

# The Gnaphosidae of the Galápagos archipelago, their distribution and the description of the Galapagoan representatives of the genus *Camillina* BERLAND

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## Abstract

A revision is given of the gnaphosid *Camillina* species of the Galápagos archipelago. *Camillina cruz* PLATNICK & SHADAB is considered as a sibling species of *C. galapagoensis* (BANKS). The male of *Camillina isabela* PLATNICK & MURPHY is described together with two new species: *C. pecki* sp. n. and *C. sandrae* sp. n. The distribution of the 12 known Galapagoan gnaphosid species is given.

## Résumé

Une révision est donnée des espèces appartenant au genre *Camillina*, retrouvées aux Galápagos. *Camillina cruz* PLATNICK & SHADAB est considérée comme espèce soeur de *C. galapagoensis* (BANKS). Le mâle de *Camillina isabela* PLATNICK & MURPHY est décrit, ainsi que deux nouvelles espèces: *C. pecki* sp. n. and *C. sandrae* sp. n. La distribution des 12 espèces de Gnaphosides rencontrées aux Galápagos est donnée.

## Introduction

Sampling expeditions for arthropods have been regularly carried out on the Galápagos islands since 1982 by an Austrian team (H. & I. SCHATZ : 1985, 1987 and 1988), a Belgian team (L. BAERT, K. DESENDER & J.-P. MAELFAIT : 1982, 1986, 1988 and 1991) and a Canadian team (S. PECK and collaborators : 1985, 1989, 1991 and 1992). All major islands and volcanoes have been sampled, at least on one side, along an altitudinal gradient. All samplings took place in the rainy season (between December and June). These samplings provide the possibility of enlarging our knowledge of the composition of the arachnofauna and the distribution of the individual species in this remote archipelago.

This paper deals with the family Gnaphosidae. A systematic review of the Galapagoan representatives of the genus *Camillina*, BERLAND, is given, together with the distribution of the 12 known Galapagoan gnaphosids.

## Description of the Galapagoan *Camillina* species

### *Camillina* BERLAND, 1919

For a detailed description and diagnosis of the genus, we refer to PLATNICK & SHADAB (1982) and PLATNICK & MURPHY (1987).

The Galapagoan *Camillina* species have been subject to quite a mix-up between some of their names. In 1982 PLATNICK & SHADAB gave a description of *C. galapagoensis* which was based on a female specimen caught on Albemarle (Isla Isabela) on April 27, (1964 ?) by a member of the Californian Academy of Sciences (CAS). This name was used owing to the presumed loss of Banks' type specimen and the bad illustration of the epigynum given in BANKS' publication. In the same publication PLATNICK and SHADAB described two other species, *C. isla* from Isla Darwin and *C. cruz* from Isla Santa Cruz. They recognised the first of these three species as *C. galapagoensis* because it was the only known species from Isla Isabela, the type locality of this species (BANKS, 1902). Subsequently, having discovered a female labelled as the type of *Prosthesima galapagoensis* in the AMNH collection (though without locality label) they synonymized *C. cruz* with *C. galapagoensis*, as this type showed (according to them) the same vulva as the one they described as *C. cruz*. For the species which they misidentified as *C. galapagoensis*, they provided the new name: *C. isabela* (the exactness of the label is doubtful as we shall see later). A minute examination of the epigynum of Banks' type and the type of *C. cruz* revealed that they differ in minor characters. This was corroborated after examination of a great number of male and female *Camillina* specimens caught during our consecutive sampling campaigns (1982, -86, -88 and -91). *Camillina cruz* can be considered a sibling species of *C. galapagoensis*.

Some general remarks must be made concerning the colouring of the carapace and the leg spination pattern. In both species, *C. cruz* and *C. galapagoensis*, the carapace can be, in certain specimens, a more or less uniform orange brown (light to dark), while in other

specimens it has a pattern of blackly suffused striae, a pattern which may be faint to strongly pronounced.

The leg spination pattern of the metatarsi seems not to be very constant within a species as a small number of specimens have a diverging formula. This makes the use of the leg spination as a taxonomical character doubtful. The basic leg spination formula of the genus as given by Platnick & Murphy (1982) is : Fe : I, II d1-1-0, p0-0-1; III d1-1-0, p0-1-1, r0-1-1; IV d1-1-0, p0-0-1, r0-0-1; Pa III r0-1-0; Ti : III p1-1-1, v2-2-2, r0-1-1; IV p1-0-1, v2-2-2, r1-1-1; Mt : II v2-0-0; III p1-2-2, v2-0-0, r1-1-2; IV p1-2-2, v2-2-0, r1-2-1. When otherwise, it is indicated in the description.

The vulva consists of following structures : 1) the median epigynal ducts and 2) the lateral epigynal ducts in which we discern a lateral ductiform part and a median flat or swollen extension (called here median wing) which may be fused along the median axis of the vulva. All measurements are in mm.

The distribution data consists of the locality(ies) cited in the literature prior to our samplings, followed by the localities sampled during the sampling expeditions of the Austrian, Belgian and Canadian teams (subtitled as New locality records) and the records of various museums (data often far from being precise). All these data are quoted without dates and without numbers of specimens collected to make this part as concise as possible.

### *Camillina galapagoensis* (BANKS, 1902)

Figures 1-3, 7, 8

*Prothesima galapagoensis* BANKS, 1902, p. 57, pl. 2, fig. 7 (female discovered in the AMNH collection, labelled type of *P. galapagoensis* but bearing no locality data. As PLATNICK & MURPHY (1987) stated there is no reason to suspect it is not the type. Its locality must be Albermarle, at sea level, near Iguana Cove, June, as stated in BANKS' publication. Examined.)

*Camillina galapagoensis* : BAERT & MAELFAIT, 1986, p. 104.

#### DIAGNOSIS

*C. galapagoensis* can be diagnosed as follows from *C. cruz* : the male has an embolus which is broader elbowed and has a narrow tip, (SEM-photographs show a bifid tip); the female has a blunt arched median epigynal duct and larger spermathecae.

#### FEMALE

Total length 4.5 - 5.0. Carapace 1.7 - 2.1 long, 1.3 - 1.6 wide. Pa+Ti I 1.6 - 2.3 long. Leg spination : Ti III r0-1-1; Mt III v2-2-0, p1-2-2, r1-1-2. Epigynal plate broad, lateral epigynal ducts posteriorly diverging, with one lobe; median epigynal ducts arched as an inverted U; spermathecae large and more or less oval.

