

## A NEW SPECIES OF *OICLUS* SIMON 1880 (SCORPIONES: SCORPIONIDAE: DIPLOCENTRINAE) FROM SAINT-BARTHÉLEMY, LESSER ANTILLES

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**Abstract:** In the present paper, the identity of the *Oiclus* population inhabiting the small island of Saint-Barthélemy is clarified, concluding that it represents the second species for this previously monotypic genus endemic from the Lesser Antilles; it is the first described Diplocentrinae known to essentially lack pectinal fulcra. Also, some topics on its taxonomy and distribution are briefly commented.

**Key words:** Scorpiones, Scorpionidae, Diplocentrinae, *Oiclus*, new species, Lesser Antilles.

**Una nueva especie de *Oiclus* Simon 1880 (Scorpiones: Scorpionidae: Diplocentrinae) de St.-Barthelemy, Antillas Menores.**

**Resumen:** En la presente contribución se esclarece la identidad de la población de *Oiclus* que habita la pequeña isla de San Bartolomé, concluyéndose que representa la segunda especie para este género hasta ahora monotípico y endémico de las Antillas Menores; este representa el primer Diplocentrinae conocido que carece básicamente de fulcras pectinales. También se comentan brevemente algunos aspectos de su taxonomía y distribución.

**Palabras clave:** Scorpiones, Scorpionidae, Diplocentrinae, *Oiclus*, especie nueva, Antillas Menores.

**Taxonomy/Taxonomía:** *Oiclus questeli* sp. n.

### Introduction

The genus *Oiclus* Simon 1880 is a very interesting Diplocentrinae with a geographical distribution restricted to the northernmost Leeward Islands, in the Lesser Antilles (Francke, 1978; Armas, 1988, 2005; Sissom & Fet, 2000). The taxonomy of this genus is problematic: it has been revised only by Francke (1978), who recognized a single polytypic species with two subspecies (*Oiclus purvesii purvesii* (Becker 1880) from Antigua, Barbuda, Île des Saintes, Montserrat and Nevis, and *Oiclus purvesii sabae* Francke 1978 from Saba) plus a third taxon from St. Kitts, which was not formally named but regarded as a hybrid population between these two subspecies (Francke, 1978).

Very recently, Teruel & Francke (2006) recorded a population of *Oiclus* for the small island of Saint-Barthélemy, but these authors refrained from assigning it to a precise taxon because it showed some evident morphological differences with respect to all known populations *O. purvesii* s.l., but the reduced sample available (two females) was not enough to elucidate the actual importance of these differences. Fortunately, further collecting efforts succeeded in finding additional specimens of this interesting population (including the adult male), whose complete study confirmed that it indeed represents a new species of *Oiclus*. The new scorpion is formally described in the present paper, with some comments of the taxonomy and distribution of the genus also included.

### Methods & Material

The specimens were studied, measured 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. Digi-

tal images were slightly processed with Adobe Photoshop® 8.0, only to optimize bright and contrast features. Nomenclature and measurements follow Stahnke (1970), except for trichobotriotaxy (Vachon, 1974), metasomal carinae (Francke, 1977) and sternum (Soleglad & Fet, 2003). In the table, all measurements are given in millimeters as length/width/depth except for the carapace, where these correspond to length/posterior width. Acronyms for the collections where the studied material is deposited: Museum of Comparative Zoology, Harvard University, Massachusetts, USA (MCZ), Montana State University, Montana, USA (MSU), and personal collection of the author (RTO).

### Systematics

#### *Oiclus questeli*, new species

Figures 1-5. Table I

*Oiclus* sp.: Teruel & Francke, 2006: 286; fig. 1-2.

