Revista Ibérica de Aracnología, nº **26** (30/06/2015): 43–47.
Grupo Ibérico de Aracnología (S.E.A.). ISSN: 1576 - 9518.

A NEW SPECIES OF *CHARINUS* SIMON, 1892 (AMBLYPYGI: CHARINIDAE) FROM GUADELOUPE, LESSER ANTILLES

Rolando Teruel[1] & Karl Questel[2]

[1] Centro Oriental de Ecosistemas y Biodiversidad (BIOECO), Museo de Historia Natural "Tomás Romay". José A. Saco # 601, esquina a Barnada; Santiago de Cuba 90100; Cuba. — rteruel@bioeco.ciges.inf.cu
[2] Association ALSOPHIS. Website: http://alsophis-antilles.blogspot.com — karlquestel@gmail.com

Abstract: A new *Charinus* Simon 1892 is herein described on the basis of four specimens collected in La Désirade, a island close of Guadeloupe (Leeward Islands of the Lesser Antilles). This represents the second species of the family Charinidae Quintero 1986 described from these islands, as well as its first record from the French Overseas Territory of Guadeloupe.
Key words: Amblypygi, Charinidae, *Charinus*, new species, Lesser Antilles.

Una especie nueva de *Charinus* Simon 1892 (Amblypygi: Charinidae) de Guadalupe, Antillas Menores.
Resumen: Se describe un nuevo *Charinus* Simon 1892, a partir de cuatro especímenes capturados en La Deseada, pequeña isla próxima a Guadalupe (Islas de Barlovento de las Antillas Menores). Esta representa la segunda especie de la familia Charinidae Quintero 1986 descrita de estas islas, así como su primer registro para el Territorio Francés Ultramarino de Guadalupe.
Palabras clave: Amblypygi, Charinidae, *Charinus*, nueva especie, Antillas Menores.

Taxonomy / Taxonomía: *Charinus desirade* **n. sp**

Introduction

The whip-spider family Charinidae Quintero, 1986, is widespread and diverse across the West Indies. It is represented there by 12 described species, which belong all to the genus *Charinus* Simon, 1892, and are endemic from single islands: six in Cuba, two in Puerto Rico, and one each in Hispaniola, Jamaica, the Virgin Islands, and Saint-Barthélemy (Quintero, 1983; Armas & Teruel, 1997; Armas & Ávila, 2001; Armas & Pérez, 2001; Harvey, 2003; Armas, 2004, 2006, 2007, 2010; Teruel & Questel, 2011). Further, two undescribed species have also been recorded from Hispaniola and the Grenadines (Armas & Pérez, 2001; Armas, 2006), and a third has been recently collected in Cuba (R. Teruel, unpublished data).

In the original description of the first *Charinus* officially named from the Lesser Antilles, Teruel & Questel (2011: 18) stated that the wide separation between this species and that still unnamed from the Grenadines suggested that the genus could be more widespread across this insular group and that the absence of published records was possibly due to poor sampling. This suspicion was quickly confirmed: a brief arachnid survey recently conducted by one of us (KQ) and some collaborators in Guadeloupe, succeeded in collecting a small but representative sample of *Charinus* at the island of La Désirade. It proved to represent a new species, and its formal description constitutes the main objective of the present paper.

Methods & material

The specimens were studied, measured, drawn and photographed under a Zeiss Stemi 2000-C stereomicroscope, equipped with line scale and grid ocular micrometers, and a Canon PowerShot A620 digital camera, all calibrated to 20x. Digital images were slightly processed with Adobe Photoshop® 8.0, only to optimize bright and contrast features. Nomenclature and measurements follow Quintero (1983). All specimens are deposited in the collection of the Centro Oriental de Ecosistemas y Biodiversidad, Santiago de Cuba (BIOECO), with labels originally written in Spanish (transcribed into English in the present text).

Systematics

Charinus desirade, new species

Figures 1–4. Table I

TYPE DATA: GUADELOUPE: La Désirade: Morne à Marthe; 16°18'30.62"N - 61°05'15.02"W; July 4, 2014; K. Questel, G. Moulard, M. Coulis, E. Curot-Lodéon; 1 adult ♂ holotype (BIOECO), 1 adult ♀, 1 juvenile ♂ and 1 juvenile ♀ paratypes (BIOECO).

