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The Scorpions of Petite Terre, Guadeloupe, Lesser Antilles, with description of a new species of *Oiclus* Simon, 1880 (Scorpiones, Buthidae, Diplocentridae)

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Abstract. – The scorpion fauna of Petite Terre, in the Guadeloupe archipelago, Lesser Antilles, is studied for the first time, based on material recently collected during an entomological inventory. Two species are discovered here, *Centruroides pococki* Sissom & Francke, 1983 (family Buthidae C. L. Koch, 1837; also recorded from several other islands in the Lesser Antilles) and a new species of the genus *Oiclus* Simon, 1880 (family Diplocentridae Karsch, 1880), *O. tite* n. sp., described in this work and possibly endemic to Petite Terre. This new taxon raises to seven the number of described *Oiclus* species (one of them being polytypic) and confirms again that this genus endemic to the Lesser Antilles is more diverse than originally suspected. The number of known *Oiclus* species occurring in the Guadeloupe archipelago is increased to five; a map of their geographical distribution is presented and a key for their identification is provided.

Résumé. – **Les Scorpions de Petite Terre, Guadeloupe, Petites Antilles, avec la description d'une nouvelle espèce d'*Oiclus* Simon, 1880 (Scorpiones, Buthidae, Diplocentridae)**. La faune scorpionique de Petite Terre, dans l'archipel de la Guadeloupe, dans les Petites Antilles, est étudiée pour la première fois, sur la base de matériel récemment collecté lors d'un inventaire entomologique. Deux espèces y sont découvertes, *Centruroides pococki* Sissom & Francke, 1983 (famille des Buthidae C. L. Koch, 1837 ; également présente dans plusieurs autres îles des Petites Antilles) et une nouvelle espèce du genre *Oiclus* Simon, 1880 (famille des Diplocentridae Karsch, 1880), *O. tite* n. sp., décrite dans ce travail et possiblement endémique de Petite Terre. Ce nouveau taxon porte à sept le nombre d'espèces décrites pour le genre *Oiclus* (l'une d'elles étant polytypique) et confirme de nouveau que la diversité de ce genre endémique des Petites Antilles est plus importante qu'originellement suspectée. Le nombre d'espèces connues du genre *Oiclus* présentes dans l'archipel de la Guadeloupe est porté à cinq ; une carte de leur répartition est présentée et une clé d'identification est proposée.

Keywords. – Scorpions, taxonomy, morphology, endemism, islands.

Situated in the French archipelago of Guadeloupe, Lesser Antilles, the currently uninhabited islets of Petite Terre are located about 10 km south-east of the island of Grande-Terre, 13 km south of the island of La Désirade and 23 km north-east of the island of Marie-Galante. The two islets are named Terre-de-Haut (31 hectares) and Terre-de-Bas (117 hectares) and are separated by only 150 m (see fig. 20). Petite Terre is administratively dependent on the commune of La Désirade, and both islets as well as 842 hectares of the sea around them have had the status of *Réserve Naturelle Nationale* (National Nature Reserve) since 1998.

The genus *Oiclus* was created by Simon (1880) to accommodate the species *Diplocentrus purvesii* Becker, 1880, from Antigua. In his revision of the scorpions of the subfamily Diplocentrinae Karsch, 1880, from the circum-Caribbean lands, Francke (1978) recognized *O. purvesii* as a polytypic species with two subspecies: *O. purvesii purvesii* (Becker, 1880) from Antigua, Barbuda, Nevis, Montserrat and Les Saintes (Guadeloupe), and *O. purvesii sabae* Francke, 1978, from Saba. In the same paper, another population of *O. purvesii* (regarded as hybrid

population between both subspecies) was recorded from Saint Kitts. Later, *O. purvesii* was also recorded from Dominica (Santiago-Blay, 1987). The genus *Oiclus* remained monotypic until the description of a second species in 2008 (*O. questeli* Teruel, 2008, from Saint-Barthélemy island) and a third one in 2010 (*O. nanus* Teruel & Chazal, 2010, from Grande-Terre, Guadeloupe). It was then suggested (Teruel, 2008; Teruel & Chazal, 2010) that this genus endemic to the Lesser Antilles could be much more diverse than suspected.

More recently (Ythier, 2019), three new *Oiclus* species were described from the Guadeloupe archipelago, namely *O. ardens* Ythier, 2019, from Basse-Terre (originally suggested by Teruel & Chazal (2010) to be referable to *O. nanus*, based on examination of photographs), *O. cousteaui* Ythier, 2019, from Îlets Pigeon (Grand Îlet), and *O. tipunch* Ythier, 2019, from Les Saintes (Terre-de-Haut, formerly recorded by Francke (1978) as *O. p. purvesii* then also suggested by Teruel & Chazal (2010) to be referable to *O. nanus* based on photographs).

During a recent entomological inventory of Petite Terre, six scorpion specimens were collected, including three specimens belonging to the genus *Centruroides* Marx, 1890 (family Buthidae C. L. Koch, 1837) and three specimens belonging to a new species of the genus *Oiclus* Simon, 1880 (family Diplocentridae Karsch, 1880).

Material and methods

Measurements and illustrations were made using a SMZ-1713 stereomicroscope with an ocular micrometer, together with a Canon EOS 7D camera and a Wacom Intuos drawing tablet. Map was made using Google Maps and Adobe Photoshop software. Presented photographs are not modified except for cropping and addition of black background in habitus illustrations. Measurements follow Stahnke (1971) and are given in mm. Trichobothrial notations follow Vachon (1974) and morphological terminology mostly follows Hjelle (1990).

Specimens studied herein are deposited in the **MNHN** (Muséum national d'Histoire naturelle, Paris, France), **MHNN** (Muséum d'Histoire naturelle de Nantes, France), and **EYCP** (Éric Ythier Private Collection, Romanèche-Thorins, France).

Collecting permit for ten specimens was obtained from the *Conseil Scientifique Régional du Patrimoine Naturel de Guadeloupe* (n°2021/04, amended n°2022/01).

