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Ochyroceratidae (Araneae) of Ecuador

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Abstract

Four new spider species belonging to the Family of the Ochyroceratidae are described from Ecuador.

Keywords: Spiders, Ochyroceratidae, New species, South America.

Résumé

Quatre nouvelles espèces d'araignées appartenant à la famille des Ochyroceratidae sont décrites d'Ecuador.

Samenvatting

Vier nieuwe spinnensoorten behorend tot de familie van de Ochyroceratidae worden van Ecuador beschreven.

Introduction

Till now (PLATNICK, 2014), there are only three genera known from the South American mainland: *Ochyrocera* Simon, 1891 from Brazil, French Guiana, Guatemala and Venezuela; *Speocera* Berland, 1914 from Brazil and the Galápagos Islands; *Theotima* Simon, 1893 from the Galápagos Islands and Venezuela.

None are known from Ecuador. In this paper four new species are described for this country, two *Ochyrocera* species, one *Speocera* species and one for which a new genus is erected: *Psiloochyrocera*.

Material and methods

This paper results of a sorting out of two different collections made in two different localities of the Andes in Ecuador.

The first collection is the result of a sampling done between February 1980 and January 1981 at an altitude of 220 m at the "Centro Científico Rio Palenque" at los Rios by Sonia Sandoval for her master thesis at the Pontificia Universidad Católica del Ecuador in Quito, under the supervision of Prof. Giovanni Onore.

The second collection is the result of more recent investigation done by Marc Pollet and Anja De Braekeleer in the "Podocarpus National Park" of Ecuador. A study made possible through the technical and financial support of the German Research Center EBSF and the Belgian King Léopold III Fund for Nature Exploration and Conservation.

The origin of the material here studied is twofold:

- Zamora Chinchipe, Bombuscaro, along the trail to El Mirador at an altitude of 1000 m.

- Cajanuma, along the trails to Los Miradores, Bosque Nublado and Oso de Anteojos, all samples at an altitude of 3000 m.

This material was collected by mean of white (WPT), red (RPT) and blue (BPT) pan traps.

All measurements were taken with a WILD M8 stereomicroscope and are in mm, while the drawings were made with a WILD M10 stereomicroscope. The electron microscope photos were made with a ESEM FEI QUANTA 200 microscope.

The colour given in the description is from specimens preserved in alcohol.

The left male palps are depicted and the female genitalia were cleared in a methyl-salicylate solution.

No scale bars are given in the figures explanation but measurements (in mm) of palp structures and epigyne are given throughout the descriptions.

All type specimens are deposited at the Royal Belgian Institute of Natural Sciences, Brussels.

The abbreviations used in the text are:

AME = Anterior Median Eyes; ALE = Anterior Lateral Eyes; Bu = Bulbus; Em = Embolus; Fe = Femur; Mt = Metatarsus; Pa = Patela; Ta = Tarsus; Ti = Tibia.

Taxonomical Results

OCHYROCERATIDAE

Psiloochyrocera gen. nov.

DIAGNOSIS

Tracheal stigma closer to epigastric furrow; Promargin of male chelicerae with beside lamina one prominent single tooth flanked by small teeth; Labium notched; Bulbus emerging apically on cymbium; Embolus emerging apically on bulbus; Vulva with a pair of elongated centrally located adjoining spermathecae; Male with 7 epiandrous glands or "fusules" linearly arranged along the anterior margin of the depression just in front of the epigastric furrow.

ETYMOLOGY

The genus name is a union of the subfamily names Psilodercinae and Ochyroceratinae (see discussion).

Psiloochyrocera cajanuma sp. nov. (Figs 1-12)