DIAGNOSIS. Adult size moderately small (4.9–5.2 mm) for the genus. Coloration olive-yellowish, immaculate. Carapace with lateral eyes well developed, median ocular tubercle vestigial, median eyes absent and without underlying melanic pigment; frontal area narrowly to widely convex (male and female, respectively). Tritosternum/tetrasternum/pentasternum with 4/2/1 pairs of spiniform setae, respectively. Leg I flagellum with 23 tibial and 41 tarsal segments. Leg IV with trisegmented basitibia. Tarsomere II of legs II–IV with translucent membranous ring complete. Tritosternum with a pair of apical spiniform setae.

DISTRIBUTION (fig. 4). This species is known only from the type locality, in the western part of La Désirade. This small island is close to Guadeloupe (Leeward Islands), where the same or a closely-related taxon is expected to occur.

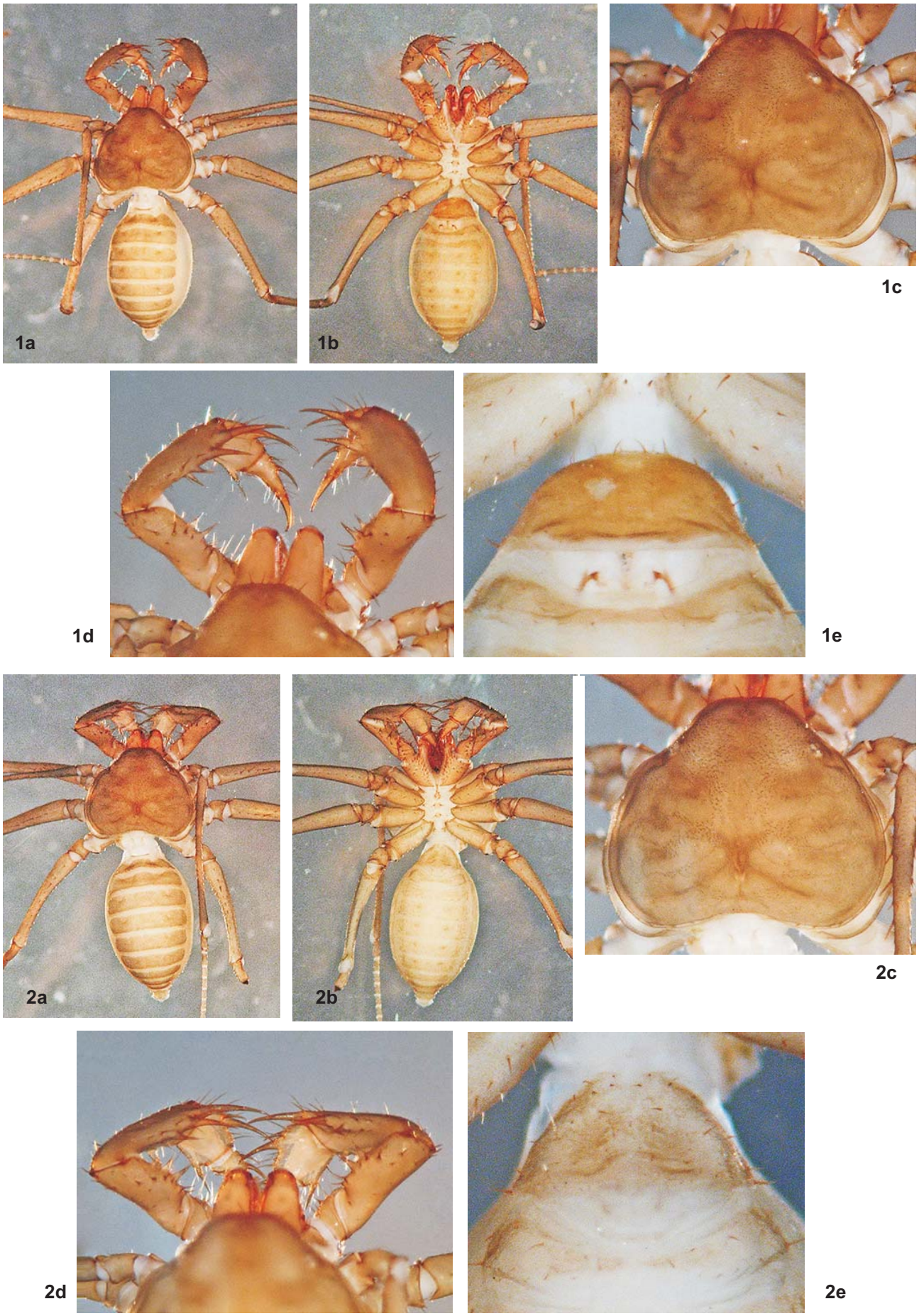

Fig. 1. Adult male holotype of *Charinus desirade* n.sp.: **a)** dorsal view; **b)** ventral view; **c)** carapace; **d)** chelicerae and pedipalps, dorsal view; **e)** genital operculum. **Fig. 2.** Adult female paratype of *Charinus desirade* n.sp.: **a)** dorsal view; **b)** ventral view; **c)** carapace; **d)** chelicerae and pedipalps, dorsal view; **e)** genital operculum.

