

New spider species (Araneae) from the Galápagos Islands (Ecuador)

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Abstract

Two new spider species are described from the Galápagos archipelago. *Theridiosoma sancristobalensis* sp. nov. (Theridiosomatidae) and *Galapa floreana* sp. nov. (Pholcidae). The unknown male of a *Zimiromus* species (Gnaphosidae) is described.

Keywords : Spiders, Gnaphosidae, Theridiosomatidae, Pholcidae, new species.

Samenvatting

Twee nieuwe spinnensoorten worden van de Galápagos eilanden beschreven: *Theridiosoma sancristobalensis* sp. nov. (Theridiosomatidae) en *Galapa floreana* sp. nov. (Pholcidae). Het onbekend mannetje van een *Zimiromus* (Gnaphosidae) soort wordt beschreven.

Résumé

Deux nouvelles espèces d'araignées sont décrites de l'archipel des Galápagos: *Theridiosoma sancristobalensis* sp. nov. (Theridiosomatidae) et *Galapa floreana* sp. nov. (Pholcidae). Le mâle inconnu d'une espèce de *Zimiromus* (Gnaphosidae) est décrit.

Introduction

All important spider collections ever made on the Galápagos Archipelago have been studied by the author. A detailed overview of the sampled spider material since 1859 is given in BAERT (2013).

The author started a systematic sampling of the spider fauna of the archipelago in 1982. These samplings were carried out in collaboration with several Belgian colleagues at regular base till 2010. By the end of 2010, the author received the opportunity to study the spider collections made between 1967 and 1980 by S. Riechert (1967-1974) and Prof. W.G. Reeder (1975-1980). These collections are deposited at the Texas Memorial Museum of the University of Texas, Austin.

The entirety of the material studied comprises something more than 11.400 specimens, derived from nearly 5.200 sampling units distributed over 700 localities scattered over the whole archipelago.

The Texas Memorial Museum material contained a new Theridiosomatidae species (*Theridiosoma sancristobalensis* sp. nov.) and 2 unknown *Zimiromus* (Gnaphosidae) males which might be the males of one of the females described from the mainland.

While sampling the ants of the island of Floreana, Henri Herrera (Researcher at the Charles Darwin Research Station, Santa Cruz) caught a small pholcid spider in a pitfall trap. It appeared to belong to the genus *Galapa* Huber, 2000 and to differ consistently from the two known archipelago species (see discussion below). It is herein described.

Material and methods

The type material of the 2 new species and the males of the *Zimiromus* species are deposited at the Royal Belgian Institute of Natural Sciences, Brussels (Belgium).

Specimens were examined and measured with a Wild M5 stereomicroscope, and illustrated using a Wild M10 stereomicroscope.

The left male palps are depicted. The female genitalia of *Theridiosoma sancristobalensis* were cleared in a methylsalicylate solution.

The abbreviations used in the text : AME = Anterior Median Eyes ; Fe = Femur ; HWH = Henri W. Herrera ; Mt = Metatarsus ; Pa = Patella ; PME = Posterior Median Eyes ; Ta = Tarsus ; Ti = Tibia.

GNAPHOSIDAE

Zimiromus Banks, 1914

DIAGNOSIS

Conform to the diagnosis given by PLATNICK (1976), except by small differences in eye positions : posterior eye row slightly procurved ; posterior eyes much closer to each other, median eyes nearly touching, lateral eyes separated 1/4th of each other.

Zimiromus species

(Figs 1-5)

DIAGNOSIS

Differs from the other male *Zimiromus* species by the straight triangular conductor not folded around the embolus, the shape of the retrolateral tibial apophysis, the eye positions and the presence of a promarginal row of 11 plumose setae.

MATERIAL EXAMINED. GALÁPAGOS ARCHIPELAGO : ♂ : Isla Rábida, 75 m asl, under rotting *Opuntia* cactus trunk, 30/IX/1975, leg. W.G. Reeder ; ♂ : Isla Gardner near Isla Española, 20 m asl, litter of *Bursera* and *Croton* under large *Opuntia* cactus, 13/II/1977, leg. W.G. Reeder.