Taxonomy

Family **Buthidae** C. L. Koch, 1837

Genus ***Centruroides*** Marx, 1890

Centruroides pococki Sissom & Francke, 1983 (fig. 1-4, 19)

Material examined. – Guadeloupe, Petite Terre, Terre-de-Bas, Lighthouse, around and in the guards' house, 1 ♀ and 2 ♂, *T. Jourdan coll*., 5-7.III.2022 (N°221-01/03) (MNHN).

Distribution. – All collected specimens were found in the islet of Terre-de-Bas, Petite Terre, Guadeloupe, Lesser Antilles. The species is also recorded from several other islands of the Guadeloupe archipelago (Basse-Terre, La Désirade, Marie-Galante, Les Saintes) as well as from Dominica, Montserrat, Saint Kitts and Nevis (Lourenço, 1984; Sissom & Francke, 1983; Santiago-Blay, 1987; De Armas, 2005; Meurgey, 2011; Schmitt *et al*., 2017).

Family **Diplocentridae** Karsch, 1880

Genus ***Oiclus*** Simon, 1880

Revised diagnosis. – Scorpions of small size with a total length ranging from 19 to 32 mm. General coloration yellowish brown to brownish, marked with brownish to dark brown

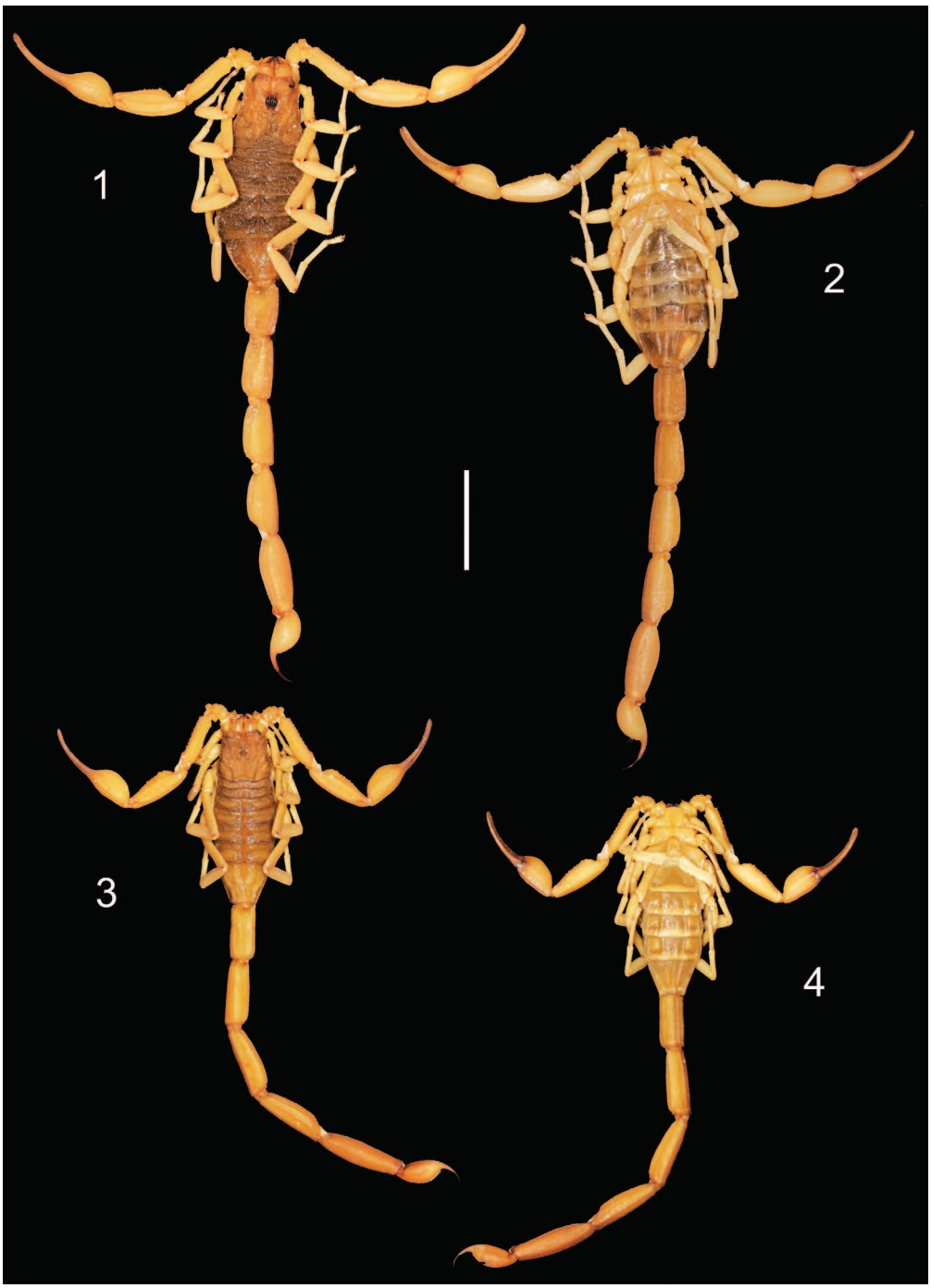

Fig. 1-4. – *Centruroides pococki* Sissom & Francke from Petite Terre, habitus. – **1-2**, ♀: **1**, dorsal aspect; **2**, ventral aspect. – **3-4**, ♂: **3**, dorsal aspect; **4**, ventral aspect. Scale bar = 1 cm.

variegated spots; legs paler than the body. Two pairs of lateral eyes. Chelicerae with dentition typical for the family, with fixed finger as long as manus width. Pedipalp femur deeper than wide. Pedipalp chela with ventro-median carina directed towards external condyle of movable finger articulation, leaving a distinctly flat ventral surface; manus without carinae on dorsal and external surfaces. Legs without prolateral pedal spurs. Metasomal segments subcylindrical; segment V with ventral transverse carina strong, arcuate. Pectinal tooth count between 6-8 teeth in both sexes.