Fig. 3. *Charinus desirade* n.sp.: **a)** adult male holotype, photographed when found in its natural habitat; **b)** exact rock where the type-series was obtained, photographed at the moment of collection; **c)** general view of the type locality.

ETYMOLOGY. The selected epithet is an indeclinable noun in apposition, taken directly from the name of the island where this species was collected.

DESCRIPTION (adult male holotype). Coloration (fig. 1) uniformly olive-yellowish, slightly darker on carapace and pedipalps, venter and chelicerae paler; intersegmental membranes whitish. Carapace with a pair of small oval, translucent-whitish spots indicating location of absent median eyes; lateral eyes silver-white; all three ocular tubercles without any traces of melanic pigment. Pedipalps (fig. 1d) not attenuated, very densely covered by minute granules in all segments except postarsus, few setiferous tubercles present only on dorsal edges of every segment except basitarsus, where absent. Trochanter moderately covered with spiniform setae, with two anteroventral spines (short, stout and widely spaced); ventroapical spur very long, sharp and angled upwards. Femur with only two dorsal spines (Fd-2 > Fd-3, both subdivided by a conspicuous round, medial suture), flanked externally by an oblique irregular row of 10–12 large setiferous tubercles; ventrally with two spines (Fv-1 > Fv-2), plus five spiniform setae of various sizes, but shorter than spines. Patella moderately flat; dorsally with three very large spines (Pd-1 < Pd-2 < Pd-3), plus a very large spine-like setiferous tubercle distal to Pd-3 (actually modified Pd-4, as large as Pd-1); ventrally with two spines (Pv-1 and Pv2) and about 12 spiniform setae, Pv-1 is about half the length of Pv-2 and subdivided by a conspicuous round, sub-basal suture. Tibia markedly flat and minutely granulose; dorsally with two spines (Td-1 less than twice as short as Td-2); ventrally with one spine (Tv-1), which is the longest along the entire ventral edge of pedipalp and subdivided by a conspicuous round, median suture. Basitarsus dorsally with two spines (Bd-1 almost three times shorter than Bd-2); ventrally smooth, with cleaning organ very long and closely barbed. Postarsus long, sharp, evenly curved inwards and smooth. Carapace (fig. 1c) widely cordiform, 1.23 times wider than long. Tegument minutely wrinkled, very densely covered by minute scale-like granules and bare. Frontal margin wide and markedly convex (widely protruded), with seven short, thick spiniform setae (single median plus three lateral pairs); posterior margin with about 10 short spiniform setae evenly distributed in five pairs. Median eyes absent but clearly indicated by a pair of oval, translucent-white spots, median ocular tubercle vestigial, unpigmented, and surrounded by a depression; lateral eyes well developed but unpigmented, entirely translucent-white, lateral ocular tubercle well developed but also lacking melanic pigment. Tergites (fig. 1a) with the same sculpture and setation as on carapace. Ventral region (figs. 1b, e) with genital operculum large and darker, posterior margin widely rounded. Tritosternum long and apically very narrow (bottle-shaped), with two apical macrosetae plus three pairs of smaller spiniform setae (median, sub-basal and basal), gradually decreasing in size basally. Tetrasternum moderately sclerotized, wider than long and with a large median pair of spiniform macrosetae plus a much smaller basal pair. Pentasternum moderately sclerotized, wider than long and with a large median pair of spiniform macrosetae only. Sternites very densely and minutely granulose, moderately covered by short, thin setae. Legs (fig. 3a) slender but not unusually attenuated, femur densely covered with minute scale-like tubercles and rigid setae of various sizes. Leg I flagellum with 23/23 tibial and 41/41 tarsal segments; first tarsomere about three times longer than second. Leg IV with trisegmented basitibia. Tarsomere II of legs II–IV with the translucent membranous ring complete, representing a true tarsal subdivision.

