim of crater, 28 March 1985, 1♀, 29 March 1985, 1♂ 1♀ 5juv. (leg. Schatz, 1985) (coll. University of Innsbrück, Austria). Types deposited in R.B.I.N.Sc except were mentioned otherwise.

Diagnosis: Males of *A. katiae* can be recognised by the short palpal tibia and the needle-like tooth at the base of the embolus, and females by their vulval structure with strawberry-shaped spermathecae and a slender cylindrical atrium.

Etymology: The species name is a patronym in posthumous honour of Catherine (Katia) Bouckaert who made all the final drawings for my publications. These were her last. She died on the first of September 1993.

Male: Total length 4.75 (4.63–4.75) mm; carapace 2.16 (2.08–2.12) mm long, 1.65 (1.49–1.57) mm wide (4 specimens, paratypes in brackets). Colour: general coloration as in *A. pacifica* but more pronounced (brownier), black abdominal pattern darker. Eyes: MOQ: AW/PW=0.82 (0.74–0.81); AW/AP=0.77 (0.81). Chelicerae: 5 promarginal teeth, 10 retromarginal denticles; L/W=2.00 (1.92–2.21). Legs: Spination: femora I-IIId3pl1r11, III-IVd3pl2r11; patellae III-IVr11; tibiae I-IIpl3rl2v3*, IIIpl2rl2v3*, IVpl3rl3v3*; metatarsi Iv1*, IIpl1rl2v1*, IIIId2p+1rpl3v3p+2r, IVd2p+rpl3rl3v3*. Measurements Ti: I 1.65 (1.45–1.49), II 1.37 (1.29), III 0.94 (0.86), IV 1.41 (1.37). Ti III: L/D=3.24 (2.77–2.97); Lsp/D=0.80 (0.87–1.00). Male palp (Figs. 6–8): Palpal tibia with 4 spines.

Female: Total length 4.74–6.86 mm; carapace 2.27–4.31 mm long, 1.69–1.92 mm wide (2 specimens). Eyes: MOQ: AW/PW=0.74–0.78; AW/AP=0.78–0.82. Chelicerae: L/W=1.92. Legs: Spination: femora Id3pl2, IId3pl1, III-IVd3pl1r11; patellae III-IVr11; tibiae Ipl1v2*, IIpl2v2*, IIIpl2rl2v3*, IVpl2rl2v3p+2r; metatarsi Iv1*, IIpl1v1*, IIIId3p+2rpl2rl2v3p+2r, IVd3p+2rpl2rl2v3*. Measurements Ti: I 1.37, 1.63, II 1.22, 1.37, III 0.90, 1.02, IV 1.41, 1.57. Ti III: L/D=3.52, 3.60; Lsp/D=1.43–1.77. Epigynum: Fig. 9.

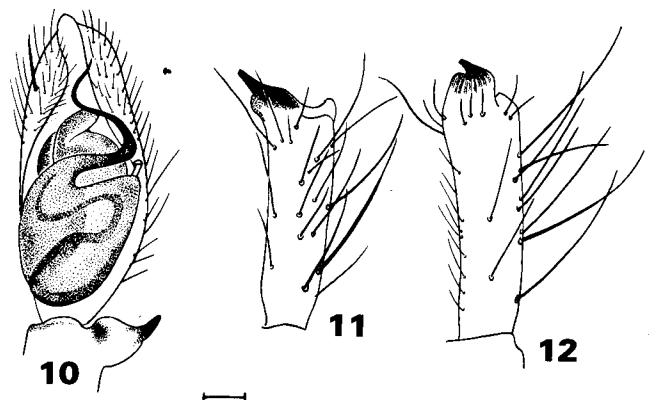
Anyphaenoides cocos, new species (Figs. 10–12)

Type material: Holotype ♂, Cocos Island, Chatham Bay, 8–9 March 1964 (leg. R. O. Schuster *et al.*), deposited in Natural History Museum of Los Angeles County.

Diagnosis: *A. cocos* can be recognised by the long palpal tibia and the swollen retrolateral apophysis.

Etymology: The species name is a noun in apposition taken from the type locality.