#### MALE

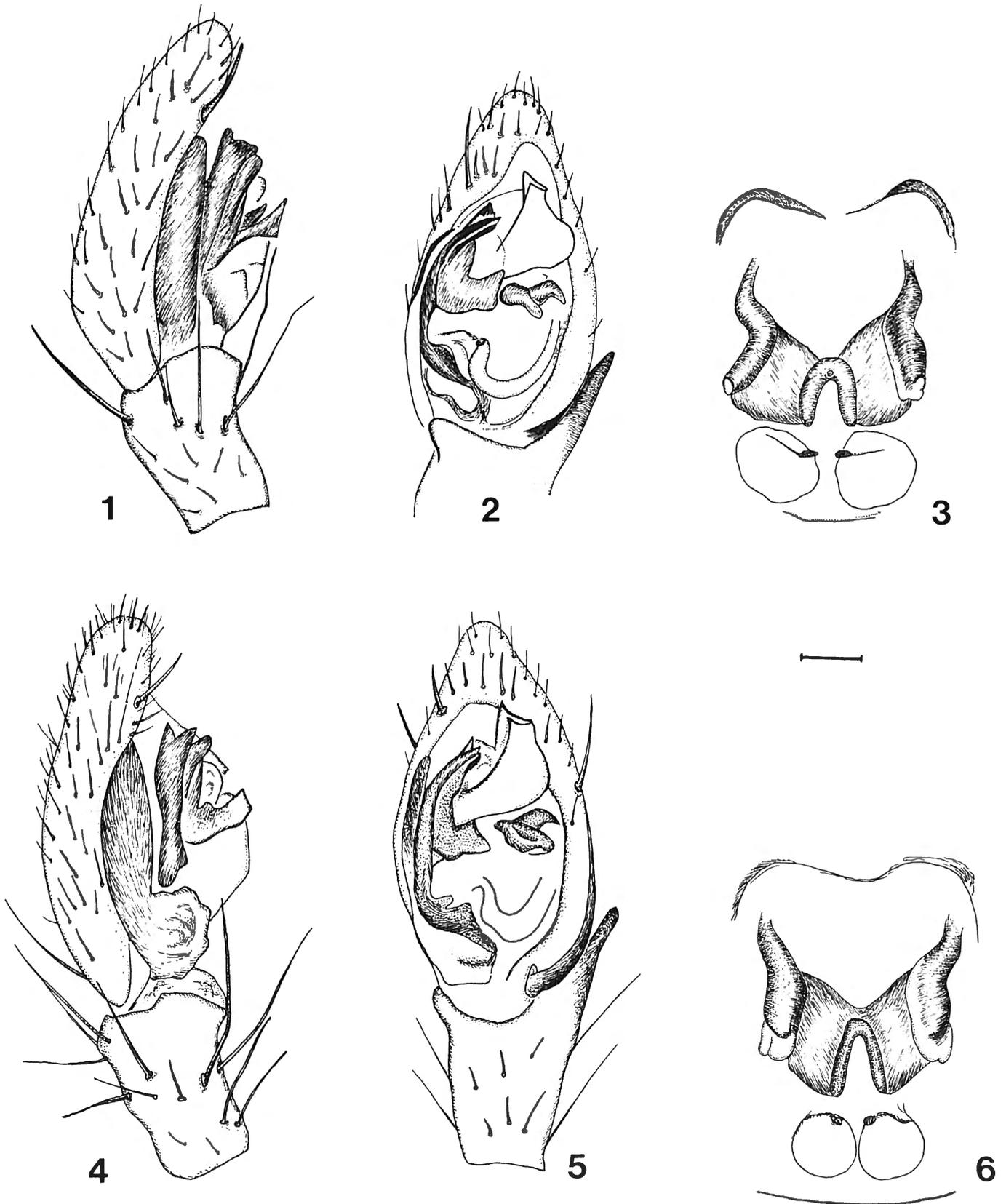
Total length 4.5 - 6.5. Carapace 2.2 - 2.7 long, 1.7 - 2.1 wide. Pa+Ti I 2.3 - 2.8 long. Leg spination as in female but with deviating specimens having on Mt III v2-1-0 or v2-0-0.

Embolus broadly elbowed, tip narrow with two distal points.

#### DISTRIBUTION

Known from Isla Isabela (BANKS, 1902).

New locality records (Map 2) : **Baltra** : in the arid zone. **Fernandina** : ten localities along southwestern slope, one at Cerro Verde in a Palo Santo wood at 170m alt., two sites at 400 m, 430 m, 600 m, 1000 m, 1200 m, two sites near fumarole at 1320 m alt. **Floreana** : two sites, one among xerophyllous vegetation near Black Beach (alt. 10 m) and one at the eastern shore of the lagoon at Punta Cormorant. **Isabela, Cerro Azul** : one locality in the pampa zone at 680 m altitude. **Isabela, Sierra Negra** : four localities in the pampa zone near top, e.g. altitudes 750 m, 850 m, 930 m and 1150 m. **Isabela, Volcán Alcedo** : three localities one at 280 m alt. along northeastern slope, one at the southeastern crater rim at 1060 m alt. and one in the nidification zone of the giant tortoise situated at the western crater floor. **Isabela, Volcán Darwin** : six localities along southwestern slope : at 400 m, 600 m, 800 m, 900 m, 1200 m, 1300 m of alt. and one at Tagus Cove at 100 m alt. **Isabela, Volcán Wolf** : three localities along southwestern slope : at 350 m, 1425 m and 1700 m (top of volcano). **Marchena** : four localities : two sites inland of Playa Negra at 25 m and 50 m alt., one in the dry arid zone at Punta Mejia and one in the dry arid zone at Punta Espejo. **Pinta** : twelve localities : two sites at Cabo Ibbetson; six along southern slope at 200 m, 240 m, 300 m, 350m, 400 m and 540 m alt.; one along eastern slope at 360 m alt., three along southwestern slope at 200 m, 300 m and 465 m alt. **Pinzon** : two localities at 300 m alt. **Plaza Sur** : in the northern part of this small island. **Santiago** : three localities : at 100 m alt. along northeastern slope, one in the transition woodland on subtop at 580 m alt., one at the top of the island at 900 m alt. **San Cristobal** : three localities : one in the dry arid zone near Puerto Baquerizo and two at lake "El Junco" at 625-675 m alt. **Santa Cruz** : Fifteen localities : one at Barranco near CDRS; two in coastal area of Bahía Tortuga; one at the lagoon near Cueva Andreas 1 km east of the CDRS; four along northern slope at 150 m, 250 m, 300 m and 350 m alt.; three along southern slope at 550 m (*Miconia* zone) and 600 m (one in the fern-sedge and one in the neighbouring *Miconia*); three in the fern-sedge zone of the highlands at 750 m, 825m (*Sphagnum* bog) and 875 m alt.; one in the *Scalesia* wood at 650 m alt. 1 km north of Cerro



Figs. 1-6. - *Camillina galapagoensis* (BANKS, 1902). 1. Palp, retrolateral view. 2. Palp, ventral view. 3. Epigynum, dorsal view. - *Camillina cruz* PLATNICK & SHADAB, 1982. 4. Palp, retrolateral view. 5. Palp, ventral view. 6. Epigynum, dorsal view. (Scale line = 0.1 mm).

Puntudo. **Santa Fe** : two sites, one at the northeastern coast and one at the top (150 m alt.).

*Camillina cruz* PLATNICK & SHADAB, 1982  
Figures 4-6, 9, 10

*Camillina cruz* PLATNICK & SHADAB, 1982, p. 36, figs. 117-120 (male holotype and female paratype taken in a light trap at low elevation on Isla Santa Cruz; September 1964; J. & N. LELEUP; deposited in KBIN; examined.).

*Camillina cruz* : BAERT & MAELFAIT, 1986, p. 102.

*Camillina galapagoensis* : PLATNICK & MURPHY, 1987, p. 31.

DIAGNOSIS

*C. cruz* can be diagnosed as follows from *C. galapagoensis* : the male has a broader embolus tip (SEM-photographs show a blunt tip); the female has smaller spermathecae and an angled median epigynal duct (inverted V).

MALE

Total length 3.5 - 6.8. Carapace 1.5 - 2.6 long, 1.2 - 2.0 wide. Pa+Ti I 1.9 - 2.7 long. Leg spination : Fe IV p0-1-1; Ti III r1-1-1; Mt III d0-1-0, p1-2-0, v2-1-0, r1-1-2. Embolus with broad tip bearing two distal points.

FEMALE

Total length 5.7 - 7.4. Carapace 1.6 - 2.7 long, 1.2 - 2.0 wide. Pa+Ti I 1.6 - 2.5 long. Leg spination as in male. Epigynal plate broad, lateral epigynal ducts with two lobes and running nearly parallel to each other; median epigynal ducts shaped as an inverted V; spermathecae small and spherical.

DISTRIBUTION

Known from Isla Pinta and Isla Santa Cruz (PLATNICK & SHADAB, 1982) and from Islas Isabela and Santa Cruz and the mainland Ecuador (PLATNICK & MURPHY, 1987).