DESCRIPTION

Male : Total length : 3.45 mm ; carapace length : 1.24 mm, width : 0.93 mm, height : 0.39 mm.

Carapace : Colour (in alcohol) pale orange with black oval in eye region, especially around AME ; sparsely covered with short black setae along sides. Chelicerae, pedipalps and labium pale orange. Endites and sternum yellow with orange tinge. Sternum covered with median short setae, bordered with long setae.

Chelicerae : Promargin with row of 9 plumose setae ; retromargin with 2 plumose setae at fang base. Three promarginal and 1 retromarginal teeth.

Abdomen : Creamy with small orange anterior scutum and four hardly visible impressed dots.

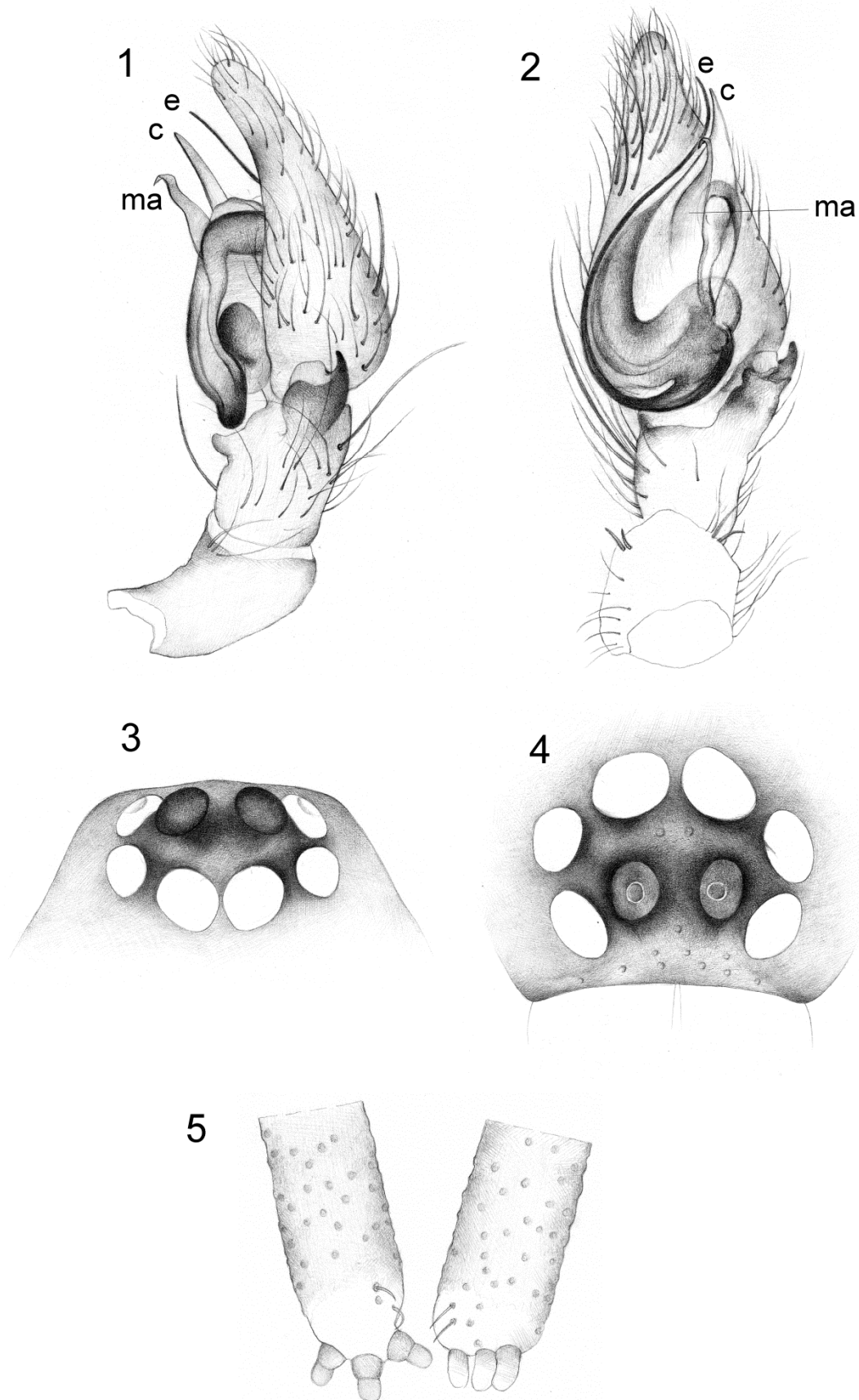
Eyes (Figs 3, 4) : Eyes close together ; anterior eye row slightly recurved, seen from above (Fig. 3) ; anterior median eyes separated by nearly their diameter (Fig. 4) ; anterior median eyes separated from anterior lateral eyes by 1/3th diameter (Fig. 4) ; posterior eye row slightly procurved ; posterior eyes much closer to each other, median eyes nearly touching, lateral eyes separated 1/4th of each other (Fig. 3) ; PME > AME.