Male: Total length 5.02 mm; carapace 2.39 mm long, 1.88 mm wide. Colour: carapace light brown, abdomen creamy (colours faded in alcohol). Eyes: MOQ: AW/PW=0.73; AW/AP=0.94. Chelicerae: 4 promarginal teeth, 9 retromarginal denticles; L/W=2.87. Legs: Spination: femora I-IIId3pl2, IIIId3pl2r12, IVd3pl1r11; patellae III-IVr11; tibiae I missing, IIpl2v3*, III-IVd2pl2r12v3*; metatarsi I missing, IIpl1r11v1*, IIIId2pl3rl3v3*,



Figs. 10–12: *Anyphaenoides cocos*, n.sp. 10 Male palp, ventral; 11 Male palpal tibia, dorsal; 12 Male palpal tibia, retrolateral. Scale line=0.1 mm.

IVd3p+2rpl2rl2v3*. Measurements Ti: I missing, II 1.77, III 1.08, IV 1.69. Ti III: L/D=5.6; Lsp/D=2.7. Mt and Ta of legs I and II with long hairs, ventrally densely covered with special hairs. Male palp (Figs. 10–12): Tibia with three spines.

Female: Unknown.

Redescription of *Anyphaenoides pluridentata* Berland, 1913

When Brescovit (1992) made his revision of the neotropical genus *Anyphaenoides* Berland, 1913, the type material of *Anyphaenoides pluridentata* was not available at the Muséum national d'Histoire naturelle, Paris. He based his description and figures for this species on a male and female originating from Nanchoc Quebrada, Cajamarca, Peru.

The types were recently found, for I received them on loan when I requested them. There were two vials: (1) a vial labelled "type of the new genus and of the species"; with 2♂, 1♀ and a juvenile ♀ from Pinnlar, Ecuador; (2) a vial labelled "type" with one ♂ and one ♀ from La Masa, Peru.

The specimens in the first vial were the real *A. pluridentata* according to the figures made by Berland, while those in the second vial obviously belonged to another species. I recognised them as being the same as the male and female drawn by Brescovit for *pluridentata*. I therefore create a new species for the specimens from Peru and call it *A. brescoviti*.

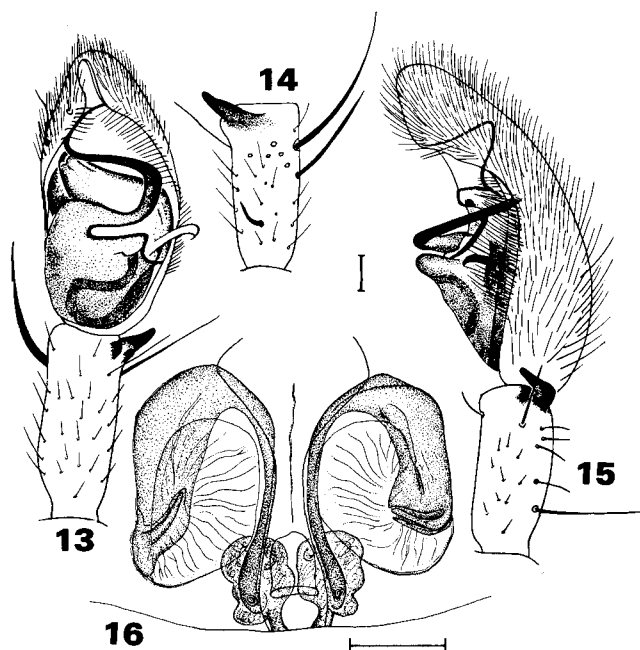
Anyphaenoides pluridentata Berland, 1913 (Figs. 13–16)

Anyphaenoides pluridentata Berland, 1913: 109 (descr. ♂, ♀).

Type material: Ecuador, Pinnlar, alt. 2900 m (holotype ♂, ♂ and ♀ paratypes and a juvenile ♀ from Muséum national d'Histoire naturelle, Paris, examined).