**DIAGNOSIS:** species of small size (male 22 mm, females 19-23 mm) for the genus. Body light yellowish brown, diffusely patterned with dark brown; legs slightly paler than the body; pedipalps and metasoma with carinae and fingers moderately infusate. Carapace polished in both sexes, in males with posterolateral areas very finely and densely granulose, in females moderately covered by coarse granules throughout; tergites finely and densely granulose in males, with the same sculpture as carapace in females. Punctate tegument restricted only to pedipalp chela. Pedipalp chela very robust, with dorsoexternal surfaces granulose and moderately reticulate in males; slender, with dorsoexternal surfaces smooth in females. Metasoma weakly to vestigially carinated in dorsal and lateral surfaces, interca-

rinal tegument smooth and polished. Pectines with fulcra extremely vestigial to absent; tooth count 7 in males, 6 in females. Modal tarsal spine formula 3/3 : 4/4 : 5/5 : 5/5.

**HOLOTYPE:** adult ♂ (RTO: Sco.0379): GUADELOUPE: SAINT-BARTHÉLEMY: Petit Anse; 14 February 2008; K. Questel.

**PARATYPES:** GUADELOUPE: SAINT-BARTHÉLEMY: Saline; 16 October 2005; K. Questel; 1 adult ♀ (RTO: Sco.0314). Flamand; 30 July 2007; K. Questel; 1 adult ♀ (RTO: Sco.0365). Petit Anse; 7 February 2008; K. Questel; 1 juvenile ♂, 1 juvenile ♀ (RTO: Sco.0378).

**COMPARATIVE MATERIAL EXAMINED:** *Oiclus purvesii purvesii* (Becker 1880): ANTIGUA: English Harbour, south end of the island; January 1918; R. Forrest; 1 adult ♀, 1 juvenile ♂ (MCZ, filemaker no. 12422). MONTSERRAT: Cassara Ghant; 31 May 2002; K. Marske; 1 adult ♀ (MSU). *Oiclus* sp.: ST. KITTS: ST. THOMAS MIDDLE ISLAND PARISH: Wingfield National Park: Peter Manning Trail (in rotten log); 4 July 2003; M. A. Ivie; 1 juvenile ♀ (MSU).