Legs : Measurements : I (3.57 mm) : Fe 1.05 mm, Pa 0.62 mm, Ti 0.72 mm, Mt 0.68 mm, Ta 0.50 mm ; II (3.24 mm) : Fe 0.95 mm, Pa 0.56 mm, Ti 0.64 mm, Mt 0.60 mm, Ta 0.49 mm ; III (3.04 mm) : Fe 0.85 mm, Pa 0.45 mm, Ti 0.56 mm, Mt 0.68 mm, Ta 0.50 mm ; IV (4.47 mm) : Fe 1.17 mm, Pa 0.60 mm, Ti 0.87 mm, Mt 1.15 mm, Ta 0.68 mm. Spination : femora : I d3p1, II d3p1, III d3p1r1, IV d3 (proximal dorsal spine the longest, I : 0.9 femur diameter, IV : 1.1 femur diameter) ; patellae I & II none, III & IV d1p1r1 ; tibiae : I & II none, III d1p2r1v1-1-2, IV d2p2r2v1-1-2 ; metatarsi : I & II none, III d2-1p1-1r1-1v1-2, IV d2-2p1-1r1-1v1-1-1. Tarsi with 3 pairs of claw tufts.

Spinnerets : Anterior lateral spinnerets with 3 piriform spigots along posterior border and 2 small ampullate spigots along antero-median border (Fig. 5).

Pedipalp (Figs 1,2) : Cymbium length 0.41 mm. Embolus long and thin, originating retro-proximally, running prolaterally along bulbus, curved towards retrolateral side, ending in a curl adjacent to thin triangular conductor ; median apophysis hooklike. Retrolateral tibial apophysis with clawlike tip.

Female : unknown.



Figs 1-5. *Zimiromus* species, male. 1. Palp, lateral view (Cymbium length 0.41 mm) – 2. Palp, ventral view – 3. Eyes, dorsal view – 4. Eyes, frontal view – 5. Anterior spinnerets. (c = conductor, e = embolus, ma = median apophysis).

DISCUSSION

From the 9 known Galápagos gnaphosid species, only 2 have a cosmopolitan distribution, i.e. *Trachyzelotes kulczyński* (Bösenberg, 1902) and *Zelotes laetus* (O.-P. Cambridge, 1872). The 6 *Camillina* species and *Poecilochroa bifasciata* Banks, 1902 are endemic to the archipelago. Although the *Zimiromus* males described here may represent a new species, it is preferable to postpone the creation of a new species until females have been found. The males might indeed belong to one of the females described from the low altitude regions of the Latin-American mainland in Ecuador or Peru, i.e. *Z. brachet* Platnick & Shadab, 1976 from Ecuador (Guyaquil), *Z. circulus* Platnick & Shadab, 1976 from Pasco (Peru) or *Z. piura* Platnick & Shadab, 1976 from Piura (Peru).

