

THE REMARKABLE DISCOVERY OF A NEW AND EXTINCT SPECIES OF *TITYUS* FROM MARTINIQUE IN LESSER ANTILLES (CHELICERATA, SCORPIONES, BUTHIDAE)¹

WILSON R. LOURENÇO*

RESUMEN

Se describe a *Tityus exstinctus* del norte de Martinica, en las Antillas menores. Es la primera especie de *Tityus* registrada en esta isla; se sugiere que fue endémica a Martinica y que se extinguió de su hábitat natural. Es muy probable que el impacto humano en el medio ambiente y posiblemente la actividad volcánica sean las causas de su extinción.

Palabras clave: escorpión, Martinica, endémicas, extinción.

ABSTRACT

Tityus exstinctus n.sp. is described from the northern range of the island of Martinique in the Lesser Antilles. This represents the first *Tityus* species known from this island. It is suggested here that this species was formerly endemic to Martinique but has vanished from its natural habitat and is today extinct. The causes responsible for its extinction are almost certainly human impact on the environment and volcanic activity.

Key words: scorpion, Martinique, endemic, extinction.

INTRODUCTION

During my studies of the scorpions deposited in the collection of the Natural History Museum in Paris, I was able to find a rather old specimen, almost certainly collected back in the 1880s labeled "Northern range of Martinique." According to

¹ This work was carried out in the Laboratoire de Zoologie (Arthropodes) of the Muséum National d'Histoire Naturelle, 61 rue de Buffon, 75005, Paris.

* Société de Biogéographie, 57, rue Cuvier 75005 Paris, France.

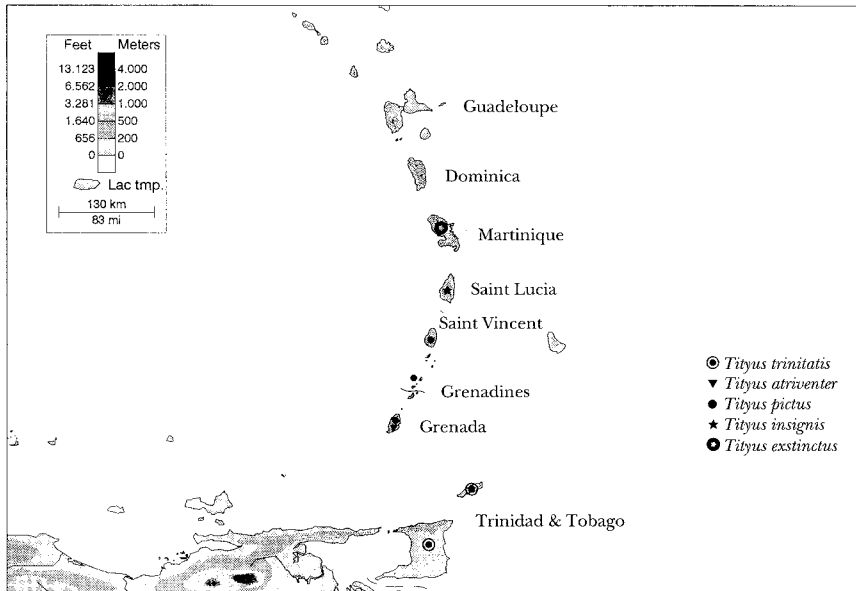


Fig. 1. Distribution of the *Tityus* species in Lesser Antilles.

the labels found in the vial, it is evident that this same specimen has been examined in the past by at least three former specialists, (i) E. Simon who identified it in 1890 as *Centrurus insulanus* Thorell, (ii) E. Strand who identified it (no date) as *Scorpio marmoratus*, and (iii) K. Kraepelin who examined the specimen in 1900 and indicated that it was *Tityus* n.sp. ?

My own study of the specimen confirms Kraepelin's opinion, and establishes that this scorpion really represents a new species of *Tityus*. One point, however, remains enigmatic: the fact that almost certainly there are at present no species of *Tityus* in Martinique. Some intensive studies have been conducted in the Lesser Antilles since the beginning of the 1980s (Lourenço, 1984a, 1987, 1992). They have revealed the presence of *Tityus* species in the islands of Grenada, The Grenadines, St. Vincent and St. Lucia in the Lesser Antilles (Fig. 1). Other species of *Tityus* are known from the islands of the Greater Antilles, i.e. Jamaica, Hispaniola and Puerto Rico.

The absence of *Tityus* species from Martinique and Guadeloupe is enigmatic since the islands are large and could, in theory, support a higher diversity of scorpion species than they actually do. For this reason, I suggest that this new species, which existed in Martinique in the recent past must have vanished from its natural habitat. The causes of its extinction are not easy to determine. It is not, however, an isolated case of extinction in the Caribbean region, since several species of both plants and animals are considered today to have become extinct in there in recent times.

Tityus exstinctus n. sp.
(Figs. 2 - 8)

Holotype male. Northern range of Martinique, 1884 (A. Rousseau leg.) Deposited in the Muséum National d'Histoire Naturelle (RS-0806), Paris. Description based on male holotype. Measurements in Table I.