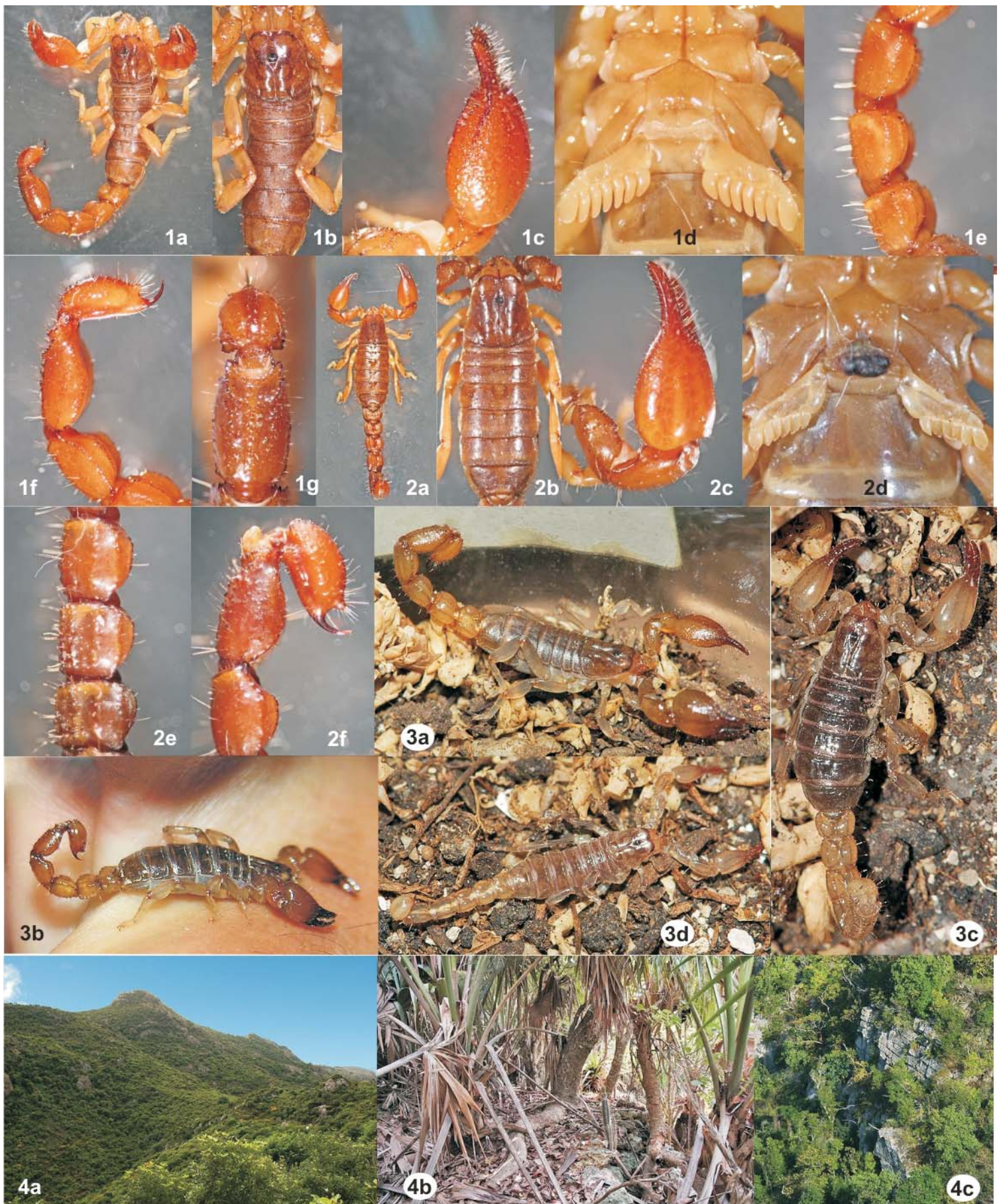
**ETYMOLOGY:** it is a pleasure to name this species after Karl Questel (Saint-Barthélemy), a good friend and scorpion enthusiast, who also collected all known specimens.

**DISTRIBUTION** (fig. 5): this species has been collected only in the small island of Saint-Barthélemy (Lesser Antilles), where it is widespread but uncommon.

**DESCRIPTION** (adult male holotype): **coloration** (fig. 1, 3a) basically light yellowish brown, with a dense but diffuse pattern of dark brown reticulate spots all over the body and appendages, except on mesosoma venter; pedipalps and metasoma also with all carinae and fingers infuscate; carapace with anterior margin, ocular tubercle and eyes blackish; pectines pale yellowish, immaculate; legs paler than the body, but with similar dark pattern. **Carapace** (fig. 1b) longer than wide, anterior margin with four pairs of macrosetae alternated with four pairs of microsetae, frontal lobes very wide and rounded, frontal notch very wide and shallow. Tegument almost entirely smooth and polished, only with posterolateral areas very finely and densely granulose. All furrows obsolete except for the lateral ocular, posterior median, posterior lateral and posterior marginal, which are relatively narrow and deep. Median eyes small but larger to the lateral eyes, and separated by about one ocular diameter, median tubercle subtly raised; two pairs of lateral eyes. **Tergites** (fig. 1b) with median carina weakly elevated on I-IV, flanked on each side by narrowly depressed furrows; tegument very finely and densely granulose. Tergite VII with moderately bilobed lateroposterior region and with two pairs of lateral carinae which are all similar and composed only by 2-3 large, rounded granules. **Chelicerae** (fig. 1b) with dentition typical for the family, and tegument smooth and polished. **Pedipalps** (figs. 1a, c) orthobothriotaxic C. Femur deeper than wide, with dorsal surface markedly convex; dorsointernal and ventrointernal carinae poorly defined, irregularly granulose, ventroexternal carina absent; ventral and external tegument smooth and polished, dorsal and internal tegument irregularly granulose, dorsal surface with some coarse granules scattered. Patella with all carinae weak except for the dorsointernal (moderately strong, costate) and the dorsoexternal (weak, costate); tegument