TYPE MATERIAL EXAMINED. **ECUADOR: LOJA:** Cajanuma, Podocarpus National Park: \bigcirc **Holotype:** (13109) trail to Los Miradores, 3000m altitude, 20-27.II.2009 (WPT); \bigcirc **Allotype:** (13155) trail to Oso de anteojos, 3000m altitude, 27.II-5.III.2009 (YPT); \bigcirc and \bigcirc **Paratypes:** (13064,13070) trail to Bosque Nublado, 3000m altitude, 16-20.II.2009 (YPT,RPT) $2\bigcirc$; (13105) Loja: trail to Bosque Nublado, 3000m altitude, 20-27.II.2009 (YPT); \bigcirc ; (13111) trail to Los Miradores, 3000m altitude, 20-27.II.2009 (YPT) \bigcirc ; (13111) trail to Los Miradores, 3000m altitude, 20-27.II.2009 (RPT) \bigcirc ; (13146) trail to Bosque Nublado, 3000m altitude, 27.II-5.III.2009 (YPT) $2\bigcirc$; (13147, 13152, 13154) trail to Los Miradores, 3000m altitude, 27.II-5.III.2009 (YPT) $3\bigcirc$, 2 \bigcirc ; (13155) trail to Oso de anteojos, 3000m altitude, 27.II-5.III.2009 (YPT) \bigcirc . (all material collected by Marc Pollet & Anja De Braekeleer)

DIAGNOSIS

The males can be recognized by the presence of 4 very long forwardly directed setae on the head, a sickle shaped embolus with small basal protuberance at its base; the females are characterized by a pair of elongated centrally located adjoining spermathecae.

ETYMOLOGY

The specific name is a noun in apposition taken from the type locality of Cajanuma.

DESCRIPTION

Male Holotype: Total length: 2.08 mm; carapace length: 0.91 mm, width: 0.74 mm, height: 0.31 mm: abdomen length 1.09 mm, width: 0.64 mm, height: 0.62 mm; chelicerae: 0.44 mm; clypeus: 0.12 mm.



Figs 1-5. *Psiloochyrocera cajanuma* gen. nov., sp. nov., male. 1. Palp, dorsal view (Ta = 0.29 mm) – 2. Palp, prolateral view (Ta = 0.29 mm) – 3. Labium and endites – 4. Cephalothorax, frontal view (chelicera = 0.44 mm) – 5. Cephalothorax, lateral view.



Figs 6-10. *Psiloochyrocera cajanuma* gen. nov., sp. nov. 6. Male right chelicera, frontal view (0.44 mm long) - 7. Male right chelicera, back view - 8. Female chelicerae, frontal view - 9. Female, epigyne, ventral view - 10. Female, cleared epigyne, dorsal view (Epigynal slit 0.21 mm wide).

Carapace: The colour (in alcohol) is brown with two parallel yellow bands starting from behind the posterior eyes and running longitudinally backwards, separated by a brown band; chelicerae yellow suffused with black; labium and endites yellowish, strongly suffused with black; sternum brown with faint central yellow stripe and black striae; palp yellowish grey; legs yellowish with green iridescence; tarsi and distal half of metatarsi with white rings giving the appearance of pseudo-segmentation.

Eyes: 6 in three groups; slightly elevated and surrounded by black.

Head region: With 4 very long setae directed forward and reaching fangs of chelicerae, 2 in the middle of the slightly protruding clypeus, 1 between each AME and ALE (Figs 4-5).

Chelicerae: Male chelicerae (0.44 mm long) with a single median promarginal tooth (Fig. 6); retromargin with a lamina and a prominent median tooth and 3 small teeth in between (Fig. 7); distally humped laterally. Two rows of 3 slits, perpendicular to each other, along the outer side close to the base of the fang (Fig. 11E).

Labium: Anteriorly incised, fused with sternum, with two central clear circular patches. 0.21 mm broad (Figs 3, 11F).

Endites: With retromarginal serrula, retrolateral long setae (with curled tip) and a promarginal scopula consisting of 4 kinds of macrosetae (crosier-like, comb-like, multifid and feather-like) (Figs 11D,12).

Sternum: Smooth with a number of long setae (those in front of the coxae I-III the longest), hind border straight, IVth coxae separated by each other by their diameter.

Abdomen: Longer than width, nearly as high as width; whitish with grey disrupted chevrons, venter grey with white central band; spinnerets greyish. Tracheal stigma closer to epigastric furrow (distance from base of colulus ca. 0.6) than to spinnerets (Fig. 11A); 7 epiandrous fusules linearly arranged along the arched anterior margin of the rounded depression just in front of the epigastric furrow (Figs 11A,B).