New locality records (Map 3) : **Fernandina** : one locality at Cerro Verde in a *Bursera graveolens* wood at an altitude of 170 m. **Isabela, Cerro Azul** : Four localities : in the pampa at an alt. of 400 m, 680 m, 760 m and at the inner rim crater of the volcano. **Isabela, Volcán Alcedo** : Five localities : four along northeastern slope

at the alt. 5 m (dry arid zone near coast), 400 m (closed Palo santo wood) and 800 m (closed woodland), 1000 m (crater rim); one at the southeastern rim (alt. 1060 m). **Isabela, Volcán Wolf** : two localities at high altitude : 1200 m and 1625 m. **Marchena** : at Playa Negra at 25 m alt. **Pinzon** : one locality at the rim of the main crater at an alt. of 300 m. **Santiago** : four localities : one in the transition woodland at the subtop (580 m alt.); two along northeastern slope at 100 m and 200 m alt.; one at the Mina de sal, at the border of the inside saline lagoon (10 m alt.). **Santa Cruz** : six localities : Barranco, near seismological station of the CDRS, arid zone (20 m alt.); at two sites in the coastal area of Bahía Tortuga; at the lagoon near cueva Andreas, 1 km east of the CDRS; in open dry deciduous forest at an alt. of 150 m along northern slope; at El Mirador. **Santa Fe** : three localities : at northeastern coast; at 75 m alt. in dry arid vegetation composed of *Opuntia*; in the highland at 150 m alt.

*Camillina isabela* PLATNICK & MURPHY, 1987  
Figures 11-14, 19, 20

*Camillina galapagoensis* (misidentification) : PLATNICK & SHADAB, 1982, p. 34, figs 111-112 (female holotype from Isla Isabela, April 27, deposited in CAS, examined).

DIAGNOSIS

*C. isabela* can be diagnosed in males by the slender embolus with pro-lateral spur and in females by the anteriorly more or less transverse epigynal median ducts. This species may, according to the male palp, be related to the Antillean species *C. elegans* (BRYANT, 1940) which has a longer and finer embolus tip.

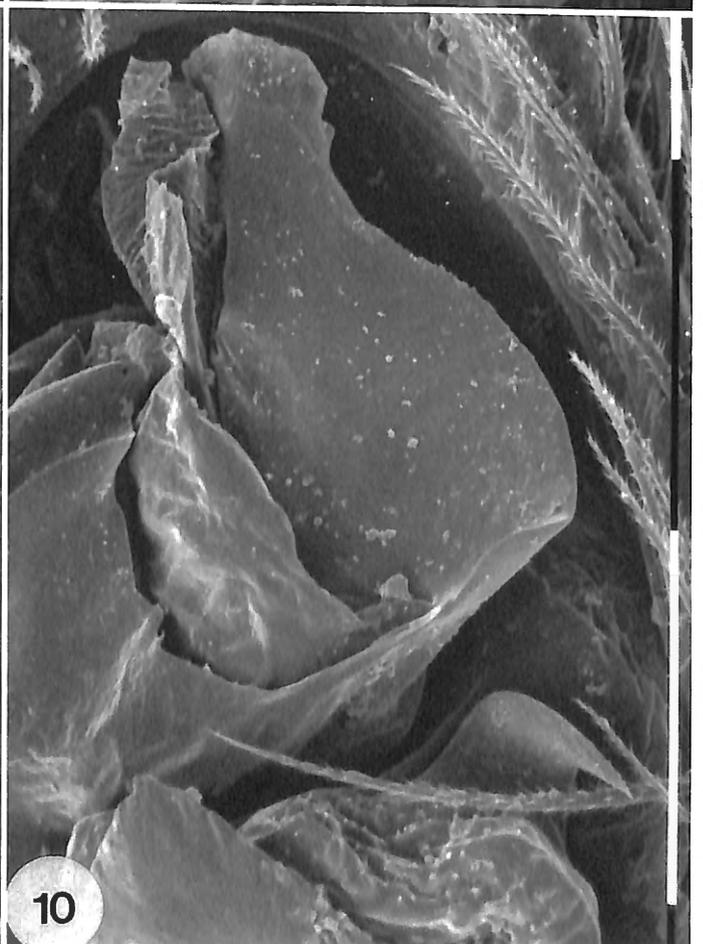
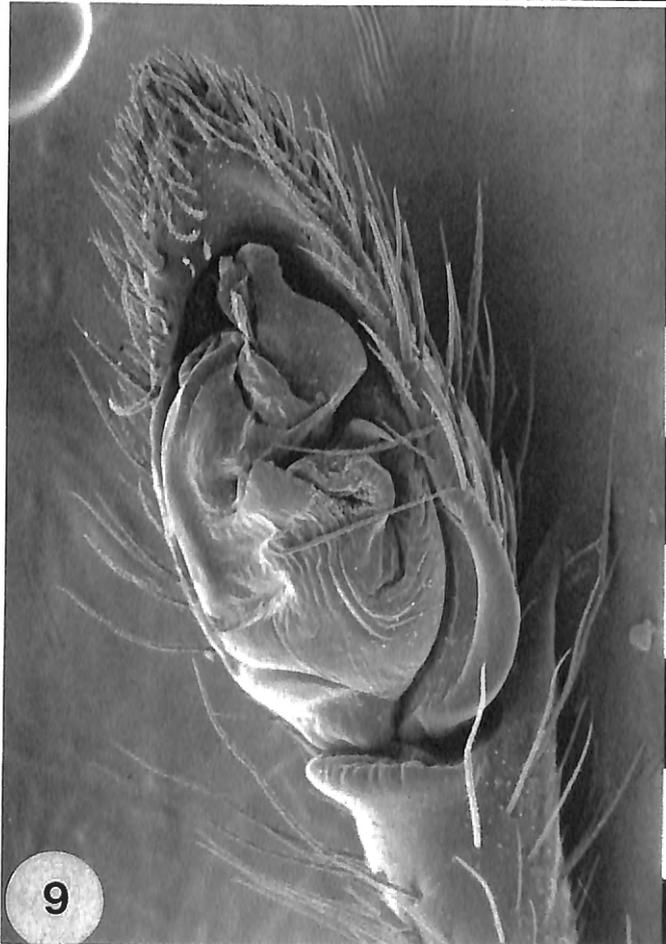
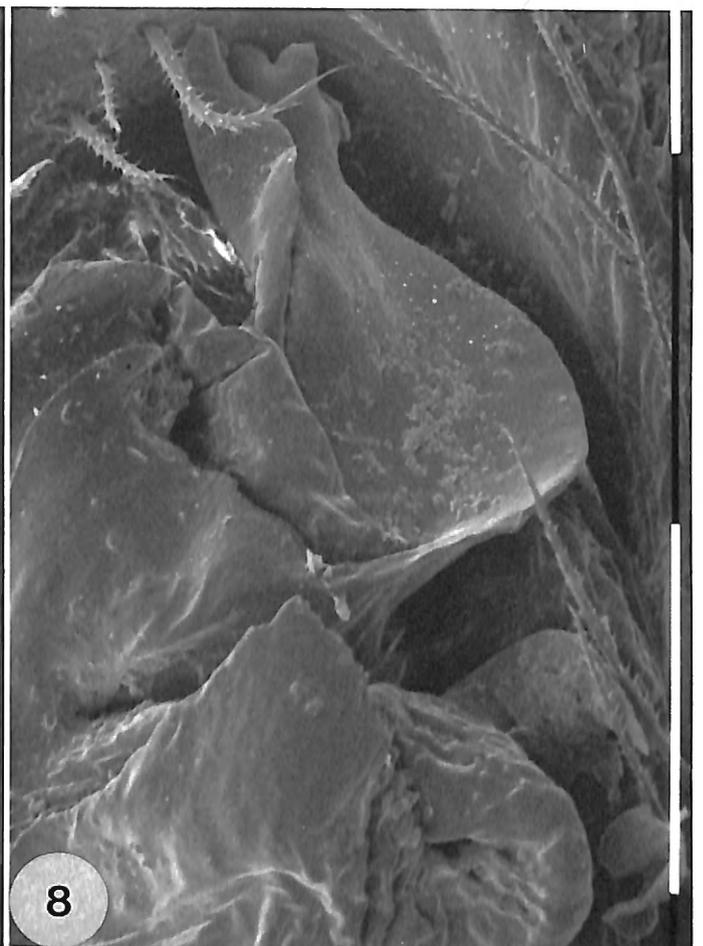
FEMALE