THERIDIOSOMATIDAE

Theridiosoma O. Pickard-Cambridge, 1879

DIAGNOSIS

Conform to the diagnosis given by CODDINGTON (1986). First legs longer than fourth ; legs long and slender ; PME separation less than ½ diameter ; embolic division fragmented into bristle-like parts (hardly visible in this species) ; posterior epigynal rim blunt, not pointed.

Theridiosoma sancristobalensis sp. nov.

(Figs 6-12)

ETYMOLOGY

The specific name is an adjective derived from the type locality.

DIAGNOSIS

Closely resembles *T. chiripa* Rodrigues & Ott (2005) but differs in some details : the embolic apophysis on the male palp is hooked whereas it is straight in *T. chiripa* ; the embolus is longer and median apophysis is elongate. The scapus of the epigynum is broadly rounded ; the vulva has long arched copulatory ducts whereas short in *T. chiripa*. Abdomen : with different folium design.

TYPE MATERIAL EXAMINED. GALÁPAGOS ARCHIPELAGO : **Holotype male & Allotype female** : Isla San Cristóbal, El Junco area, 540-560 m asl, sweeping dense grove of *Eugenia* leaves, 16/II/1978, leg. W.G. Reeder. **Paratype male** : Isla San Cristóbal, El Junco area, 540-560 m asl, sweeping vertical walls of encañada at head of stream, covered with ferns and *Miconia*, 16/II/1978, leg. W.G. Reeder.

OTHER MATERIAL EXAMINED.

One male and two females without label (leg. W.G. Reeder).

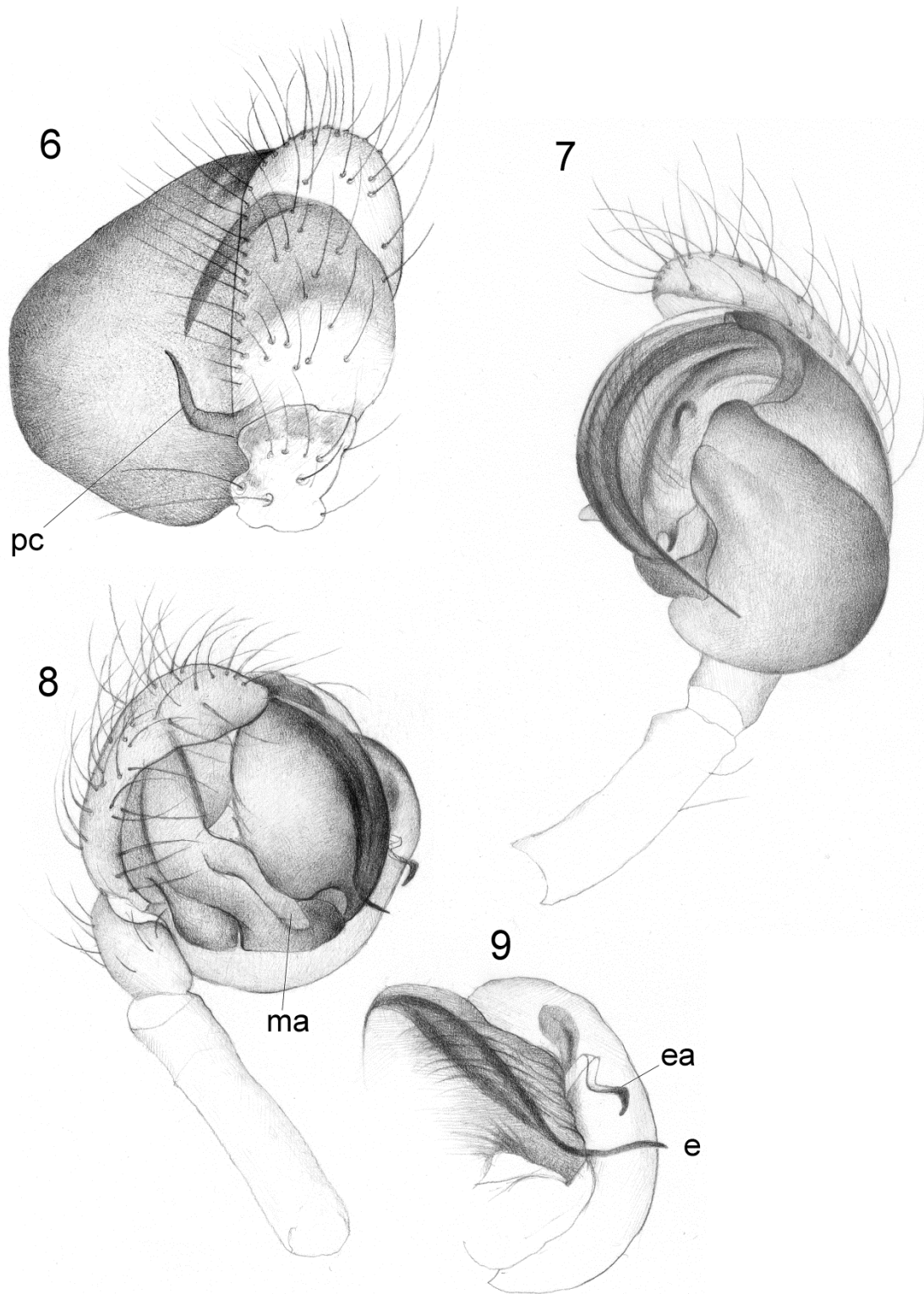
DESCRIPTION :