Spinnerets (Fig. 11C): Anterior lateral spinnerets with 6 priform spigots; posterior lateral spinnerets flat, leaflike with 17-18 aciniform gland spigots in a row; inner small, posterior median spinnerets with a single spigot.

Legs: Measurements: I (6.48 mm): Fe 1.81 mm, Pa 0.24 mm, Ti 2.04 mm, Mt 1.40 mm, Ta 0.99 mm; II (5.54 mm): Fe 1.57 mm, Pa 0.24 mm, Ti 1.69 mm, Mt 1.17 mm, Ta 0.87 mm; III (4.53 mm): Fe 1.30 mm, Pa 0.24 mm, Ti 1.26 mm, Mt 0.97 mm, Ta 0.76 mm; IV (5.93 mm): Fe 1.69 mm, Pa 0.25 mm, Ti 1.86 mm, Mt 1.24 mm, Ta 0.89 mm. Leg formula 1423, femora arched.

Pedipalp (Figs 1-2): Measurements: Fe: 0.47 mm, Pa: 0.16 mm, Ti: 0.39 mm, Ta: 0.29 mm, Bu + Em: 0.21 mm. Fe long; Ti slightly swollen with sparsely long hairs; cymbium strongly swollen with dorsally grouped long hairs; Bulbus spherical in apical position; Embolus sickle shaped, in apical position, with small basal protuberance at base.

Female Allotype: Total length: 1.92 mm; carapace length: 0.83 mm, width: 0.62 mm, height: 0.29 mm; abdomen length: 0.89 mm, width: 0.76 mm, height: 0.85 mm; chelicerae: 0.39 mm; clypeus: 0.17 mm.

Carapace: Colouration and markings as in male but lighter. Characters as in male, but: head region with shorter and less robust setae on clypeus and between AME and ALE.

Chelicerae: With 7 promarginal teeth in front of lamina (Fig. 8).

Abdomen: Light violet and nearly globose. Tracheal split closer to epigynal furrow (distance from base of colulus ca. 0.6) than to spinnerets.

Eyes: As in male.

Legs: Measurements: I (5.15 mm): Fe 1.40 mm, Pa 0.23 mm, Ti 1.61 mm, Mt 1.07 mm, Ta 0.84 mm; II (4.48 mm): Fe 1.28 mm, Pa 0.23 mm, Ti 1.30 mm, Mt 0.91 mm, Ta 0.76 mm; III (3.65 mm): Fe 1.07 mm, Pa 0.21 mm, Ti 1.01 mm, Mt 0.74 mm, Ta 0.62 mm; IV (4.86 mm): Fe 1.36 mm, Pa 0.23 mm, Ti 1.46 mm, Mt 1.03 mm, Ta 1.78 mm. Leg formula: 1423, Ta IV slightly curled distally.

Epigyne (Figs 9-10): Vulva with a pair of elongated centrally located adjoining spermathecae, short fertilization ducts running ectally. Epigynal slit 0.21 mm wide.

DISCUSSION

Following the identification key of DEELEMAN-REINHOLD (1995) we should place this species according the notched labium into the Subfamilies Ochyroceratinae / Theotiminae, and according to the apical position of the tegulum on the cymbium into the Subfamily Psilodercinae, but according the closer position of the tracheal stigma against the epigastric furrow it should belong to neither of them.



Fig. 11. *Psiloochyrocera cajanuma* gen. nov., sp. nov., male. A. Abdomen, ventral view – B. Epiandrous glands – C. Spinnerets – D. Endite with promarginal scopular macrosetae – E. Base of chelicera with two rows of three slits – F. Labium.



Fig. 12. *Psiloochyrocera cajanuma* gen. nov., sp. nov., male, detail of endite with promarginal scopular macrosetae and serrula.

This might mean that the differentiation between the Subfamilies, as suggested by DEELEMAN-REINHOLD (1995) and MACHADO (1951), cannot be supported anymore.