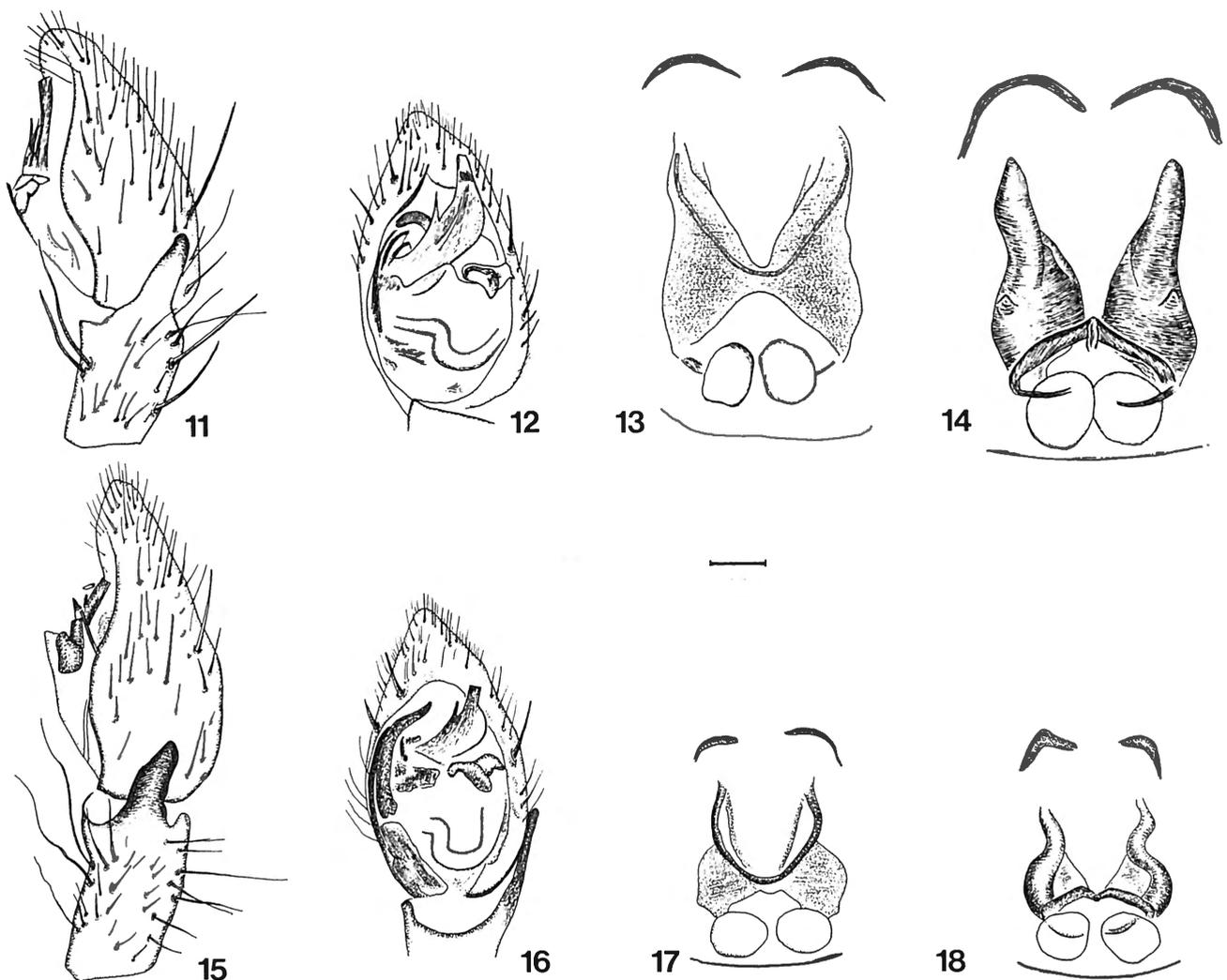
Total length 4.5 - 7.9. Carapace 1.9 - 3.0 long, 1.4 - 2.3 wide. Pa+Ti I 2.0 - 3.1 long. Leg spination : Fe IV p0-1-1; Ti IV p1-1-1. Epigynal median ducts elbowed posteriorly, more or less transverse anteriorly. Median wings of lateral epigynal ducts strongly swollen and in ventral view exceeding the posterior border of the epigynal plate. MOQ : AA/AP : 0.83; AA/AP : 0.74 (PLATNICK & MURPHY, 1987).

MALE

Total length : 4.2 - 5.0. Carapace 1.9 - 2.3 long, 1.5 - 1.8 wide. Pa+Ti I 2.3 - 2.5 long. Leg spination : Fe IV p0-1-

Figs. 7-10. - SEM-photographs. *Camillina galapagoensis* (BANKS, 1902). 7. Palp, ventral view. 8. Palp, embolus and tip of terminal apophysis. - *Camillina cruz* PLATNICK & SHADAB, 1982. 9. Palp, ventral view. 10. Palp, embolus and tip of terminal apophysis. (Scale lines = 100  $\mu$ m).





Figs. 11-18. - *Camillina isabela* PLATNICK & MURPHY, 1987. 11. Palp, retrolateral view. 12. Palp, ventral view. 13. Epigynum, ventral view. 14. Epigynum, dorsal view. - *Camillina pecki*, new species. 15. Palp, retrolateral view. 16. Palp, ventral view. 17. Epigynum, ventral view. 18. Epigynum, dorsal view. (Scale line = 0.1 mm).

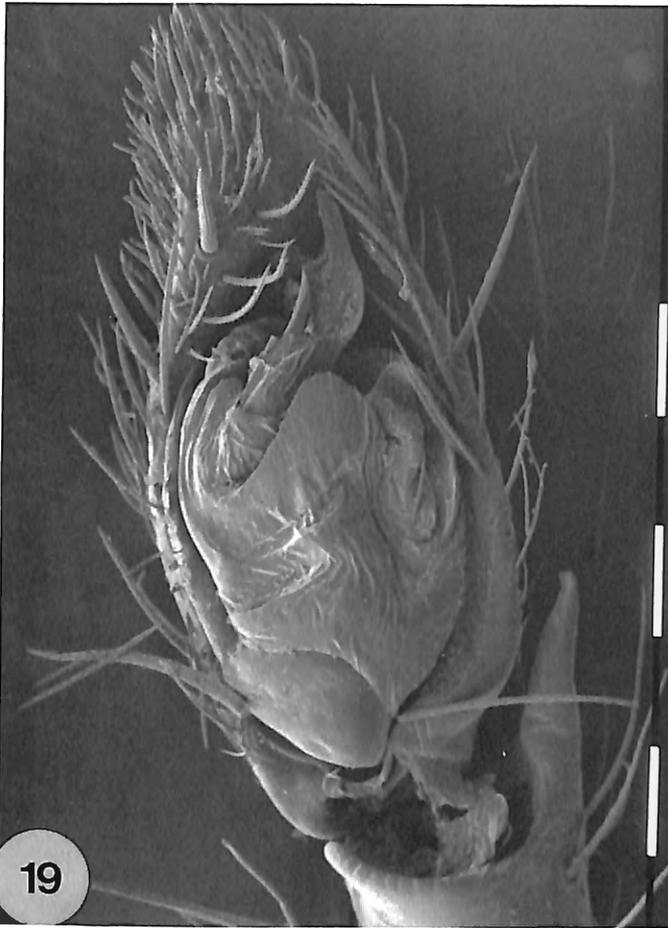
1, r0-1-1; Ti III r1-1-1; Ti IV p1-1-1 (1-0-1); Mt III v2-2-0. Embolus long and slender with a rather long prolateral spur. MOQ : AA/AP : 0.85; AA/AP : 0.74.