Male Holotype : Total length : 1.44 mm ; carapace length : 0.70 mm, width : 0.58 mm, height : 0.39 mm ; abdomen : 0.74 mm long, 1.01 mm high, 0.74 mm wide.

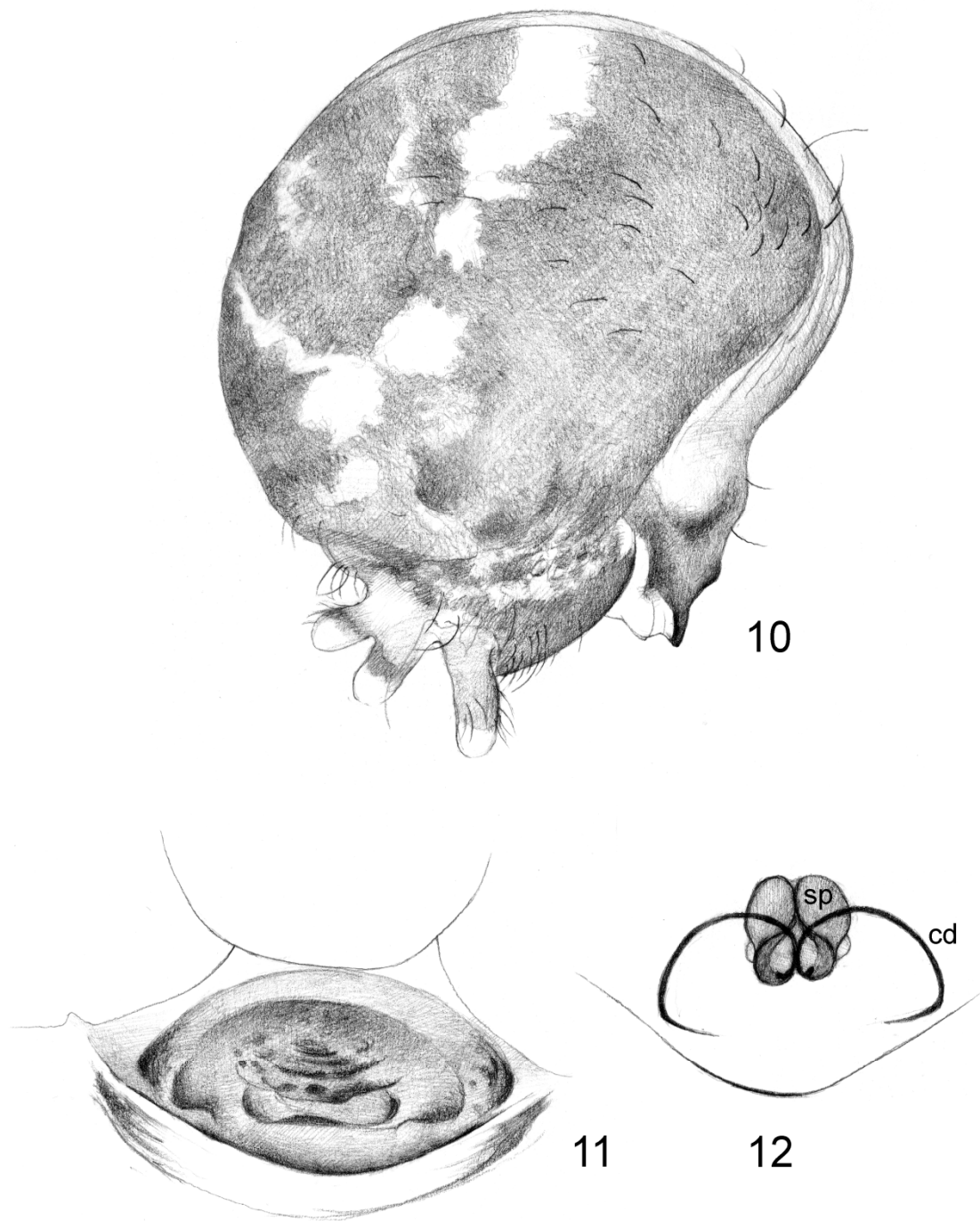
Carapace : Colour (in alcohol) brown, slightly suffused with black along striae ; ocular area black, especially around anterior median eyes ; slanting caudal part yellowish brown. Clypeus 3.5 times diameter of AME. Chelicerae and labium light brown. Endites whitish with blackly suffused bases. Sternum light brown with blackish border. Legs light brown hardly visibly suffused with black.

Abdomen : Smoothly ovoid, higher than long, with white band running across dividing dorsum in two parts : apical part dusty creamy white, posterior part blackish ; venter blackish ; sides dusty with thin broken creamy stripes. Anterior spinnerets dark ; posterior and median spinnerets pale.