A new genus for this species is therefore erected, diagnosed by the diagnostic characters of both Subfamilies taken together: notched labium; bulbus emerging apically on the tarsus (*); tracheal stigma lying closer to the epigastric fold; single prominent pro-marginal tooth on male chelicerae (**). (*) The apical emergence of the tegulum can also be found in the cave-dwelling species *Ochyrocera peruana* Ribera-Almerje, 1978. Other common characters of this species with this new genus are the presence of clypeal setae (in this species: many short ones just in front of the anterior eye row) and the more or less congruent shape of the tarsus. This species might therefore belong to this new genus. There is also at first sight a good resemblance with the bulbus and embolus of *Ochyrocera juquila*

Valdez-Mondragón, 2009 from Mexico, except that in *juquila* it emerges lateral of the tarsus. (**) cfr Ochyrocera cachote Hormiga et al., 2007

The epiandrous glands or "fusules"

This is a group of well-developed glands which open immediately anterior to the genital furrow of the male spiders. These were apparently first noticed by MACHADO (1951) and he stated that they were evidently homologous with those found in a similar position in *Scytodes* and *Pholcus* (see also FAGE & MACHADO, 1951 p. 99). Their possible function and possible origin are well discussed in MARPLES (1967).

Not all authors have taken notice of this character, but going through the species descriptions where the authors did we may in a certain way conclude that their number seems to be more or less typical for each genera:

ex-Apiacera species from Western Samoa: 2 (MARPLES, 1955 & 1967)

Speocera species from Angola: 3 (exceptionally 4 in S. vilhenae) (MACHADO, 1951)
Dundacera species from Angola: 3 (exceptionally 2) (MACHADO, 1951)
Theotima species from Angola: 3 (exceptionally 2 in T. moxicensis) (MACHADO, 1951)
Ceruleocera species from Western Samoa: 6 (MARPLES, 1955 & 1967)
Ochyrocera: 5-6 {O. ransfordi (Marples, 1955): 6, O. caeruleomethystina Lopez & Lopez, 1997: 6, O. thibaudi Emerit & Lopez, 1985: 5}.

The promarginal scopular macrosetae of the endites

The endites are characterized by the presence of a promarginal scopula with a number of modified macrosetae.

We find in the literature the mention of crosier-like macrosetae in *Althepus* and *Ochyrocera* (FAGE, 1912), in *Speocera pallida* (BERLAND, 1914) and in *Dundocera* and *Speocera* (MACHADO, 1951).

Multifid macrosetae are mentioned in *Ochyrocera* by FAGE (1912), and comb-like macrosetae are mentioned in *Dundocera* and *Speocera* by MACHADO (1951).

In this species we observe a fourth kind of macroseta with a feather-like appearance (Fig. 12).

Ochyrocera Simon, 1891

Ochyrocera zamora sp. nov.

(Figs 13-14)

DIAGNOSIS

The male can be diagnosed from other *Ochyrocera* species by the long apical cymbial cuspule, the bottle-shaped bulbus and the long filiform embolus strongly curled at the tip.

ETYMOLOGY

The specific name is a noun in apposition taken from the type locality of Zamora.

DESCRIPTION

Male Holotype: Total length: 1.88 mm; carapace length: 0.85 mm, width: 0.70 mm, height: 0.27 mm; abdomen length 0.93 mm, width: 0.49 mm, height: 0.45 mm; chelicerae: 0.35 mm; clypeus: 0.17 mm.

Carapace: The colour (in alcohol) is brown with a slight pinkish tinge, striae lightly suffused with black; six eyes in three groups, eyes slightly elevated and encircled by black; chelicerae yellowish brown with 7 small teeth distally of lamina; labium and endites yellowish speckled with grey; sternum smooth, yellowish with faint brown network; legs pinkish speckled with grey and with slight greenish iridescence, coxae yellow, tarsi with white tip, tarsi and distal third of metatarsi with white rings giving the appearance of pseudo-segmentation; abdomen grey.

Chelicerae: A lamina followed by a row of 8 small teeth.

Labium: A small notch at the tip.

Abdomen: Longer than width, nearly as high as width; tracheal split closer to epigynal furrow (distance from base of colulus ca. 0.71) than to spinnerets; 6 epiandrous fusules linearly arranged along the arched anterior margin of the rounded depression just in front of the epigastric furrow.