#### DISTRIBUTION

Known from one female accompanied by a label indicating Isla Isabela, April 27 (1964 ?). This species has since never been caught again on Isabela despite our regular intensive samplings. Strangely enough, all captures since 1982 show that the distribution of this species is confined to the southern and the southeastern islands of the archipelago. This might indicate that the label does not fit with the type-specimen.

New locality records (Map 4) : **Española** : Eleven localities; four along a eastern transect : near the coast at Punta Cevallos at 5 m alt., along abandoned army road, dry arid zone at 10 m alt., at 80 m alt. and at 175 m alt.; seven localities along a northern transect west to Bahía Gardner : one at 5 m alt. at Bahía Manzanilla, the others at 5 m (three different localities), 15 m, 130 m altitude all east of Bahía Manzanilla. **Floreana** : four localities : one at 350 m of alt. in the mesophytic microphyllous evergreen *Scalesia* forest east of Cerro Pajas, one at 400 m and 620 m alt. on Cerro Pajas and one along the main road at 270 m altitude. **San Cristóbal** : one locality at some 3 km SE of Puerto Baquerizo and two at the El Junco lake at an alt. of 675 m.

Figs. 19-22. - SEM-photographs. - *Camillina isabela* PLATNICK & MURPHY, 1987. 19. palp, ventral view. 20. Palp, embolus and tip of terminal apophysis. - *Camillina pecki*, new species. 21. Palp, ventral view. 22. Palp, embolus and tip of terminal apophysis. (Scale lines = 100  $\mu$ m).



*Camillina pecki* sp. n.  
Figures 15-18, 21, 22

## TYPE

Male holotype with male and female paratypes from Isla Floreana, mangrove litter at lagoon edge at Punta Cormorant, 28 March 1989 (leg. S. PECK). Two male and three female paratypes from Isla San Cristóbal, Baquerizo Moreno, 11-23 February 1989 (leg. S. PECK). Four female paratypes from Isla Floreana, lagoon of Punta Cormorant, 12 April 1991 (1 specimen) and 21 April 1991 (3 specimens) (leg. L. BAERT, K. DESENDER & J.-P. MAELFAIT).

## ETYMOLOGY

This species is named in honor of Prof. Dr. Stewart PECK of the Carleton University of Ottawa, Canada, the first collector of the species.

## DIAGNOSIS

*C. pecki* resembles very much *C. isabela* but can easily be diagnosed from it by the shorter and more compact embolus retrolaterally strongly elbowed and the flat (not swollen) median wings of the lateral epigynal ducts which does not exceed the posterior border of the epigynal plate in ventral view.

## MALE

Total length : 3.8 - 4.4. Carapace 1.8 - 2.0 long, 1.3 - 1.5 wide. Pa+Ti I 1.8 - 1.9 long. Leg spination : Ti III r0-1-1; Mt III v2-2-0(2-2-0); Mt IV v1-1-0(2-2-0), p1-2-2(0-2-2). Embolus shorter than in *C. isabella*, strongly elbowed retrolaterally; tip of terminal apophysis single. MOQ : AA/PP : 0.85, AA/AP : 0.74.

## FEMALE

Total length : 4.0 - 4.8. Carapace ca 1.9 long and 1.4 wide. Pa+Ti I ca 2.0 long. Leg spination : Mt III v2-1-0, r0-1-2; Mt IV p1-2-2(1-1-2). Median wings of lateral epigynal ducts not swollen and not exceeding the posterior border of the epigynal plate in ventral view. MOQ : AA/PP : 1.0; AA/AP : 0.87.

## DISTRIBUTION (Map 5)

**Floreana** (Punta Cormoran) and **San Cristóbal** (Puerto Baquerizo Moreno).

The distribution of this species is also confined to the south-southeastern islands of the archipel.

*Camillina isla* PLATNICK & SHADAB, 1982

*Camillina isla* PLATNICK & SHADAB, 1982, p. 35, figs 113-116 (male holotype and female paratype from Isla Darwin, January 29, 1964 : D.Q. CAVAGNERO, deposited in CAS. Examined).

*Camillina isla* : BAERT & MAELFAIT, 1986, p. 104.

## DIAGNOSIS

*Camillina isla* can be recognized by the wrinkled embolar tip and arched median epigynal ducts (PLATNICK & SHADAB, 1982, p. 36, figs 113-116).

## DESCRIPTION MALE AND FEMALE

PLATNICK & SHADAB, 1982, p. 35-36.

## DISTRIBUTION

Known only from Isla Darwin.

*Camillina sandrae* sp. n.  
Figures 23-26

## TYPES

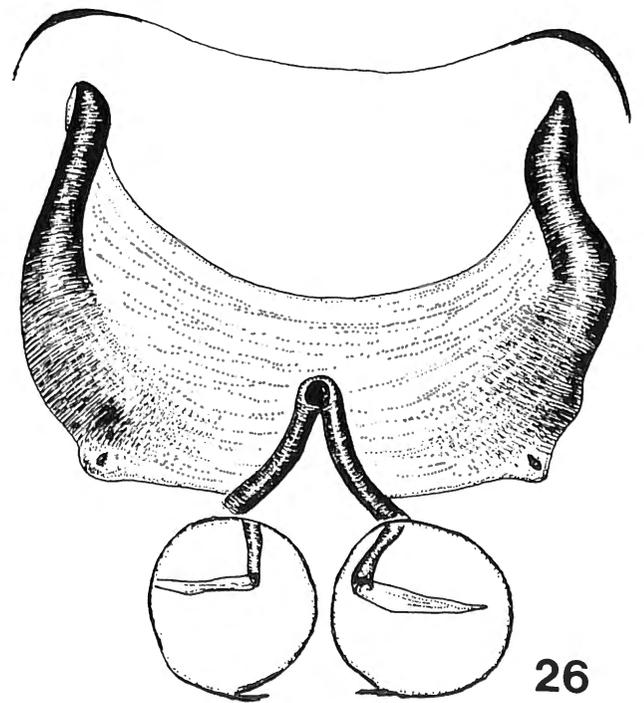
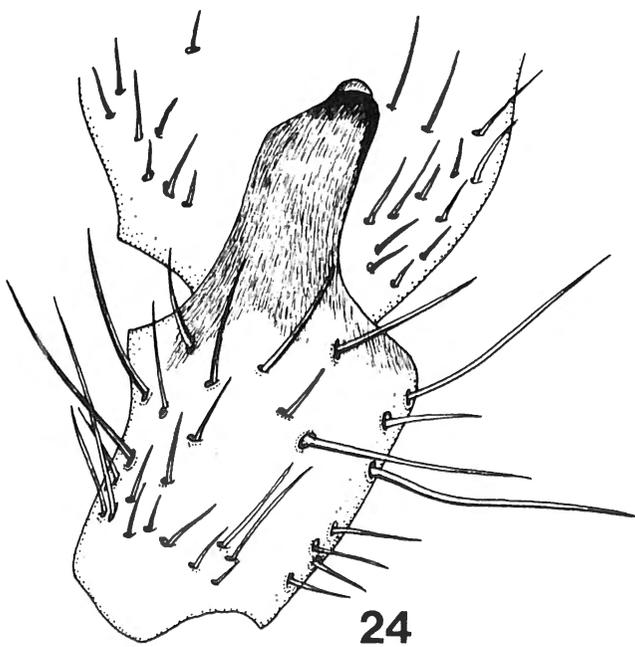
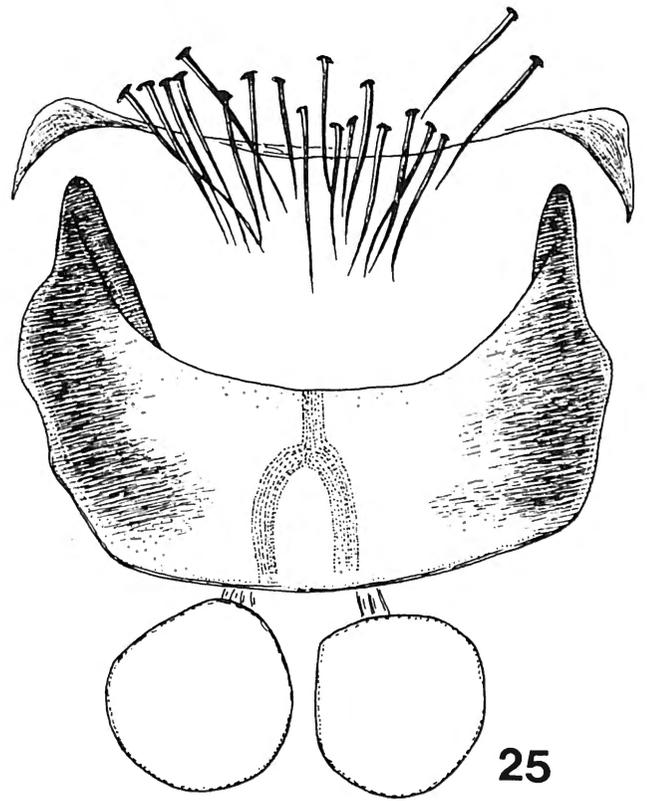
Male holotype and three female paratypes from Isla San Cristóbal, arid zone, Planta Eléctrica, altitude 100 m, 22-29 februari 1992, leg. Sandra ABEDRABBO (Entomologist of the Charles Darwin Research Station).