Composition of the genus* Oiclus *(in order of description)

Oiclus purvesii purvesii (Becker, 1880) (Antigua, Barbuda, Montserrat, Saint Kitts and Nevis);
Oiclus purvesii sabae Francke, 1978 (Saba);
Oiclus questeli Teruel, 2008 (Saint-Barthélemy);
Oiclus nanus Teruel, 2010 (Guadeloupe: Grande-Terre);
Oiclus ardens Ythier, 2019 (Guadeloupe: Basse-Terre);
Oiclus cousteaui Ythier, 2019 (Guadeloupe: Îlets Pigeon);
Oiclus tipunch Ythier, 2019 (Guadeloupe: Les Saintes);
Oiclus tite n. sp. (Guadeloupe: Petite Terre).

Oiclus tite n. sp. (fig. 5-18, tab. I-II)

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Holotype: ♀, Guadeloupe, Petite Terre, Terre-de-Bas, lighthouse, in the dry forest nearby, under rocks, *T. Jourdan coll.*, 5-7.III.2022 (N°221-01) (MNHN).

Paratypes: 1 ♂, 1 juvenile ♂, *idem* holotype (MNHN).

Comparative material examined. – *Oiclus questeli*, Saint-Bartélemy, Colombier, 1 ♀ and 3 ♂ (MNHN, EYCP); *O. nanus*, Guadeloupe, Grande-Terre, Saint-François, Pointe des Châteaux, 1 ♀ (EYCP); *O. nanus*, Guadeloupe, Grande-Terre, Le Moule, Anse Sainte-Marguerite, 1 juvenile ♂ (MNHN); *O. ardens*, Guadeloupe, Bouillante, 1 ♀ (holotype), 3 ♀ (paratypes), 1 ♂ (paratype), 4 juvenile ♀ (paratypes) and 1 juvenile ♂ (paratype) (MHNN, EYCP); *O. cousteaui*, Guadeloupe, Îlets Pigeon, Grand Îlet, 1 ♀ (holotype) and 1 ♂ (paratype) (MNHN, EYCP); *O. tipunch*, Guadeloupe, Les Saintes, Terre-de-Haut, Morne Morel, 1 ♀ (holotype), 1 ♂ (paratype) and 1 juvenile ♀ (paratype) (MHNN, EYCP).

Distribution. – All collected specimens were found in the islet of Terre-de-Bas, Petite Terre, Guadeloupe, Lesser Antilles. The new species probably also occurs in the very close neighboring islet of Terre-de-Haut (to be confirmed, see fig. 20) and appears to be possibly endemic from Petite Terre.

Diagnosis. – The new species exhibits the general characteristics of the genus *Oiclus* Simon, 1880; total length 24 mm for female and 25 mm for male; general coloration yellowish brown, marked with brownish variegated spots; legs and pedipalps yellowish with brownish spots, chela fingers darkened; carapace as long as wide in female, longer than wide in male, with tegument smooth and shiny; median eyes separated by less than one ocular diameter in both sexes; pectines with 6-6 teeth in female and 7-8 teeth in male, fulcra present; metasoma with segments I-II wider than long and III-V longer than wide in both sexes; telson with vesicle moderately elongated in both sexes; pedipalp chela moderately robust in female, robust in male; chela manus tegument with minute punctuation in female, granulated in male; chela fingers proportionally moderately short in female, very short in male; leg modal tarsal spine formula 3/3 : 4/4 : 5/5 : 5/5.

Description based on female holotype and male paratype. – Measurements in table I.

Coloration. General coloration yellowish brown, marked with brownish variegated spots. Carapace yellowish brown, marked with brownish pigmentation; median ocular tubercle blackish. Tergites yellowish brown with brownish variegated spots, especially on the sides of tergites, forming a lighter longitudi-

nal median stripe; the posterior edge of the tergites also lighter; tergite VII lighter than other tergites in male. Venter and sternites yellowish brown in female, yellowish in male; the posterior edge of the sternites lighter in both sexes; sternum, genital operculum and pectines yellowish in both sexes. Metasomal segments yellowish with very diffuse brownish pigmentation on dorsal carinae; segments IV-V reddish yellow in

Fig. 5-8. – *Oiclus tite* n. sp., habitus. – **5-6**, ♀ holotype: **5**, dorsal aspect; **6**, ventral aspect. – **7-8**, ♂ paratype: **7**, dorsal aspect; **8**, ventral aspect. Scale bar = 5 mm.

Table I. – Morphometric values (mm) of adult females and males of *Oiclus purvesii purvesii* (Becker), *O. questeli* Teruel, *O. nanus* Teruel, *O. ardens* Ythier, *O. cousteaui* Ythier, *O. tipunch* Ythier and *O. tite* n. sp. (NA = not available).