Legs: Measurements: I (6.17 mm): Fe 1.73 mm, Pa 0.27 mm, Ti 1.94 mm, Mt 1.36 mm, Ta 0.87 mm; III (4.30 mm): Fe 1.22 mm, Pa 0.23 mm, Ti 1.22 mm, Mt 0.99 mm, Ta 0.64 mm; IV (5.68 mm): Fe 1.61 mm, Pa 0.25 mm, Ti 1.71 mm, Mt 1.22 mm, Ta 0.89 mm.

Pedipalp (Figs 13-14): Measurements: Fe: 0.37 mm, Pa: 0.12 mm, Ti: 0.71 mm, Ta: 0.47 mm, Bu: 0.31 mm, Em: 0.55 mm. Fe long; Ti swollen in proximal half; Cymbium with long apical cuspule; Tegulum peer-shaped originating at base of cymbium; Embolus long, crossing cymbium perpendicularly and strongly curled apical.

Female: Unknown.

Related species:

The *Ochyrocera* species which resembles most *O. zamora* are *O. chiapas* Valdez-Mondragón, 2009, *O. arietina* Simon, 1891 and *O. simoni* O.P.-Cambridge, 1894. *O. chiapas* differs by cylindrical palpal tibia and the broader less curled embolus, while *arietina* and *simoni* do have more or less the same tibial shape and filiform embolus but the emboli are have a straighter configuration and are not curled at the tip.



Figs 13-14. Ochyrocera zamora sp. nov., male. 13. Palp, prolateral view -14. Palp, retrolateral view (Ta = 0.47 mm).

Ochyrocera sandovalae sp. nov. (Figs 15-16)

TYPE MATERIAL EXAMINED. **ECUADOR:** Los Rios; Centro Científico Rio Palenque, 220 m of altitude, bosque: *A* **Holotype**: 26.XII.1980. (Leg. Sonia Sandoval)

DIAGNOSIS

Cymbium of male palp with digitiform apical extension; embolus long, broad at base but narrowing towards its tip.

ETYMOLOGY

The specific name is a patronym in honour of Sandra Sandoval who captured this species in the course of her samplings for her master thesis (1981) at the Pontifica Universidad Católica del Ecuador, Quito.

DESCRIPTION

Male Holotype: Total length: 0.74 mm; carapace length: 0.35 mm, width: 0.33 mm, height: 0.14 mm; abdomen length 0.39 mm, width: 0.31 mm; chelicerae: 0.35 mm; clypeus: 0.17 mm.

Carapace: The colour (in alcohol) is yellow orange, striae ectally suffused with black; six eyes in three groups, encircled by black; chelicerae, labium, endites and sternum yellowish; legs whitish. *Abdomen*: Oval, longer than width; beige with anal region encircled with black.

Legs: Measurements: I (1.83 mm): Fe 0.485 mm, Pa 0.136 mm, Ti 0.524 mm, Mt 0.378 mm, Ta 0.311 mm; II (1.58 mm): Fe 0.447 mm, Pa 0.118 mm, Ti 0.408 mm, Mt 0.330 mm, Ta 0.272 mm; III & IV missing.

Pedipalp (Figs 15-16): Measurements: Fe: 0.155 mm, Pa: 0.039 mm, Ti: 0.155 mm, Ta: 0.146 mm, Bu: 0.31 mm, Em: 0.55 mm. Ti short, swollen at base; Cymbium with digitiform apical extension; Tegulum swollen, originating at base of cymbium; Embolus long, broad at base but narrowing towards the end.

Female: Unknown.



Figs 15-16. Ochyrocera sandovalae sp. nov., male. 15. Palp, lateral view - 16. Palp, ventral view (Ta = 0.15 mm).

Speocera Berland, 1914

Speocera onorei sp. nov. (Figs 17-20)

TYPE MATERIAL EXAMINED. **ECUADOR:** Los Rios; Centro Científico Rio Palenque, 220 m of altitude: \eth **Holotype**: 20.XII.1980, \heartsuit **Allotype**: 21.XII.1980, **Paratypes**: 20.XII.1980 (\eth), 27.XII.1980 (\eth), 27.XII.1980 (\circlearrowright), 28.II.1981 (\circlearrowright), 28.II.1981 (\circlearrowright), 23.XII.1981 (\circlearrowright) (Leg. Sonia Sandoval).

DIAGNOSIS

Can be recognised from the other *Speocera* species by its short hooklike embolus in males and by the central located spermathecae in females.