smooth and polished except on the internal surface, which is very finely and densely granulose. Chela very short and robust, ovate in cross-section and much deeper than wide; hand with all carinae obsolete to absent, digital carina vestigial, costate, ventrointernal carinae absent, ventroexternal carinae strong, costate and directed towards its articulation condyle, dorsal marginal and dorsointernal carinae strong, irregularly granulose; tegument vestigially punctate and covered with granulose reticulations which cross even over some of the carinae, dorsointernal surfaces densely granulose. Fingers very short, densely punctate, acarinate and densely setose, without lobe/notch combination; opposable edges with irregular granulation not arranged in rows. **Legs** (fig. 1a) with tegument smooth and polished; pedal spurs absent; tarsomere II without laterodistal lobes; tarsal spine formula 3/3 : 4/4 : 5/5 : 5/5. **Sternum** (fig. 1d) type 2, strongly pentagonal, with parallel sides. **Genital operculi** (fig. 1d) rhomboidal; genital papillae moderately developed and subtly exposed. **Pectines** (fig. 1d) moderately setose, with 7/7 teeth; fulcra absent to extremely vestigial; basal plate much wider than long; anterior margin weakly notched, posterior margin straight. **Sternites** (fig. 1d) smooth and polished, with some scattered setae; VII only with the lateral carinae present, which are very weak and costate to subgranulose; spiracles narrow oval, elongate. **Metasoma** (figs. 1a, e-g) with segments I-III each wider than long; intercarinal tegument smooth and polished, with some minute granules scattered on dorsal and lateral surfaces; segments I-III, with ten carinae, IV with eight, V with five; dorsolateral carinae vestigial and subgranulose on I-IV, absent on V; lateral suprmedian carinae weak and subgranulose on all segments; lateral infrmedian carinae very weak and subcostate on I, vestigial and smooth on II-III, absent on IV-V; ventrolateral carinae moderately crenulate on I-II, weakly costate on III, very weak and smooth on IV, composed by irregularly arranged conical granules on basal two-thirds of V but replaced on distal third by the ventral transverse carina; ventral submedian carinae moderate to strongly crenulate on I-II, weakly costate on III, very weak and smooth on IV; ventromedian carinae on V strong and composed by irregularly arranged conical granules; ventral transverse carina strong, dentate and evenly arched; segment V slightly shorter than telson, with anal arc denticulate, laterodistal lobes bluntly triangular and not projected. Telson oval-depressed and moderately slender; vesicle polished and irregularly granulose, ventrobasal area coarsely granulose, subaculear tubercle large, laterally compressed and covered by many rigid setae and a few coarse granules; aculeus short, sharp and moderately curved.

**FEMALE** (figs. 2, 3b; tab. I): overall similar to the male but somewhat darker, there is also a strong sexual dimorphism evident on: **1**) carapace and tergites smooth but moderately covered by coarse, low, and polished granules; **2**) mesosoma comparatively wider, not parallel-sided; **3**) pedipalp chela much more slender, with dorsoexternal surfaces smooth; **4**) pectines smaller, entirely lacking fulcra and with lower number of teeth, which are also relatively much smaller; **5**) genital papillae absent; **6**) sternite VII with ventrosubmedian carinae present, weakly granulose; **7**) metasoma more robust and with all carinae conspicuously stronger.