	O. purvesii purvesii		***O. questeli***		***O. nanus***		***O. ardens***		***O. cousteaui***		***O. tipunch***		***O. tite* n. sp.**	
	♀	♂	♀	♂	♀	♂	♀	♂	♀	♂	♀	♂	♀	♂
Total length	27.95	25.70-31.85	19.35-24.10	22.20-22.40	21.20-30.80	20.10-23.20	24.20-25.90	18.80	26.50	22.60	26.00	23.10	24.08	24.80
Carapace														
length	3.90	3.50-4.20	3.00-3.30	3.00-3.30	3.05-3.70	2.70-3.20	2.80-3.50	2.70	3.30	3.00	3.00	3.20	3.26	3.40
posterior width	3.60	3.20-3.90	2.90-3.35	2.70-2.85	2.90-3.60	2.70-3.10	2.90-3.30	2.70	3.10	2.60	3.00	3.20	3.26	3.26
Mesosoma length	9.20	6.60-9.10	9.10-12.65	6.50-7.20	7.00-12.50	5.80-6.50	9.60-11.90	5.70	11.00	7.50	11.60	7.40	8.20	7.26
Tergite VII lenght	NA	NA	1.25-1.60	1.25-1.60	1.50-2.10	1.20-1.50	1.50-1.50	1.40	1.60	1.50	1.60	1.60	1.67	1.67
Metasoma length (including telson)	14.85	15.60-18.55	10.85-12.65	12.00-12.70	11.65-14.60	11.60-13.50	11.10-11.80	10.40	12.20	12.10	11.40	12.50	12.62	14.14
Metasomal segment I														
length	1.75	1.90-2.30	1.25-1.50	1.40-1.50	1.30-1.60	1.40-1.60	1.30-1.50	1.20	1.50	1.50	1.30	1.40	1.44	1.63
width	2.45	2.30-2.80	1.85-2.25	1.90-2.05	1.85-2.40	1.70-1.90	1.80-1.90	1.70	1.90	1.80	1.80	1.90	2.12	2.37
Metasomal segment II														
length	1.95	2.10-2.50	1.40-1.65	1.50-1.65	1.50-1.80	1.60-1.80	1.40-1.50	1.30	1.60	1.60	1.40	1.50	1.63	1.95
width	2.20	2.10-2.65	1.70-2.10	1.70-1.90	1.70-2.20	1.55-1.75	1.60-1.70	1.60	1.70	1.70	1.70	1.80	1.91	2.19
Metasomal segment III														
length	2.15	2.25-2.70	1.50-1.85	1.70-1.80	1.65-2.00	1.70-2.00	1.50-1.60	1.50	1.70	1.70	1.60	1.70	1.91	2.12
width	2.20	2.05-2.60	1.65-2.00	1.80-1.90	1.65-2.00	1.50-1.70	1.50-1.60	1.50	1.60	1.60	1.70	1.80	1.79	2.07
Metasomal segment IV														
length	2.50	2.75-3.25	1.85-2.20	2.10-2.20	2.00-2.60	2.00-2.30	1.70-1.90	1.70	2.00	2.00	2.00	2.30	2.16	2.47
width	2.05	1.95-2.50	1.55-1.85	1.70-1.80	1.60-1.90	1.40-1.60	1.50-1.60	1.40	1.60	1.60	1.70	1.70	1.77	1.91
Metasomal segment V														
length	3.20	3.40-4.00	2.35-2.70	2.60-2.80	2.55-3.30	2.50-2.90	2.60-2.70	2.30	2.70	2.70	2.50	2.90	2.74	3.07
width	2.00	1.85-2.40	1.55-1.75	1.70-1.80	1.45-1.80	1.35-1.55	1.50-1.50	1.40	1.50	1.50	1.60	1.70	1.70	1.79
Telson														
total length	3.30	3.20-3.80	2.50-2.75	2.60-2.85	2.65-3.30	2.40-2.90	2.40-2.70	2.40	2.70	2.60	2.60	2.70	2.79	2.93
vesicle length	2.60	2.50-2.90	1.85-2.20	2.00-2.30	1.90-2.60	1.70-2.10	2.10-2.40	2.10	2.30	2.20	2.20	2.30	2.33	2.37
vesicle width	2.00	1.60-1.95	1.50-1.75	1.40-1.50	1.50-1.80	1.20-1.40	1.40-1.60	1.40	1.60	1.30	1.60	1.50	1.72	1.53
vesicle depth	1.50	1.30-1.45	1.15-1.30	1.10-1.20	1.10-1.40	1.00-1.10	1.20-1.30	1.00	1.30	0.90	1.20	1.00	1.30	1.30
aculeus length	0.70	0.70-0.90	0.40-0.75	0.40-0.85	0.70-0.75	0.70-0.80	0.30-0.30	0.30	0.40	0.40	0.40	0.40	0.46	0.56

	O. purvesii purvesii		*O. questeli*		*O. nanus*		*O. ardens*		*O. cousteaui*		*O. tipunch*		*O. tite* **n. sp.**	
	♀	♂	♀	♂	♀	♂	♀	♂	♀	♂	♀	♂	♀	♂
Pedipalp														
femur length	2.40	2.15-2.60	1.75-2.20	1.70-1.80	2.00-2.30	1.80-2.10	1.70-1.80	1.70	1.80	1.80	1.60	1.80	2.19	2.23
femur width	1.15	1.00-1.25	0.85-1.30	1.10-1.20	0.95-1.30	0.90-1.00	0.90-1.10	0.80	0.80	1.20	1.20	1.10	1.12	1.02
patella length	2.45	2.30-2.75	1.95-2.30	2.05-2.30	2.35-2.80	2.00-2.50	1.90-2.30	2.00	2.30	2.30	2.20	2.20	2.33	2.70
patella width	1.30	1.20-1.40	1.00-1.20	1.10-1.20	1.00-1.30	0.95-1.10	1.00-1.10	0.90	0.90	0.90	1.20	1.20	1.16	1.02
chela length	5.15	4.40-5.10	4.15-5.30	4.25-4.70	4.15-6.20	3.50-4.30	4.60-5.00	4.20	5.00	5.00	4.60	4.80	4.93	5.12
chela width	2.75	2.95-3.45	1.60-1.85	1.70-2.05	1.70-2.50	1.70-2.00	1.30-1.50	1.30	1.30	1.60	1.50	1.60	1.67	2.09
chela depth	1.90	1.80-2.30	2.00-2.40	2.35-2.60	1.75-2.60	1.60-2.30	2.10-2.30	1.70	2.20	2.80	2.20	2.70	2.33	3.13
movable finger length	3.00	2.50-2.90	2.35-2.80	2.10-2.50	2.40-3.10	2.00-2.50	2.30-2.60	2.20	2.50	2.50	2.50	2.70	2.42	2.60
Morphometric ratios														
metasomal segment II length/width	0.89	0.94-1.00	0.79-0.82	0.87-0.88	0.82-0.88	1.03-1.03	0.88-0.88	0.81	0.94	0.94	0.82	0.83	0.85	0.89
metasomal segment III length/width	0.98	1.04-1.10	0.91-0.93	0.94-0.95	1.00-1.00	1.13-1.18	1.00-1.00	1.00	1.06	1.06	0.94	0.94	1.07	1.02
telson length/depth	2.20	2.46-2.62	2.12-2.17	2.36-2.38	2.36-2.41	2.40-2.64	2.00-2.08	2.40	2.08	2.89	2.17	2.70	2.15	2.25
chela length/width	1.87	1.48-1.49	2.59-2.86	2.29-2.50	2.44-2.48	2.06-2.15	3.33-3.54	3.23	3.85	3.13	3.07	3.00	2.95	2.45

male. Telson with vesicle yellowish in female, reddish yellow in male; basis of aculeus reddish yellow and tip reddish black in both sexes. Chelicerae with manus and finger pale yellow, with variegated light brown spots on fingers and anterior edge of manus; teeth reddish yellow. Pedipalps yellowish with brownish pigmentation on carinae; chela fingers reddish brown in female, reddish yellow in male. Legs pale yellow marked with diffuse light brownish variegated spots.