Legs : Measurements : I (2.07 mm) : Fe 0.63 mm, Pa 0.25 mm, Ti 0.47 mm, Mt 0.43 mm, Ta 0.29 mm ; II (1.74 mm) : Fe 0.50 mm, Pa 0.23 mm, Ti 0.39 mm, Mt 0.37 mm, Ta 0.25 mm ; III (1.09 mm) : Fe 0.31 mm, Pa 0.17 mm, Ti 0.19 mm, Mt 0.23 mm, Ta 0.19 mm ; IV (1.38 mm) : Fe 0.43 mm, Pa 0.19 mm, Ti 0.29 mm, Mt 0.28 mm, Ta 0.19 mm. Ti I with proximal spine and 3 trichobothria ; Ti II with 1 proximal spine and 2 trichobothria ; Ti III with 1 proximal spine and 2 trichobothria (2.7 diameter) ; Ti IV with 1 proximal spine and 3 trichobothria (spine flanked by the proximal trichobothria). Mt III with prolateral trichobothrium.



Figs 6-9. *Theridiosoma sancristobalensis* sp. nov., male. 6. Palp, dorsal view – 7. Palp, ventral view – 8. Palp, lateral view – 9. Detail of embolus and embolic apophysis. (e = embolus, ea = embolic apophysis, ma = median apophysis, pc = paracymbium) (Cymbium length 0.35 mm).