## ETYMOLOGY

This species is named in honour of Sandra ABEDRABBO, who was of great help to us during our stay at the Charles Darwin Research Station in 1992, organizing our field trips and taking samples.

## DIAGNOSIS

Males can be recognized by the truncated and incised (4 incisions) tip of embolus which is broadly elbowed retrolaterally; the terminal apophysis has a bifid tip. The females can be recognized by the wide epigynal plate; the median wings of the lateral epigynal ducts are flat and fused, forming together a more or less square plate



which is broader than long; median epigynal ducts forming a triangle with convex diverging legs.

This species seems to be close to the Mexican *C. pedestris* group (comprising the *C. pedestris*, *puebla* and *chiapa* species; eventually also *colon* from Panama). It differs from them by the incised embolic tip with four incisions; the terminal apophysis of the Mexican species have also a more pronounced retrolateral extension than this species; the females differ by the proportion between the lateral (ductiform) and median (median wings of lateral epigynal ducts fused to median plate) parts of the lateral epigynal ducts.

#### MALE

Total length : 3.75. Carapace 1.78 long and 1.37 wide. Pa+Ti I : 1.84 long. Leg spination : Ti IV p1-1-0, r1-1-0. Tip of embolus truncated and wrinckled with four points; embolus broadly elbowed retrolaterally. Terminal apophysis bifid at tip. MOQ : AA/PP : 0.82; AA/AP : 0.75. Abdomen with three well visible pairs of impressed dots.

#### FEMALE

Total length : 3.7 - 4.1. Carapace 1.7 - 1.9 long, 1.3 - 1.5 wide. Pa+Ti I : 1.6 - 1.8 long. leg spination : Ti IV p1-1-0, r1-1-0. Median wings of lateral epigynal ducts flat and fused together forming a more or less square plate. MOQ : AA/PP : 0.86; AA/AP : 0.76.

#### DISTRIBUTION (Map 5)

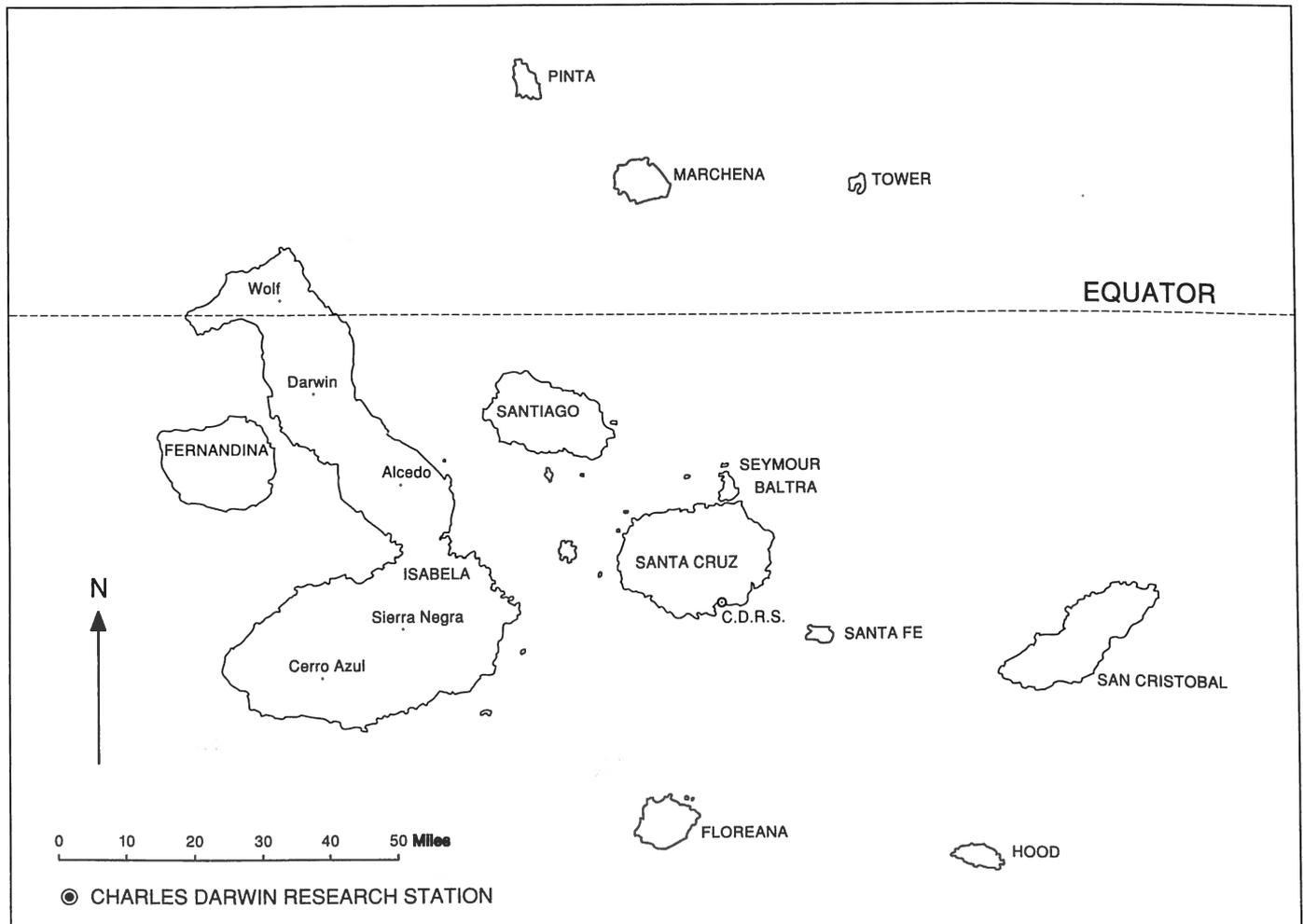
Known only from Isla San Cristóbal.

#### Distribution of the Galapagoan gnaphosids.

##### *Camillina* species

The genus *Camillina* on Galápagos is represented by 6 species of which two pairs are sibling species.

The first pair of sibling species is represented by *C. galapagoensis* and *C. cruz*, of which *galapagoensis* is the commonest occurring on all islands except the



Map 1. - General map of the Galápagos archipelago.



northern island Genovesa and the southernmost island Española.

It occurs in all vegetation types from supralittoral up to the pampa zone at the top of the islands.