Morphology. Carapace as long as wide in female, longer than wide in male; 4-5 pairs of macrosetae on the anterior margin; frontal lobes wide and rounded with frontal notch wide and shallow; tegument smooth and shiny; furrows obsolete except for the lateral ocular, posterior median, posterior lateral and posterior marginal, which are narrow and deep; median ocular tubercle with eyes separated by less than one ocular diameter in both sexes; two pairs of lateral eyes. Tergites moderately granulated and shiny, with some bigger granules on their posterior part; tergites with a vestigial to weakly marked median carinae, tergite VII with two pairs of lateral carinae. Sternum pentagonal, as long as wide. Pectinal tooth count 6-6 in female, 7-8 in male; fulcra present. Sternites smooth and shiny, sternite VII with four weakly marked carinae. Metasomal segments with intercarinal tegument smooth and shiny, with few granules on segment V; female and male with segments I-II wider than long and III-V longer than wide; segments I to V with 10-10-10-8-5 carinae, respectively. Telson with vesicle moderately elongated, smooth and shiny, with some granules on ventral and lateral sides; subaculear tubercle large, covered by many setae; aculeus short and strongly curved. Pedipalp femur with dorso-internal and ventro-internal carinae vestigial, irregularly granular, ventro-external carina absent; tegument smooth and shiny with few granules on dorsal surface. Pedipalp patella with all carinae vestigial except the dorso-internal carina, moderate; tegument smooth and shiny. Pedipalp chela manus with all carinae vestigial to absent except ventro-external carinae in male, strong; tegument shiny, with minute punctuation in female, granulated in male; chela moderately robust in female, robust in male; chela fingers proportionally moderately short in female, very short in male. Legs with pedal spurs absent; tarsal spine formula 3/3 : 4/4 : 5/5 : 5/5. Chelicerae with dentition typical of the family (Vachon, 1963). Trichobothriotaxy of type C, orthobothriotaxic (Vachon, 1974).

Table II. – Morphometric ratios for metasomal segments I-V (W: wider than long, A: as wide as long, L: longer than wide) of adult females and males of *Oiclus purvesii purvesii* (Becker), *O. questeli* Teruel, *O. nanus* Teruel, *O. ardens* Ythier, *O. cousteaui* Ythier, *O. tipunch* Ythier and *O. tite* n. sp.

	O. p. purvesii		***O. questeli***		***O. nanus***		***O. ardens***		***O. cousteaui***		***O. tipunch***		***O. tite* n. sp.**	
Metasomal segments	♀	♂	♀	♂	♀	♂	♀	♂	♀	♂	♀	♂	♀	♂
I	W	W	W	W	W	W	W	W	W	W	W	W	W	W
II	W	W	W	W	W	L	W	W	W	W	W	W	W	W
III	W	L	W	W	A	L	A	A	L	L	W	W	L	L
IV	L	L	L	L	L	L	L	L	L	L	L	L	L	L
V	L	L	L	L	L	L	L	L	L	L	L	L	L	L