FEMALE (fig. 2; tab. I). Very similar to holotype male, slight sexual dimorphism evident in: a) body larger, but with pedipalps comparatively shorter; b) carapace proportionally wider, with frontal margin more convex and less prominent; c) genital operculum relatively smaller and narrower, with fewer and shorter setae; d) gonopods lacking sclerotized sclerites.

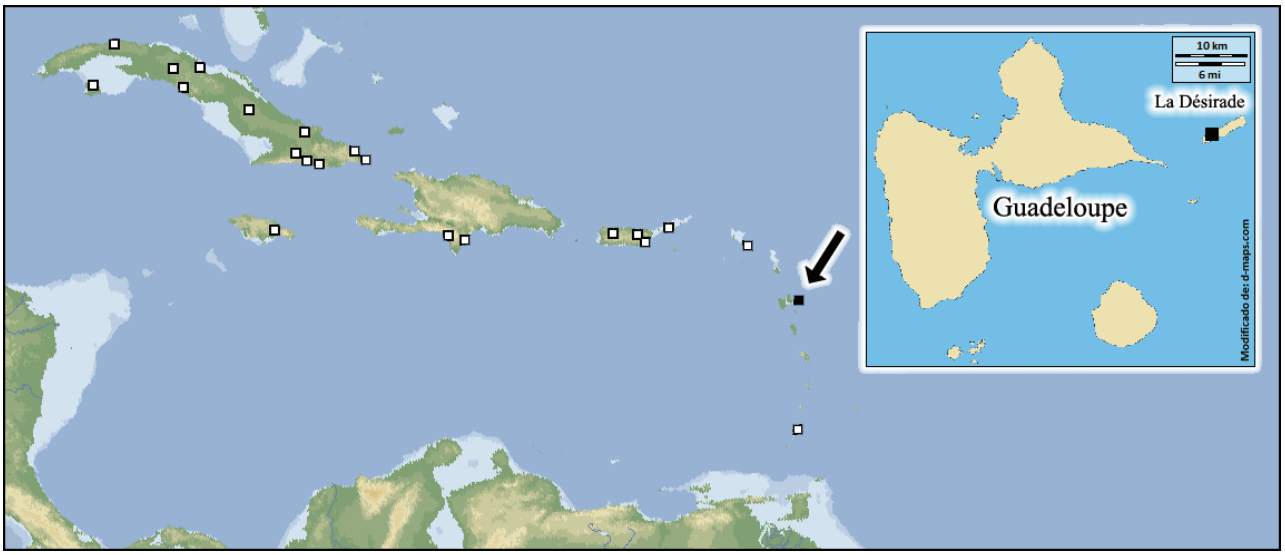

Fig. 4. Known geographical distribution of the genus *Charinus* in the West Indies (white squares) and La Désirade (black square). The inset shows the precise type locality of *Charinus desirade* n.sp.

Table I. Measurements (mm) of the two adult types of *Charinus desirade* n.sp. Abbreviations: length (L), width (W), depth (H).

Dimensions		♂ holotype	♀ paratype
Carapace	L / A	1.95 / 2.40	2.00 / 2.60
Abdomen	L	3.00	3.20
Pedipalp	L	4.38	3.84
Femur	L / A	1.00 / 0.34	0.90 / 0.35
Patella	L / A	1.28 / 0.33	1.30 / 0.32
Tibia	L	0.50	0.59
Basitarsus	L	0.88	0.50
Postarsus	L	0.72	0.55
Leg I Femur	L	3.33	3.50
Leg IV Femur	L	2.40	2.40
TOTAL	**L**	**4.95**	**5.20**

VARIATION. The coloration in live specimens is conspicuously darker and has a reddish hue (fig. 3a), but after alcoholic preservation it rapidly changes to the pattern described above. Both adults are identical in color but the two juveniles are markedly paler, especially on pedipalps.

The segmentation of leg I is essentially fixed: six of the seven flagella available have 23 tibial and 41 tarsal segments, the remaining one possess 23/38 and belongs to the juvenile male paratype (the other flagellum of this specimen is missing). Similarly, no variation was found in walking legs: the basitibia is trisegmented (IV) and the tarsomere II has the translucent membranous ring completely developed in all available legs (III–IV).