Diagnosis: The male of *A. pluridentata* can be recognised by the retrolateral tibial apophysis being longer than in *A. pacifica*, and the two apical spines (Fig. 14), and females by their vulval structure with a short rounded atrium.

Male: Total length 6.43 mm; carapace 2.43 mm long, 1.80 mm wide. Colour: carapace yellow-brown, bordered with narrow black band, fovea black; lateral black suffused band reaching posterior lateral eyes; chelicerae brown mottled with black; legs yellow without annulation; abdomen creamy white with irregular black patches at both sides of median unicolorous creamy white band. Eyes: MOQ: AW/PW=0.69; AW/AP=0.93. Chelicerae: 5 promarginal teeth, 10 retromarginal denticles; L/W=2.7. Legs: Spination: femora Id3pl2, IId3pl2, IIId3pl2rl2, IVd3pl1rl1; patellae I-IVdr11; tibiae Ipl2rl2v3*, Iipl2rl2v2p+3r, IIId2pl3rl3v3p+1r, IVd2pl3rl3v3*; metatarsi Iv1*, Iipl1v1*, IIId3p+2rpl2rl2v3p+2r, IVd3p+2rpl2rl2v3*. Measurements Ti: I 2.55, II 1.88, III 1.18, IV 1.96 (paratype 1.73, 1.25, 0.86, 1.41). Ti III: L/D=4.9; Lsp/D=2.2 (paratype 1.8). Mt and Ta of legs I and II with long hairs. Male palp (Figs. 13–15): Tibia with 3 spines.



Figs. 13–16: *Anyphaenoides pluridentata* Berland. 13 Male palp, ventral; 14 Male palpal tibia, dorsal; 15 Male palp, retrolateral; 16 Epigynum, internal, ventral. Scale lines=0.1 mm.

Female: Total length 5.18 mm; carapace 2.16 mm long, 1.61 mm wide. Colour: as male. Eyes: MOQ: AW/PW=0.70; AW/AP=0.79. Chelicerae: L/W=2.3. Legs: Spination: femora Id3pl2, IId3pl1, IIId3pl1rl1, IVd3rl1pl1; patellae III-IVrl1; tibiae I-IIv2*, IIId2pl2rl2v3p+1r, IVd1pl2rl3v3p+2r; metatarsi Iv1*, Iipl1v1*, IIId3p+2rpl2rl2v2*, IVd2p+3rpl3rl1v3*. Measurements Ti: I 1.57, II 1.18, III 0.86, IV 1.55. Ti III: L/D=3.7; Lsp/D=1.9. Epigynum: Fig. 16.

Distribution: Ecuador.

Anyphaenoides brescoviti, new species (Figs. 17–20)

Anyphaenoides pluridentata Berland, 1913: 109.

Anyphaenoides pluridentata: Brescovit, 1992: 744, figs. 1–8 (misidentification).

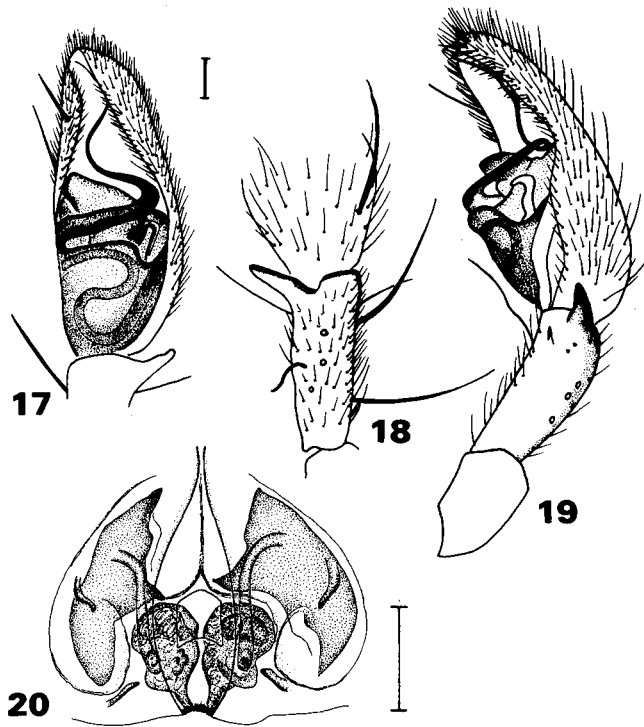
Type material: Peru, La Masa, alt. 400 m (leg. G. Rivet, 1906), holotype ♂ and paratype ♀, Muséum national d'Histoire naturelle, Paris, examined.