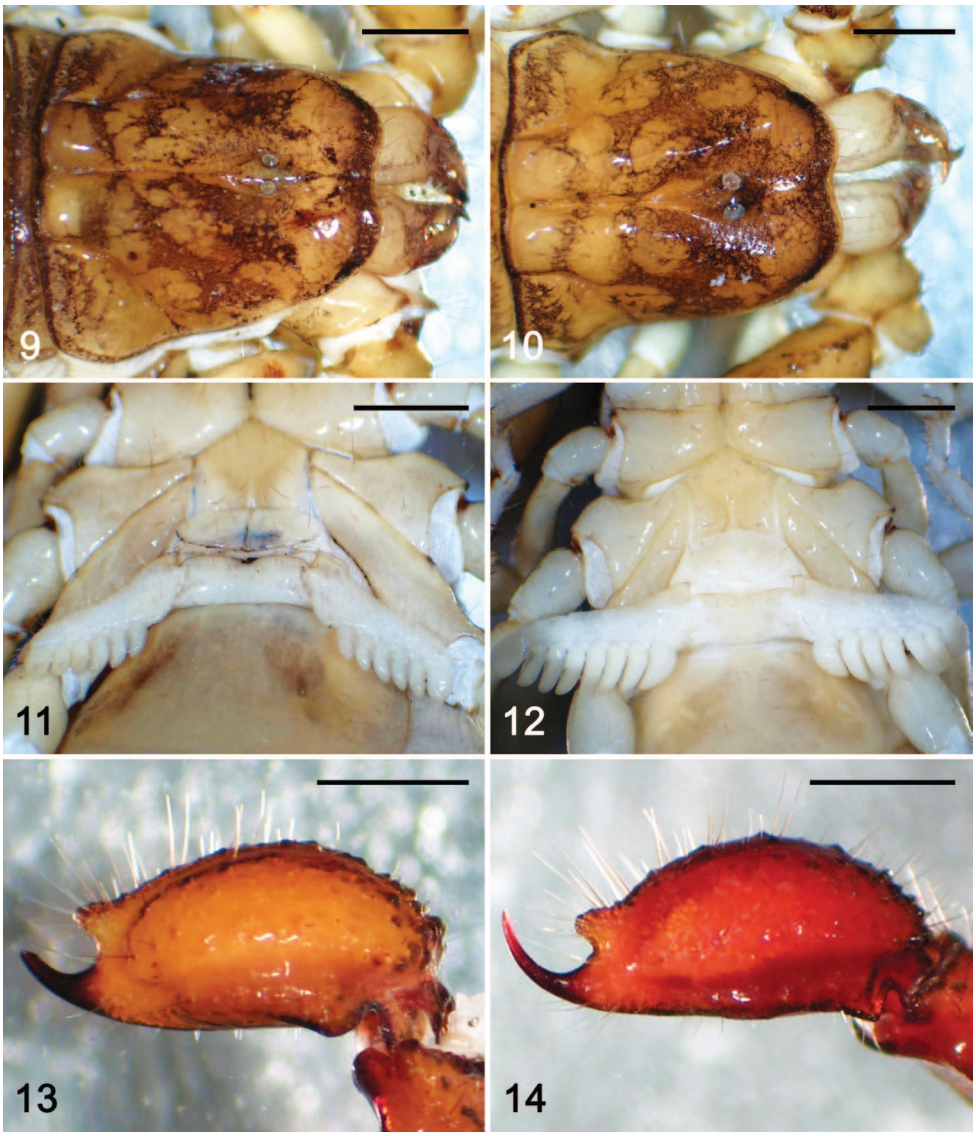

Fig. 9-14. – *Oiclus tite* n. sp. – **9-10**, Carapace: **9**, ♀ holotype. – **10**, ♂ paratype. – **11-12**, Sternum, genital operculum and pectines: **11**, ♀ holotype; **12**, ♂ paratype. – **13-14**, Telson: **13**, ♀ holotype; **14**, ♂ paratype. Scale bars = 1 mm.

Etymology. – The specific name is placed in apposition to the generic name and refers to islets of Petite Terre ("*Ti Tè*" in Antillean French Creole), where the new species was found. The specific name also honors the Association *Titè*, in charge of the management of the *Réserve Naturelle Nationale des* îles *de La Petite Terre* (National Nature Reserve of Petite Terre).

Comparisons. – The metasoma with segments I-II wider than long and III-V longer than wide in both sexes is a reliable character to distinguish adults of *Oiclus tite* n. sp. from all other *Oiclus* species, except *O. cousteaui*. Median eyes separated by less than one ocular diameter in both sexes is also a reliable character distinguishing adults of the new species from all other *Oiclus* species, except *O. nanus*. In addition to these two key characters, *O. tite* n. sp. can be distinguished from *O. cousteaui*, *O. nanus* and the other species of the genus *Oiclus* by the following main features:

– *Oiclus purvesii*: (i) general coloration yellowish brown (brownish in *O. purvesii*), (ii) carapace with median eyes separated by less than one ocular diameter in both sexes (one ocular diameter in both sexes of *O. purvesii*), (iii) metasoma with segment III longer than wide in both sexes (wider than long in female *O. purvesii*), (iv) chela more slender in both sexes with length/width ratio 2.95 in female (1.87 in *O. purvesii*) and 2.45 in male (1.48-1.49 in *O. purvesii*), (v) male vesicle moderately elongated with telson length/width ratio 2.25 [elongated in *O. purvesii* (2.46-2.62)].

– *Oiclus questeli*: (i) carapace with median eyes separated by less than one ocular diameter in both sexes (one ocular diameter in both sexes of *O. questeli*), (ii) metasoma with segment III

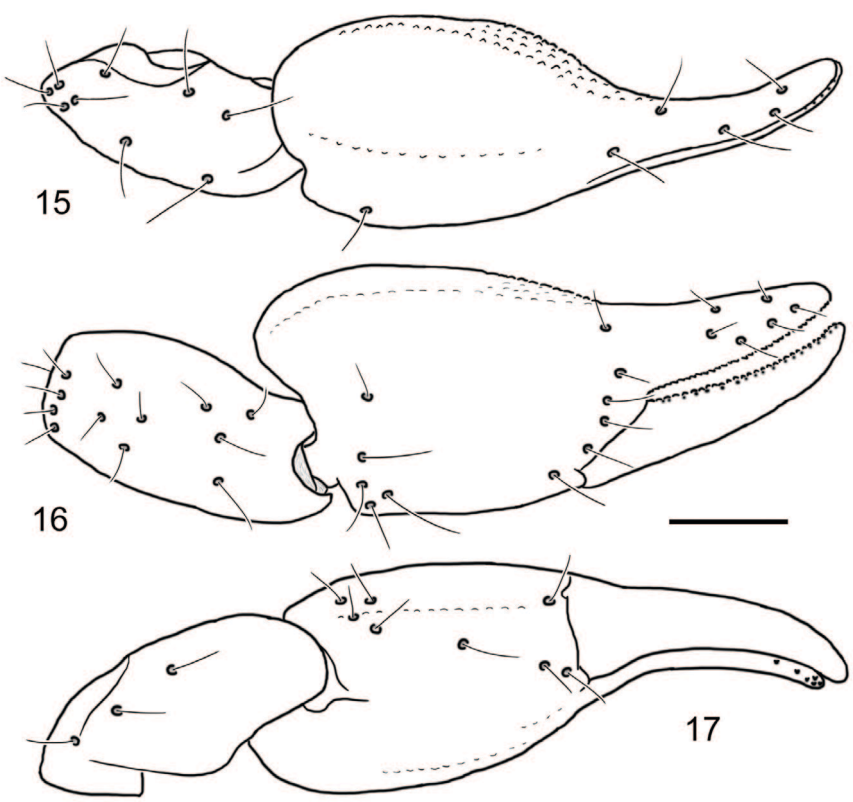

Fig. 15-17. – *Oiclus tite* n. sp., ♀ holotype, trichobotrial pattern of patella and chela. – **15**, Dorsal aspect. – **16**, External aspect. – **17**, Ventral aspect. Scale bar = 1 mm.

longer than wide in both sexes (wider than long in both sexes of *O. questeli*), (iii) male vesicle moderately elongated with telson length/width ratio 2.25 [elongated in *O. questeli* (2.36-2.38)].

– *Oiclus nanus*: (i) metasoma in both sexes with segment II wider than long (longer than wide in male *O. nanus*) and segment III longer than wide (as wide as long in female *O. nanus*), (ii) female chela slenderer with length/width ratio 2.95 (2.44-2.48 in *O. nanus*), (iii) vesicle moderately elongated in both sexes with telson length/width ratio 2.15 in female and 2.25 in male (elongated in *O. nanus* with 2.36-2.41 in female and 2.40-2.64 in male).