The distribution of *C. cruz* is limited to the arid zones of the western and central islands. It occurs on the tops of Volcán Wolf and Cerro Azul in the arid zones above the 1000 m inversion zone. It can also be found along the eastern flank of Volcán Alcedo which is characterized by a sequence of dry vegetation zones.

It seems to be absent on the northern islands Pinta and Genovesa, on the southern islands Floreana and Española and on the easternmost San Cristóbal island.

Both species were found sympatrically at Tortuga Bay and Barranco near the CDRS. It is not clear whether both species have a sympatric origin or an allopatric origin with a secondary sympatric coexistence.

The second pair of sibling species is formed by *C. isabela* and *C. pecki*. Both are found on the southern island Floreana and southeastern island San Cristóbal. *C. isabela* also occurs on the southern island Española. *C. isabela* can be found in the arid zone (San Cristóbal, Española) and in the top pampa zone (Floreana) while *C. pecki* has only been found in the arid zone of San Cristóbal and Floreana. As noted above, the type locality Isabela seems problematic. The same question concerning origin can be put forward as in the former sibling species. As noted earlier, these species might be related to the Antillean species *C. elegans* (BRYANT, 1940).

*C. isla* is confined to the remote northern island Darwin, while *C. sandrae* has only been found on San Cristóbal. Originally three different *Camillina* species may have reached the archipelago in ancient times.

#### *Lygromma anops* PECK & SHEAR, 1987

*Lygromma anops* PECK & SHEAR, 1987, p. 106, figs 1-3.

#### DISTRIBUTION

Known from various caves on Isla Santa Cruz (PECK & SHEAR, 1987; PECK, 1990; HERNANDEZ *et al.*, 1992).

New locality records (Map 5): **Floreana**: in the litter of the xerophyllous vegetation of the dry arid zone at Black beach and in the caves at Bahía del Correos (Finch cave and in the Post Office Bay cave, leg. HERNANDEZ). **Santa Cruz**: in the San Andreas cave situated 1 km east of the C.D.R.S. and in the litter of the littoral and arid zones, such as in: coastal area at Bahía Tortuga; at the Barranco near the seismological station of the C.D.R.S.; in the mangrove and littoral zone near Punta Roca Fuerte; along road between Puerto Ayora and Belavista, near lava tubes at an alt. of 65 m.

#### *Neozimiris pinta* PLATNICK & SHADAB, 1976

*Neozimiris pinta* PLATNICK & SHADAB, 1976, p. 20, figs 53, 54 (female).

*Neozimiris pinta*: BAERT & MAELFAIT, 1986, p. 104.

*Neozimiris pinta*: BAERT *et al.*, 1989, p. 42.

*Neozimiris santiago* BAERT & MAELFAIT, 1986a, p. 52, figs 1,2 (male). **New Synonymy.**

*Neozimiris santiago*: BAERT & MAELFAIT, 1986, p. 104.

#### DISTRIBUTION

Known from Isla Pinta.

New locality records (Map 6): **Española**: two localities along northern transect west of Bahía Gardner, one near the coast (15 m alt.) and one at the islands top (130 m alt.). **Pinta**: one locality along an eastern transect at an alt. of 360 m; two localities along a southwestern transect at 200 m and 300 m altitude. **Santiago**: one locality in the transition woodland at 580 m of alt.

#### *Neozimiris pinzon* PLATNICK & SHADAB, 1976

*Neozimiris pinzon* PLATNICK & SHADAB, 1976, p. 21, figs 55, 56.

*Neozimiris pinzon*: BAERT & MAELFAIT, 1986, p. 104.

#### DISTRIBUTION (Map 6)

Known only from Isla Pinzon.

#### *Poecilochroa bifasciata* BANKS, 1902

*Poecilochroa bifasciata* BANKS, 1902, p. 57, fig. 4.

*Poecilochroa bifasciata*: BAERT *et al.*, 1989, p. 43.

*Poecilochroa bifasciata*: BAERT *et al.*, 1989a, p. 14.

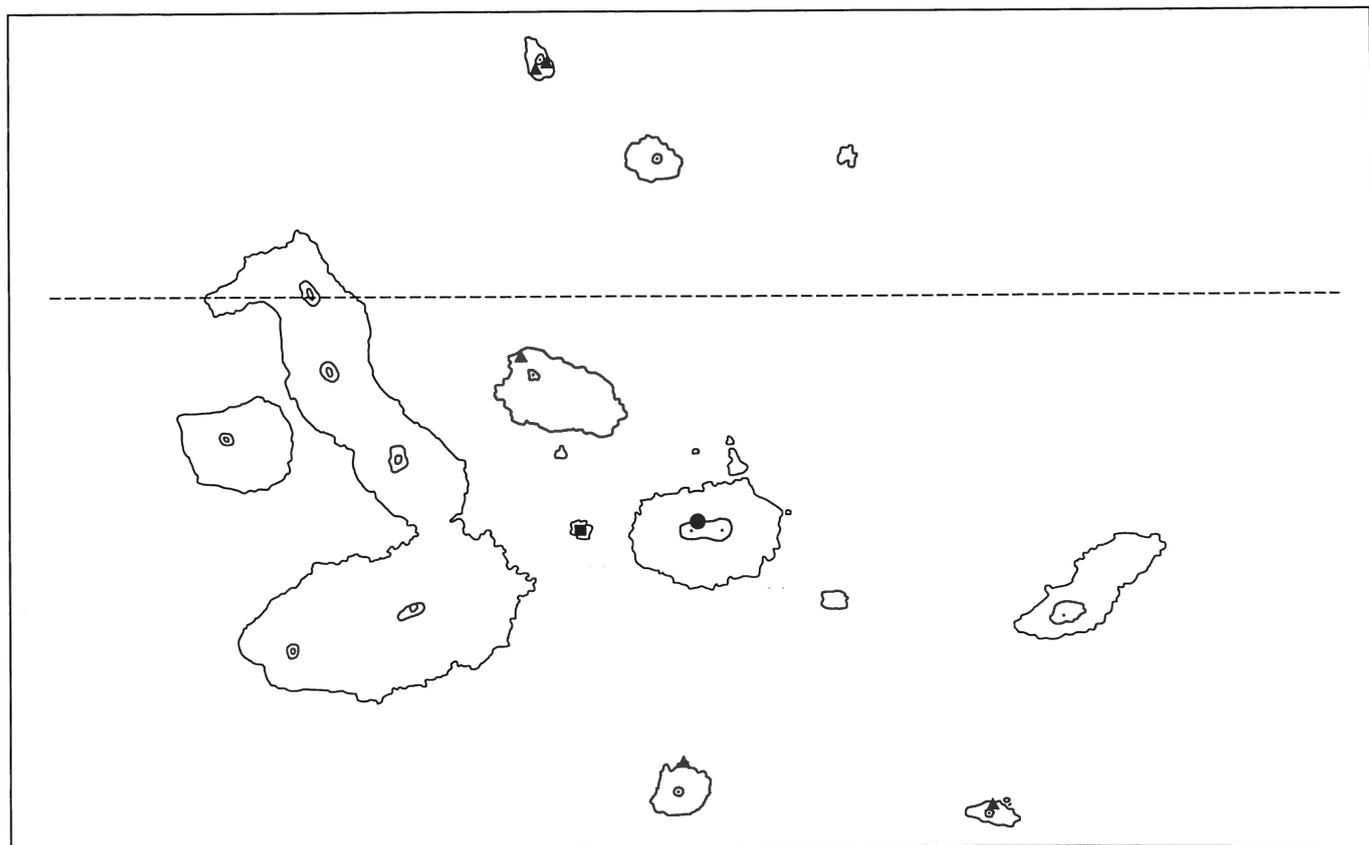
#### DISTRIBUTION

Known from Fernandina and Santa Cruz.