ETYMOLOGY

The specific name is a patronym in honour of Professor Giovani Onoré, teacher biology at the Pontifica Universidad Católica del Ecuador, Quito, promotor of the Master thesis of Sonia Sandoval.

DESCRIPTION

Male Holotype: Total length: 0.88 mm; carapace length: 0.42 mm, width: 0.35 mm, height: 0.16 mm; abdomen length 0.47 mm, width: 0.29 mm; chelicerae: 0.35 mm; clypeus: 0.17 mm.

Carapace: The colour (in alcohol) is yellowish, striae slightly suffused with black, border black; six eyes in three groups, encircled by black; chelicerae, labium, endites and sternum yellowish; legs whitish.

Chelicerae: A lamina followed by a row of 6 small teeth (Fig. 20A). Two rows of 2 slits, perpendicular to each other, along the outer side close to the base of the fang (Fig. 20B).

Endites: With retromarginal serrula and a promarginal scopula consisting of 3 kinds of macrosetae (crosier-like, comb-like, and multifid) (Fig. 20D).

Abdomen: Longer than width, yellow brown speckled with grey and lighter median band.

Spinnerets: Anterior lateral spinnerets with 4 spigots; posterior lateral spinnerets with 3 spigots; posterior median spinnerets with 1 spigot (Fig. 20C).



Figs 17-19. *Speocera onorei* sp. nov., male. 17. Palp, lateral view - 18. Palp, ventral view (Ta = 0.155 mm) - *Speocera onorei* sp.n., female. 19. Cleared epigyne, ventral view (Epigynal slit 0.16 mm wide).

Legs: Measurements: I (1.55 mm): Fe 0.466 mm, Pa 0.118 mm, Ti 0.437 mm, Mt 0.311 mm, Ta 0.214 mm; II (1.33 mm): Fe 0.388 mm, Pa 0.101 mm, Ti 0.350 mm, Mt 0.291 mm, Ta 0.204 mm; III (1.17 mm): Fe 0.330 mm, Pa 0.118 mm, Ti 0.272 mm, Mt 0.272 mm, Ta 0.180 mm; IV (1.55 mm): Fe 0.466 mm, Pa 0.118 mm, Ti 0.408 mm, Mt 0.340 mm, Ta 0.214 mm.

Pedipalp (Figs 17-18): Measurements: Fe: 0.233 mm, Pa: 0.078 mm, Ti: 0.214 mm, Ta: 0.155 mm, Bu: 0.31 mm, Em: 0.55 mm. Fe long; Ti and Cy embrasing spherical bulbus with short hooklike embolus.

Female Allotype: Total length: 0.92 mm; carapace length: 0.44 mm, width: 0.33 mm, height: 0.14 mm; abdomen length 0.49 mm, width: 0.29 mm; chelicerae: 0.35 mm; clypeus: 0.17 mm.

Carapace: The colour (in alcohol) is yellowish, striae suffused with black, border black; six eyes in three groups, encircled by black; chelicerae, labium, endites and sternum yellowish; legs lighter.

Abdomen: Longer than width, beige speckled with grey dots.

Legs: Measurements: I (1.37 mm): Fe 0.388 mm, Pa 0.107 mm, Ti 0.388 mm, Mt 0.291 mm, Ta 0.194 mm; II (1.21 mm): Fe 0.350 mm, Pa 0.107 mm, Ti 0.311 mm, Mt 0.243 mm, Ta 0.194 mm; III (1.07 mm): Fe 0.330 mm, Pa 0.097 mm, Ti 0.252 mm, Mt 0.233 mm, Ta 0.155 mm; IV (1.45 mm): Fe 0.408 mm, Pa 0.118 mm, Ti 0.388 mm, Mt 0.330 mm, Ta 0.204 mm.

Epigyne (Fig. 19): Vulva with a pair of centrally located spermathecae, short fertilization ducts diverging to the outermost edges of the epigynal slit being 0.16 mm wide.



Fig. 20. *Speocera onorei* sp. nov., male. A. Chelicerae – B. Base of chelicera with two rows of two slits – C. Spinnerets – D. Endite with promarginal scopular macrosetae and serrula.

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