Fig. 18-19. – Scorpions of Petite Terre, alive in their habitat. – **18**, *Oiclus tite* n. sp., juvenile, ♀. – **19**, *Centruroides pococki* Sissom & Francke, ♀.

– *Oiclus ardens*: (i) chela fingers darker than manus (fingers not darkened in *O. ardens*), (ii) carapace with median eyes separated by less than one ocular diameter in both sexes [one (female) to more than one (male) ocular diameter in *O. ardens*], (iii) metasoma with segment III longer than wide in both sexes (as wide as long in both sexes of *O. ardens*), (iv) male chela robust with length/width ratio 2.45 [moderately robust in *O. ardens* (3.23)], with fingers very short (moderately short in *O. ardens*) and tegument granular (not granular in *O. ardens*), (v) female vesicle moderately elongated with telson length/depth ratio 2.15 [rounded in *O. ardens* (2.00-2.08)].

– *Oiclus cousteaui*: (i) general coloration yellowish brown with brownish spots throughout the body and appendages (yellowish with light brownish spots on body but not on appendages in *O. cousteaui*), (ii) carapace with median eyes separated by less than one ocular diameter in both sexes (one ocular diameter in both sexes of *O. cousteaui*) and with tegument shiny (not shiny in *O. cousteaui*), (iii) chela more robust in both sexes with length/width ratio 2.95 in female and 2.45 in male (3.85 in female and 3.13 in male *O. cousteaui*), (iv) vesicle moderately elongated in both sexes with telson length/width ratio 2.15 in female and 2.25 in male [rounded in female (2.08) and elongated in male (2.89) in *O. cousteaui*].

– *Oiclus tipunch*: (i) carapace with median eyes separated by less than one ocular diameter in both sexes (one (male) to more than one (female) ocular diameter in *O. tipunch*), (ii) metasoma with segment III longer than wide in both sexes (wider than long in both sexes of *O. tipunch*), (iii) male chela robust with length/width ratio 2.45 [moderately robust in *O. tipunch* (3.00)], with fingers very short (moderately short in *O. tipunch*). (iv) male vesicle moderately elongated with telson length/width ratio 2.25 [elongated in *O. tipunch* (2.70)].

With the description of *Oiclus tite* n. sp., the number of described species in the genus *Oiclus* is now raised to seven (one of them being polytypic), which confirms again that this genus is more diverse than originally suspected. The number of known *Oiclus* species occurring in the Guadeloupe archipelago is increased to five, together with yet unanalyzed populations occurring in two other islands of the archipelago, La Désirade and Marie-Galante. The new species described here appears to be possibly endemic from Petite Terre and is the second *Oiclus* species from Guadeloupe archipelago to occur in a protected area, the *Réserve Naturelle Nationale des* îles *de La Petite Terre* (National Nature Reserve of Petite Terre). The other species is *O. cousteaui*, endemic from Îlets Pigeon, in the Cousteau Reserve, which is included, as a *Cœur de Parc* (heart of park), in the *Parc National de la Guadeloupe* (National Park of Guadeloupe). Both participate in demonstrating the importance of preserving and protecting such habitats.

Key to the known species of *Oiclus* from the Guadeloupe archipelago

1. Female metasomal segment III wider than long ..... ***Oiclus tipunch*** Ythier
– Female metasomal segment III not wider than long **2**
2. Female metasomal segment III as long as wide **3**
– Female metasomal segment III longer than wide **4**
3. Male metasomal segment II wider than long and III as long as wide; median eyes separated by one (female) to more than one (male) ocular diameter; male chela moderately robust (length/width ratio 3.23) with fingers moderately short and tegument not granular; female vesicle rounded with telson length/depth ratio 2.00-2.08 ..... ***O. ardens*** Ythier
– Male metasomal segment II and III longer than wide; median eyes separated by less than one ocular diameter in both sexes; male chela robust (length/width ratio 2.06-2.15) with fingers very short and tegument granular; female vesicle elongated with telson length/depth ratio 2.36-2.41 .... ***O. nanus*** Teruel
4. Carapace with tegument not shiny and median eyes separated by one ocular diameter in both sexes; male chela moderately robust (length/width ratio 3.13); female vesicle rounded with telson length/depth ratio 2.08; general coloration yellowish with light brownish spots on body but not on appendages ..... ***O. cousteaui*** Ythier

– Carapace with tegument shiny and median eyes separated by less than one ocular diameter in both sexes; male chela robust (length/width ratio 2.45); female vesicle moderately elongated with telson length/depth ratio 2.15; general coloration yellowish brown with brownish spots on body and appendages ..... ***O. tite*** n. sp.

ECOLOGICAL AND BIOGEOGRAPHIC CONSIDERATIONS RELATING TO PETITE TERRE

Petite Terre has a tropical climate with mean temperatures between 25°C (February) and 29°C (September) and mean precipitations between 70 mm (March) and 240 mm (September). The islets are only up to between 5 m (Terre-de-Haut) to 8 m (Terre-de-Bas) above the sea level and five types of terrestrial habitats can be found, based on vegetation: short or no vegetation (beaches, rocks, grass cover, woody plants under 0.5 m high), scrub dominant vegetation (mainly bushes between 1-2 m high), mixed vegetation (bushes and several trees between 3-10 m high), forest (mainly trees between 3-10 m high) and sand vegetation (barrier-beach vegetation). *Centruroides pococki* mainly occurs in habitats nearby the coast with short vegetation or scrub dominant vegetation, while *Oiclus tite* n. sp. mainly occurs in the inland mixed vegetation or forest vegetation (see fig. 21-22) (ROUSTEAU, 1995).