**Fig. 1.** Adult male holotype of *Oichus questeli* sp.n.: **a)** entire dorsal view; **b)** carapace and tergites; **c)** pedipalp; **d)** sternopectinal region; **e)** metasomal segments I-III, lateral view; **f)** metasomal segments IV-V and telson, lateral view; **g)** metasomal segment V and telson, ventral view. **Fig. 2.** Adult female paratype of *Oichus questeli* sp.n. from Saline: **a)** entire dorsal view; **b)** carapace and tergites; **c)** pedipalp; **d)** sternopectinal region; **e)** metasomal segments I-II, lateral view; **f)** metasomal segments IV-V and telson, lateral view. **Fig. 3.** Live specimens of *Oichus questeli* sp.n. in their natural habitat: **a)** adult male holotype; **b)** adult female paratype from Saline; **c)** juvenile male paratype from Petit Anse; **d)** juvenile female paratype from Petit Anse. **Fig. 4.** Habitat and microhabitat where *Oichus questeli* sp.n. occurs at: **a-b)** Saline; **c)** Flamand.

**Table I. Measurements of the three adult types of *Oiclus questeli* sp.n.**  
Abbreviations: length (L), width (W), posterior width (Wp), depth (H).

| Dimensions     |          | ♂ holotype<br>(Petit Anse) | ♀ paratype<br>(Flamand) | ♀ paratype<br>(Saline) |
|----------------|----------|----------------------------|-------------------------|------------------------|
| Carapace       | L/Wp     | 3.10 / 2.85                | 3.00 / 3.10             | 3.25 / 3.35            |
| Mesosoma       | L        | 6.50                       | 5.50                    | 7.25                   |
| Tergite VII    | L        | 1.25 / 2.60                | 1.25 / 2.75             | 1.50 / 3.30            |
| Metasoma       | L        | 12.70                      | 10.85                   | 12.65                  |
| Segment I      | L/W      | 1.50 / 2.05                | 1.25 / 1.85             | 1.50 / 2.25            |
| Segment II     | L/W      | 1.65 / 1.85                | 1.40 / 1.70             | 1.65 / 2.10            |
| Segment III    | L/W      | 1.75 / 1.80                | 1.50 / 1.65             | 1.85 / 2.00            |
| Segment IV     | L/W      | 2.15 / 1.75                | 1.85 / 1.55             | 2.20 / 1.85            |
| Segment V      | L/W/H    | 2.80 / 1.70                | 2.35 / 1.55             | 2.70 / 1.75            |
| Telson         | L        | 2.85                       | 2.50                    | 2.75                   |
| Vesicle        | L/W/H    | 2.00 / 1.50 / 1.10         | 1.85 / 1.50 / 1.15      | 2.00 / 1.75 / 1.30     |
| Aculeus        | L        | 0.85                       | 0.65                    | 0.75                   |
| Pedipalp       | L        | 8.10                       | 7.85                    | 9.25                   |
| Femur          | L/W      | 1.80 / 1.10                | 1.75 / 0.85             | 2.20 / 1.00            |
| Patella        | L/W      | 2.05 / 1.20                | 1.95 / 1.00             | 2.25 / 1.10            |
| Chela          | L        | 4.25                       | 4.15                    | 4.80                   |
| Hand           | L/W/H    | 1.75 / 2.05 / 2.35         | 1.80 / 1.60 / 2.00      | 2.00 / 1.85 / 2.10     |
| Movable finger | L        | 2.50                       | 2.35                    | 2.80                   |
| <b>Total</b>   | <b>L</b> | <b>22.30</b>               | <b>19.35</b>            | <b>23.15</b>           |

**VARIATION:** all five type-specimens have identical coloration, sculpture of the tegument, tarsal spine formula (3/3 : 4/4 : 5/5 : 5/5), and pectinal tooth count in each sex (males 7/7, females 6/6). The only significant variation observed is that the adult female from Flamand is conspicuously smaller than the adult female from Saline (table I).