Figs 10-12. *Theridiosoma sancristobalensis* sp. nov., female. 10. Abdomen, lateral view – 11. Epigyne, ventral view – 12. Epigyne, cleared. (cd = copulatory duct, sp = spermatheca) (Width of scapus : 0.31 mm, height of abdomen : 1.05 mm).

Pedipalp (Figs. 6-9) : Cymbium length 0.35 mm. Median apophysis elongated ; long thin embolus resting on tegulum curved over 90° at free end ; embolic apophysis hooked at tip ; cymbium with long sharp paracymbium.

Female Allotype : Total length : 1.65 mm ; carapace length : 0.74 mm, width : 0.56 mm, height : 0.37 mm ; abdomen : 1.01 mm long, 1.05 mm high, 0.99 mm wide.

Carapace : Colour (in alcohol) as in male but lighter. Clypeus 0.5 times diameter anterior median eye.

Abdomen (Fig. 10) : Nearly spherical.

Legs : Measurements : I (1.78 mm) : Fe 0.56 mm, Pa 0.27 mm, Ti 0.37 mm, Mt 0.35 mm, Ta 0.23 mm ; II (1.54 mm) : Fe 0.45 mm, Pa 0.23 mm, Ti 0.35 mm, Mt 0.30 mm, Ta 0.21 mm ; III (1.01 mm) : Fe 0.33 mm, Pa 0.09 mm, Ti 0.19 mm, Mt 0.23 mm, Ta 0.17 mm ; IV (1.51 mm) : Fe 0.49 mm, Pa 0.23 mm, Ti 0.33 mm, Mt 0.27 mm, Ta 0.19 mm. Ti II with 1 trichobothria ; Ti III with 1 proximal spine flanking by 1 long trichobothria (2.7 times tibial diameter) ; Ti IV with 1 proximal spine and 3 trichobothria (spine flanked by the proximal trichobothria), distal trichobothrium very long (4.8 times tibial diameter).

Epigyne (Figs. 11,12) : Width of scapus : 0.31 mm. Scapus broadly rounded ; spermathecae oval ; fertilization ducts short near base of spermathecae and copulatory duct entry ; long arched copulatory ducts joining mesially and entering spermatheca caudally after a short forwardly running slope.

DISCUSSION

ARCHER (1953) described a Theridiosomatidae, *Wendilgarda galapagensis*, for which he gave as type locality : Cocos, Galápagos islands. The species name *galapagensis* is exceedingly confusing since the Cocos islands are no part of the Galápagos archipelago as was already noted by ROTH & CRAIG, 1970. The species of which the type specimens were examined during this study is very different from the one herein described.

PHOLCIDAE

Galapa Huber, 2000

DIAGNOSIS

Conform with the diagnosis given by HUBER (2000). Tiny pholcids, without thoracic groove, short legs, globular opisthosoma, eight eyes, apophyses on male cheliceral fangs and procurus with dorsal apophysis and retrolateral protrusion.

Galapa floreana sp. nov.

(Figs 13-14)