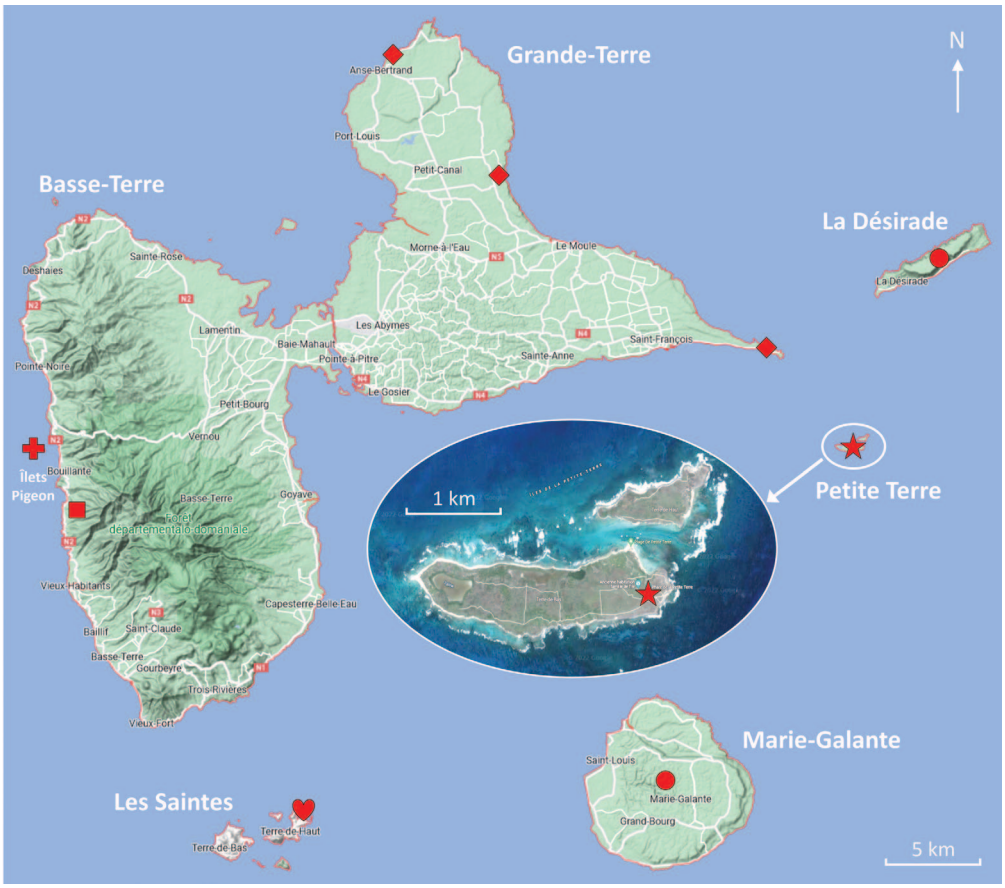

Fig. 20. – Map of the known distribution of *Oiclus* species in Guadeloupe archipelago: *O. nanus* Teruel (diamond), *O. ardens* Ythier (square), *O. cousteaui* Ythier (cross), *O. tipunch* Ythier (heart) and *O. tite* n. sp. (star). Populations of *Oiclus* with unclear status are represented by circles.

Petite Terre is a remarkable ecological area for both terrestrial and marine habitats. This biodiversity is linked to the juxtaposition of diverse ecosystems on a relatively small area. The biodiversity importance of this site is notably due to the presence of one of the largest populations of the Lesser Antilles iguanas (*Iguana delicatissima* Laurenti, 1768), an endemic skink species (*Mabuya parviterrae* Hedges *et al.*, 2016) and a nesting area for several species of sea turtles [*e.g. Chelonia mydas* (Linnaeus, 1758), *Eretmochelys imbricata* (Linnaeus, 1766) and *Dermochelys coriacea* (Vandelli, 1761)]. Petite Terre also houses a population of the tree

Fig. 21-22. – Natural habitat of the scorpions of Petite Terre. – **21**, habitat of *Oiclus tite* n. sp. – **22**, habitat of *Centruroides pococki* Sissom & Francke.

Guaiacum officinale L., which has disappeared from other islands in the Lesser Antilles (UNEP, 2012).

The geographic distribution of Antillean scorpions has been well studied (Lourenço 1987, 1992; Esposito & Prendini, 2019), showing two major distribution patterns based on the combination of historical factors (Tertiary geography and Pleistocene climatic cycles) and more recent ecological factors (*e.g.* natural cataclysms and anthropic actions). The distribution pattern of the genus *Oiclus*, and more generally of the equilibrium or K-selected species, seems to be mainly related to historical factors and the early scorpion colonization of the Antilles, supporting a limited vicariance model and a more plausible dispersal model. This hypothesis is supported by the former dry land connections (banks) between several islands of the Lesser Antilles during the Pleistocene glacial cycles, with reduced sea level by up to 140 m below present levels (Rohling *et al*., 1998), connecting islands belonging to the same banks. The current Lesser Antilles islands emerge from 17 banks, namely (from South to North) Grenada (including the Grenadines), Barbados, Saint Vincent, Sainte Lucia, Martinique, Dominica, Aves Island, Les Saintes, Marie-Galante, Guadeloupe (including Basse-Terre, Grande-Terre, La Désirade and Petite Terre), Montserrat, Redonda, Antigua (including Barbuda), Saint Kitts (including Nevis and Saint Eustacius), Saba, Anguilla (including Saint-Barthélemy and Saint-Martin) and Sombrero (Lorvelec *et al*., 2016). In the Guadeloupe bank, the seabed between Grande-Terre and Petite Terre is currently less than 25 m at its shallowest point, and less than 15 m at its shallowest point between La Désirade and Petite Terre (Hedges *et al*., 2016), suggesting past connections between these islands and an allopatric isolation of *Oiclus* island populations since their separation, or even during periods of connections due to ecological factors reducing or eliminating gene flow, considering the very low dispersal ability of the scorpions of this genus (compared to some opportunistic or r-selected species, mainly belonging to the Buthidae family like *e.g. Centruroides pococki* which can frequently be transported between islands by over-water dispersal or human activity, as indicated by its presence on several islands). Based on this hypothesis, *O. tite* n. sp. may be more closely related to *O. nanus* (occurring in Grande-Terre, from the same bank) than other *Oiclus* species from different banks. The status of the population of *Oiclus* occurring in La Désirade still needs to be clarified.

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