As in all other diplocentrine scorpions, juveniles (figs. 3c-d) differ from adults in coloration (base conspicuously paler, spotted pattern darker and more contrasting), general body shape (noticeably more slender), tegument sculpture (pedipalpal and metasomal carinae weaker), and lack of sexual dimorphism except on pectines and genital operculum (juvenile males possess carapace, tergites, and pedipalp chelae with the same shape and sculpture as both adult and juvenile females).

**ECOLOGICAL NOTES:** according to the data kindly provided by the collector, all specimens of *O. questeli* sp.n. have been collected under stones in wet, forested ravines (fig. 4); the maximum altitude where it has been found is 108 m at Saline. This species is widespread all over the island, but it is very uncommon: despite intensive searches continued for several years, it has been found only five times and not more than two specimens have been seen in every search. It occurs both sympatrically and syntopically with two buthid scorpions: *Centruroides barbudensis* (Pocock 1898) and *Isometrus maculatus* (DeGeer 1778).

**COMPARISONS:** *O. questeli* sp.n. is the first described member of Diplocentrinae (and Scorpionidae) known to essentially lack pectinal fulcra (figs. 1d, 2d). Apart from this, the only other species currently recognized in the genus (*O. purvesii*) can easily be separated from *O. questeli* sp.n. by the following characters: **1)** punctate tegument not restricted

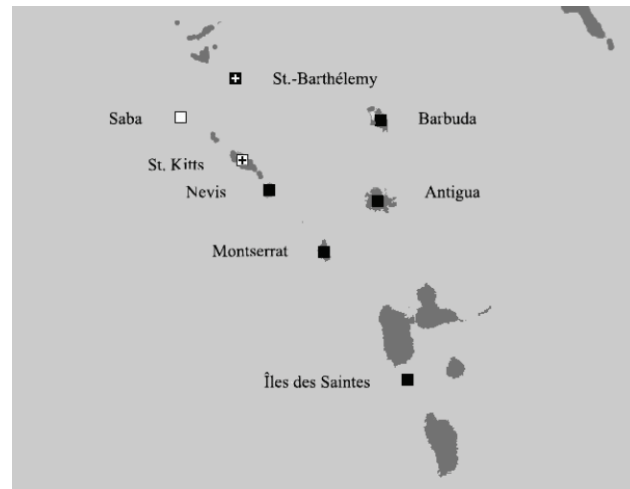
to pedipalp chela, but also extending to sternites, metasoma and pedipalp patella; **2)** adult male with ventrosubmedian carinae present on sternite VII; **3)** carapace and tergites entirely smooth in females, at most with very few vestiges of granules on posterior margins; **4)** larger size: males 28-32 mm, females 28-34 mm.

**REMARKS:** it is now evident that actually *Oiclus* is not monotypic as previously regarded by Francke (1978). In fact, this genus possibly contains more than two species because the study of the specimens mentioned above under "Comparative Material Examined" revealed some morphological discrepancy on the St. Kitts specimen when compared to those from Antigua + Montserrat (*O. p. purvesii*) and St.-Barthélemy (*O. questeli* sp.n.), as it was also noticed by Francke (1978), who regarded St. Kitts specimens as hybrids between *O. p. purvesii* and *O. p. sabae*. As in all other diplocentrine genera, the taxonomic identity of any *Oiclus* population can be reliably determined only after study of representative series of specimens (adults of both sexes at least), but unfortunately the samples available herein were too small to be adequate.

#### Acknowledgements

I wish to thank Karl Questel (St.-Barthelemy) for providing the *Oiclus* specimens upon which the present description is based, detailed information about their habitat conditions, and his excellent photos included herein as figures 3-4. Also, to Luis F. de Armas for kindly giving all facilities to study additional specimens of *Oiclus* he had in loan from MCZ and MSU collections, and also for the peer-review of the manuscript, together with two anonymous referees.

**Fig. 5.** Geographical distribution of *Oiclus questeli* sp.n. (⊕), *Oiclus purvesii purvesii* (■), *Oiclus purvesii sabae* (□), and *Oiclus* sp. (⊕).



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