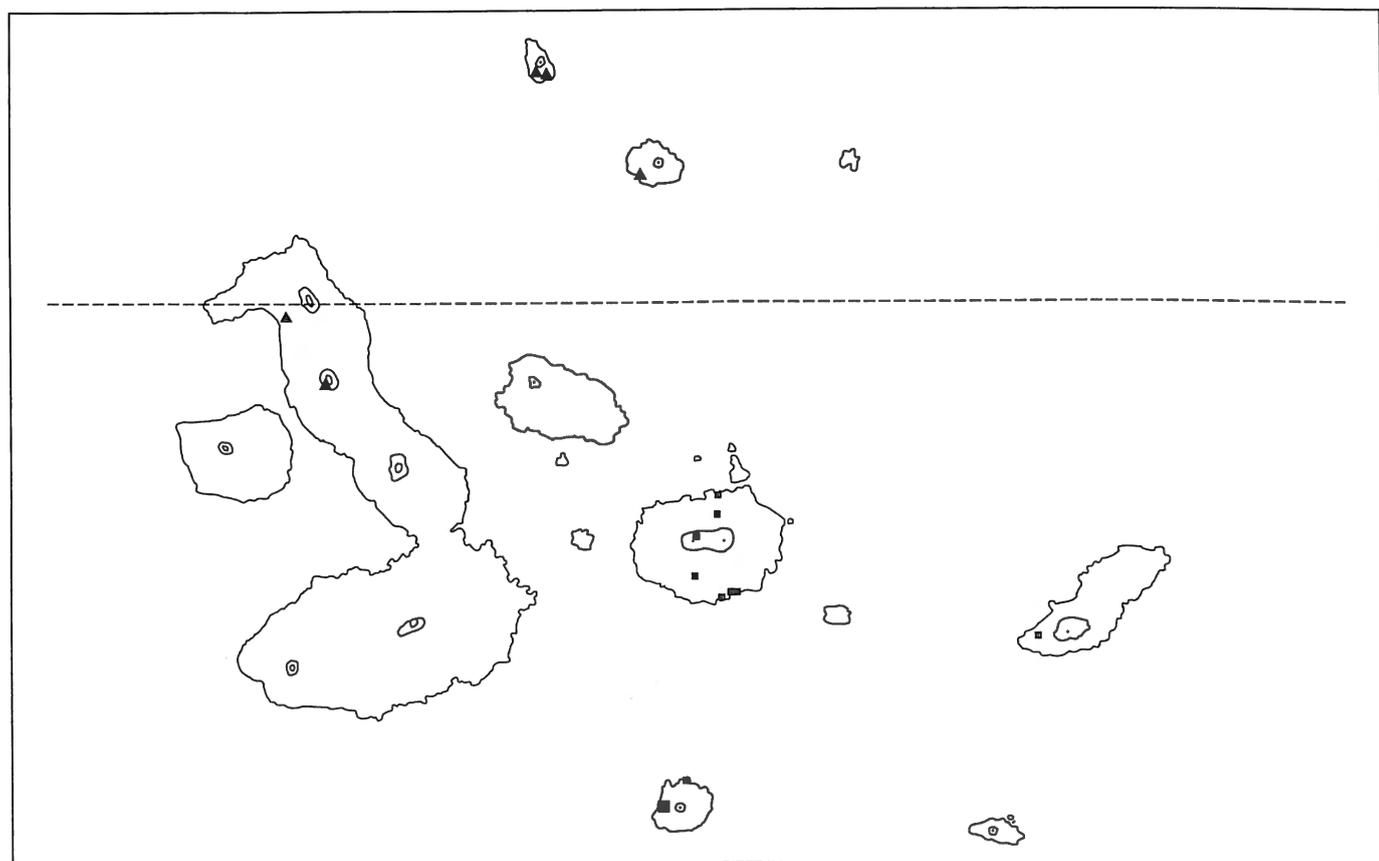
New locality records (Map 7): **Isabela, Volcán Darwin**: At 1100 m of elevation. **Isabela Volcán Wolf**: at 50 m elevation. **Marchena**: At two places at Playa Negra (25 m and 50 m alt.). **Pinta**: in three localities: one at Cabo Ibbetson; one at 100 m alt. in the southwestern corner of the island and one in the Transition zone at 200 m elevation.

Musea records: **Fernandina**: nest of brown pelican (CDRS); **Santa Cruz**: E-slope, alt. 160 m (CAS).





Map 6. – Distribution of *Zelotes reformans* CHAMBERLIN, 1924 (●), *Neozimiris pinta* PLATNICK & SHADAB, 1976 (▲) and *Neozimiris pinzon* PLATNICK & SHADAB, 1976 (■).



Map 7. – Distribution of *Poecilochroa bifasciata* BANKS, 1902 (▲) and *Trachyzelotes kulckzynskii* (BÖSENBERG, 1902) (■).

*Trachyzelotes kulckzynskii* (BÖSENBERG, 1902)*Trachyzelotes kulckzynskii* : BAERT *et al.*, 1989, p. 43.*Trachyzelotes kulckzynskii* : BAERT *et al.*, 1989a, p. 14.

## DISTRIBUTION (Map 7)

Balkan, USA (Florida), Jamaica, St. Kitts and Samao.

## GALAPAGOS ARCHIPEL :

**Floreana** : four localities, three at Black beach (in littoral zone, in litter of xerophyllous vegetation and in the Wittmer house) and one at Punta Cormorant at the lagoon. **San Cristóbal** : in the dense *Bursera graveolens* wood at an alt. of 100 m along road. **Santa Cruz** : twelve localities scattered as follows : three in the arid zone in the immediate surroundings of the C.D.R.S. (outside and in buildings, at the meteorological and seismological station, down in the iguana grieta); in the littoral and supralittoral zones of Bahía Tortuga; at Bahía Tortuga Negra; in the Transition woodland near Caseta Tortuga (180 m alt.); along the northern slope at 150 m and 500 m alt.; in the garden of Hotel Fernandina at Puerta Ayora.

Obviously this species occurs only on islands with a permanent human colonisation and can be considered as a recent human introduction that occurred after the 1982/83 El Niño, as it was not found in the same localities during our 1982 samplings.

According to PLATNICK & MURPHY (1984) this species is natively Balkan and introduced in Florida, Jamaica, St. Kitts (British West Indies) and Samoa. It has now been introduced on the Galápagos islands.

*Zelotes reformans* CHAMBERLIN, 1924

## DISTRIBUTION (Map 6)

This species is known from the Southwestern United States and the northwestern Mexico, also Peru and Hawaii (PLATNICK & SHADAB, 1983).

## GALAPAGOS ARCHIPEL :

**Santa Cruz** : one locality in the closed semi-dry deciduous forest at 500 m of alt. along the northern slope of the island, were two females and 3 juveniles were captured in 1992.

As Santa Cruz has been well sampled since 1982, we must conclude that *Zelotes reformans* is a very recent human introduction to the islands.

## 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 in 1982, 1986, 1988 and 1991. We received excellent cooperation from the Parque Nacional de Galápagos, Intendentes : Igr. Miguel CIFUENTAS (1982), Igr. Humberto OCHOA (1986) y Lcdo. Fausto CEPEDA (1988, 1991) and the Charles Darwin Research Station, Directors : Dr. Friedemann KÖSTER (1982), Dr. Günther RECK (1986 & 1988), Daniel EVANS (1991) and their staff.

I am further indebted to S. SANDOVAL, S. ABEDRABBO, M.-A. GALARZA, Th. PAREDES, B. NOVAK and B. REINOSO for their valuable help in the field. We would also like to thank Professor G. ONORE (Pont. Univ. Catol., Quito, Ecuador), Dr. H. and Dr. I. SCHATZ (Inst. Zool., Innsbrück, Austria) and Professor S. PECK and co-workers (Carleton Univ., Ottawa, Canada) for the loan of their sampled material and co-operation during expeditions. I thank Norman PLATNICK for the identification of the *Zelotes* species and for the loan of the *Camillina* types and John MURPHY for a critical reading of the manuscript. I thank Julien CILLIS for taking the SEM-photographs and Eliane DEBOCK for the final drawings.

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.

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