COMPARISONS. *Charinus desirade* n.sp. is very easy to distinguish from all other West Indian known congeners: its 23/41 segmentation formula of leg I flagellum is shared in this region only by *Charinus acosta* (Quintero, 1983), an endemic but widespread species from Cuba. But the latter can be unequivocally differentiated by the following characters: 1) median eyes, ocular tubercle and underlying melanic pigment, all fully developed; 2) lateral ocular tubercles with underlying melanic pigment also fully developed; 3) tritosternum / tetrasternum / pentasternum with 6/5/4 pairs of markedly stouter spiniform setae, respectively; 4) pedipalp spination conspicuously different: femur with three dorsal spines and abundant setiferous tubercles essentially all over, patella with dorsal edge elevated as an irregular coarse carina, and tibia with many small accessory spines and setiferous tubercles along dorsal and ventral edges; 5) entire body and appendages with setae stouter and more numerous.

Another geographically close species is *Charinus muchmorei* Armas & Teruel, 1997 (known only from St. John, in the U.S. Virgin Islands), which also possesses leg I flagellum with 23 tibial segments. But it is very easy to separate from *Charinus desirade* n.sp. by: 1) median eyes and ocular tubercle entirely absent; 2) leg I flagellum with much lower number of tarsal segments, 33–39 in adults and 29 in juveniles; 3) tritosternum/tetrasternum/pentasternum with 3/1/1 pairs of spiniform setae, respectively; 4) pedipalp femur with three dorsal and three ventral spines, all well-developed.

ECOLOGICAL NOTES. All specimens were collected under a single rock of volcanic tuff, together with a tiny juvenile of the scorpion *Oiclus* cf. *nanus* Teruel & Chazal, 2010 (Scorpionidae: Diplocentrinae). The rock was semi-buried in the ground, in a shady place of the dry forest that covers this part of the island (figs. 3b–c).

REMARKS. The holotype has right leg IV and left leg I both broken at the patella/tibia joint, but no segments are missing and the two detached parts are stored in the same vial. The paratypes also have some legs similarly broken, but the only missing parts are those of the right leg IV of the adult female and left leg II of juvenile female, which obviously had been lost long before the specimens were collected, i.e., both joints bear a dark, old scab covering the injured membranes.

The discovery of *C. desirade* n.sp. confirmed the hypothesis previous exposed by Teruel & Questel (2011): the genus *Charinus* is widespread and diverse in the Lesser Antilles, but remains heavily underestimated due to poor and/or inadequate sampling. The three species now known to occur there cover the entire range of this insular group: *C. bruneti* in its northern limit (Saint-Barthélemy), *C. desirade* n.sp. roughly in the middle (Guadeloupe), and an undescribed species in the southern end (The Grenadines). Although La Désirade is very close to Guadeloupe, this is not a satellite islet, but an island of 21 km2 near the Guadeloupe, it is better to separate the Desirade to La Guadeloupe, there are many differ-

rent endemism on these two islands (bird subspecies, reptile species) La Desirade belongs politically to Guadeloupe, but geologically it is older.

With the present addition, the complete list of the Charinidae occurring in the West Indies is updated as follows:

1. *Charinus acosta* (Quintero, 1983): Cuba.
2. *Charinus bruneti* Teruel & Questel, 2011: Saint-Barthélemy.
3. *Charinus caribensis* (Quintero, 1986): Jamaica.
4. *Charinus centralis* Armas & Ávila, 2001: Cuba.
5. *Charinus cubensis* (Quintero, 1983): Cuba.
6. *Charinus decu* (Quintero, 1983): Cuba.
7. *Charinus desirade* Teruel & Questel, 2015: Guadeloupe.
8. *Charinus dominicanus* Armas & Pérez, 2001: Hispaniola.
9. *Charinus muchmorei* Armas & Teruel, 1997: Virgin Islands.
10. *Charinus perezassoi* Armas, 2010: Puerto Rico.
11. *Charinus tomasmicheli* Armas, 2006: Cuba.
12. *Charinus victori* Armas, 2010: Puerto Rico.
13. *Charinus wanlessi* (Quintero, 1983): Cuba.

Acknowledgements

We are deeply indebted to Baptiste Angin and Fortuné Guiougou (Association Le Gaïac) for making possible the opportunity to explore La Désirade. Also to Grégory Moulard, Mathieu Coulis, and Elisa Curot-Lodéon, for their kind assistance during the collection of the type-series of this species. And to Luis F. de Armas (Instituto de Ecología y Sistemática, Havana, Cuba), Tomás M. Rodríguez-Cabrera (Jardín Botánico de Cienfuegos, Cuba), and anonymous referees for the peer-review of the manuscript.

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