Etymology: The species name is a patronym in honour of Dr Antonio D. Brescovit.

Diagnosis: Males of *A. brescoviti* can be distinguished from *A. pluridentata* by the shape of the retrolateral tibial apophysis and the two widely separated prolateral spines, and females by their vulval structure, with fissure between epigynal plates wide open in the middle (borders of epigynal plates nearly touching each other in *A. pluridentata*).

Description: The description Brescovit (1992) gave erroneously for *Anyphaenoides pluridentata* in his recent revision of the genus *Anyphaenoides* applies to *A. brescoviti* and is not repeated here. I only add some data in accordance with the descriptions given for the other species.

Male: Eyes: MOQ: AW/PW=0.66; AW/AP=0.73. Chelicerae: 5 promarginal and 8 retromarginal teeth; L/W=1.3. Male palp: Figs. 17–19.



Figs. 17–20: *Anyphaenoides brescoviti*, n.sp. **17** Male palp, ventral; **18** Male palpal tibia, dorsal; **19** Male palp, retrolateral; **20** Epigynum, internal, ventral. Scale lines=0.1 mm.

Female: Eyes: MOQ: AW/PW=0.77; AW/AP=0.79. Chelicerae: 5 promarginal and 9 retromarginal teeth; L/W=1.0. Legs: Ti III: L/D=3.35; Lsp/D=1.86. Epigynum: Fig. 20.

Distribution: Peru.

Acknowledgements

I wish to thank the Ministerio de Agricultura y Ganadería, Programa Nacional Forestal, for the

permission they gave us to carry out our investigation programmes. We received excellent co-operation from the Parque Nacional de Galápagos (successive Intendentes Igr. Miguel Cifuentes, Igr. Humberto Ochoa, Lcdo. Fausto Cepeda and Igr. O. Sarango) and the Charles Darwin Research Station (successive Directors Dr F. Köster, Dr Günther Reck, Daniel Evans and their staff).

The Belgian expeditions were financed by: (1) the Belgian Ministry of Education; (2) the National Foundation for Scientific Research (NFWO); and (3) the Léopold III Foundation.

I also wish to thank Prof. S. Peck for his material, S. Abedrabbo for collecting material, Dr C. Hogue for the Cocos material and Dr C. Rollard for the loan of types from the Muséum national d'Histoire naturelle, Paris.

I wish to thank Eliane De Bock for drawing Figs. 16 and 20.

References

- BAERT, L. 1987: Spiders of the Galapagos Islands. Part IV. Miscellaneous families II. *Bull. Inst. r. Sci. nat. Belg.* **57**: 141–155.
- BANKS, N. 1902: Papers from the Hopkins Stamford Galápagos Expedition, 1898–1899. VII. Entomological results (6). Arachnida. *Proc. Wash. Acad. Sci.* **4**: 49–86.
- BERLAND, L. 1913: Araignées. In: *Mission du Service géographique de l'armée pour la mesure d'un arc de méridien équatorial en Amérique du Sud (1899–1906)* **10**: 79–119. Paris, Gauthier-Villars.
- BRESCOVIT, A. D. 1992: Revisão das aranhas neotropicais do gênero *Anyphaenoides* Berland, 1913 (Araneae, Anyphaenidae). *Revta bras. Ent.* **36**(4): 741–757.
- ROTH, V. D. & CRAIG, P. R. 1970: VII. Arachnida of the Galápagos Islands (excluding Acari). In: *Mission zoologique belge aux îles Galápagos et en Ecuador. Résultats scientifiques* **2**(10): 107–124.
- SCHMIDT, G. E. W. 1971: Mit Bananen eingeschleppte Spinnen. *Zool. Beitr (N.F.)* **17**: 387–433.