ETYMOLOGY

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

DIAGNOSIS

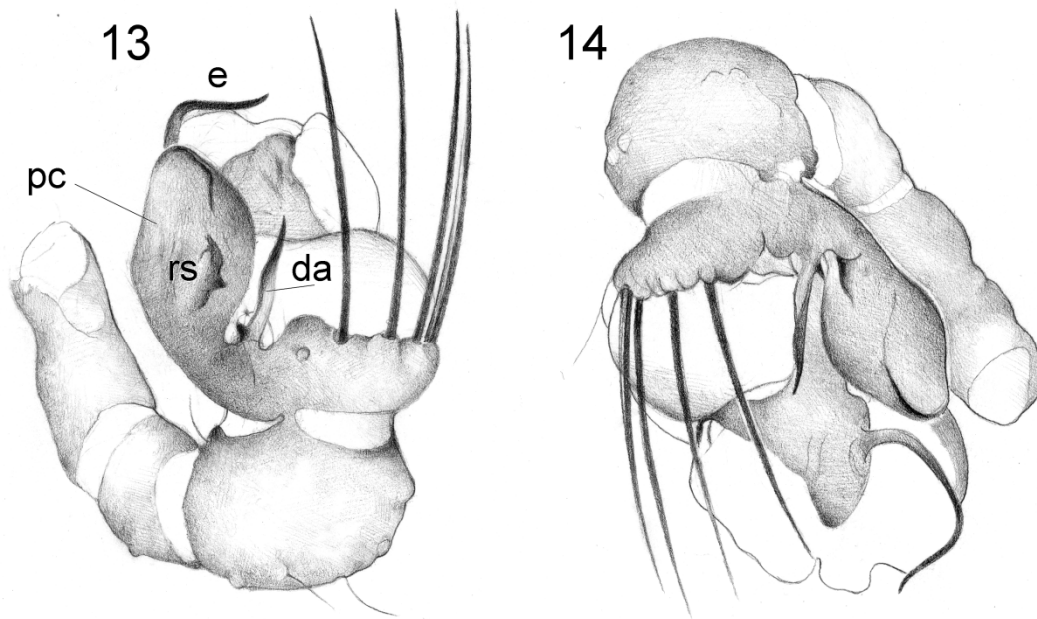
Differs from *G. bella* (Gertsch & Peck, 1992) and *G. baerti* (Gertsch & Peck, 1992), both species occurring in the Galápagos islands, by the shape of the procurus, the sharp retrolateral apophysis of the procurus (blunt in *G. bella* and *G. baerti*), the position and shape of the dorsal apophysis of the procurus (same position as in *G. baerti* but with broader base, higher position than in *G. bella*).

MATERIAL EXAMINED. Holotype male (first pair of legs and abdomen missing, cephalic region damaged) : Isla Floreana, La Lobería (N), 1°16'59.27"S – 90°29'26.52"W, salt marsh, 11/I/2011, pitfall trap, leg. H. Herrera (HWH294).

DESCRIPTION

Male Holotype : Carapace length : 0.49 mm, width : 0.50 mm ; abdomen missing.

Carapace : Creamy white, chelicerae brownish, legs brownish with creamy white coxae and patellae, tibiae lighter brown, tarsi with 5-6 white rings (false annulations).



Figs 13-14. *Galapa floreana* sp. nov., male. 13. Palp, lateral view – 14. Palp, apical view. (da = dorsal apophysis, e = embolus, pc = procurus, rs = retrolateral spine) (Length of long spines along procurus edge : 0.21 mm).

Legs : Measurements : I: missing ; II (2.57 mm) : Fe 0.72 mm, Pa 0.16 mm, Ti 0.64 mm, Mt 0.72 mm, Ta 0.33 mm ; III (2.37 mm) : Fe 0.66 mm, Pa 0.16 mm, Ti 0.58 mm, Mt 0.68 mm, Ta 0.29 mm ; IV (3.05mm) : Fe 0.87 mm, Pa 0.16 mm, Ti 0.82 mm, Mt 0.87 mm, Ta 0.33 mm. Spination : The legs are apparently spiny, many empty sockets visible over whole length of the legs, some short spines visible on different places of every leg. Tarsi with false annulations (white rings).

Pedipalp (Figs 13,14) : Procurus with long sharp dorsal apophysis, short sharp retrolateral spine with broad base and upper edge with 5 long spines (length : 0.21 mm). Long lose hanging embolus.

Female : Unknown.

DISCUSSION

Though the unique specimen of the new *Galapa* pholcid species is strongly damaged, its description is yet included in this paper, as its palp is so obviously different from both the other species known from Galápagos. Two *Galapa* species are already known from the archipelago : 1° *Galapa baerti* (GERTSCH & PECK, 1992) from Santa Fé, Santa Cruz, Santiago and Pinta ; 2° *Galapa bella* (GERTSCH & PECK, 1992) from Santa Cruz and Genovesa.

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