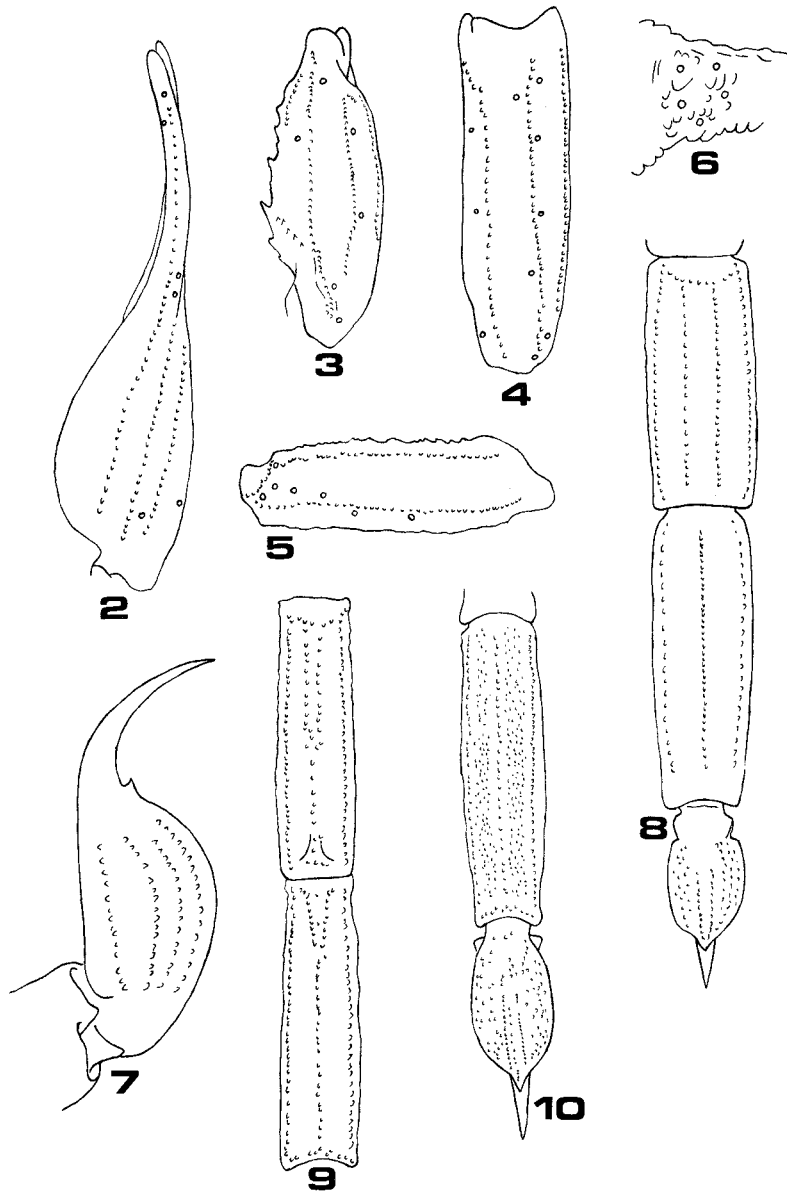
Coloration. Basically yellowish red. Prosoma: carapace yellowish; eyes surrounded with black pigment. Mesosoma. tergites yellowish, some distinctly variegated. Metasoma: Segments I to III yellowish; IV reddish; V dark reddish to brown. Vesicle: same colour as segment V. Venter and sternites yellowish. Chelicerae yellowish; fingers uniformly reddish. Pedipalps yellowish; fingers densely red. Legs yellowish without diffuse fuscous spots.

Morphology. Carapace moderately granular; anterior margin with a median concavity. Anterior median superciliary and posterior median keels strong. All furrows moderate to very deep. Median ocular tubercle distinctly anterior to the center of the carapace. Three pairs of lateral eyes. Sternum subtriangular. Mesosoma: tergites moderately granular. Median keel strong in all tergites. Tergite VII pentacarinata. Venter: genital operculum divided longitudinally. Pectines: pectinal tooth count 22 (the right pecten is teratological and presents only 12 teeth). Sternites feebly granular, almost smooth with elongate stigmata; VII with four keels. Metasoma: segments I to IV with dorsolateral and lateral suprmedian keels crenulate. Lateral inframedian keels on segment I complete, strongly crenulate; on II represented by only four to five distal granules; absent from III and IV. Ventrolateral and submedian keels strongly crenulate, except in segments IV and V. Intercarinal spaces feebly granular. Segment V with dorsolateral keels moderate; lateromedian keels absent; ventrolateral and ventromedian keels feebly crenulate. Lateral intercarinal spaces smooth. Telson, moderately granular with a short and moderately curved aculeus. Dorsal surface smooth; ventral surface granular; subaculeus tooth very small and feebly spinoid. Cheliceral dentition characteristic of the family Buthidae; ventral aspect of both fingers and manus with dense, long setae. Pedipalps: femur pentacarinata; tibia with 7 keels; chelae with 9 keels, strong or moderate; all faces feebly granular. Movable fingers with 14 oblique rows of granules. Trochobothriotaxy; orthobothriotaxy A- α . Legs: tarsus ventrally with numerous short fine setae.

Etymology. *Exstinctus* refers to the fact that this species no longer exists.

TAXONOMIC POSITION

Tityus exstinctus shows several general traits which suggest a relationship to *Tityus trinitatis* Pocock, from Trinidad and Tobago (Lourenço, 1984b). The most significant differences between the two species are: (i) different disposition of ventral



Figs. 2 to 10. *Tityus extinctus*, male holotype. 2. Chelac, dorso-lateral view. 3. Tibia, dorsal view. 4. Tibia, external view. 5. Femur, dorsal view. 6. Femur, internal view, detail. 7. Telson, lateral view. 8. Metasomal segments IV and V and telson, ventral view. 9 and 10. *Tityus trinitatis*, male holotype. 9. Metasomal segments III and IV, ventral view. 10. Metasomal segment V and telson, ventral view.

keels in segments IV and V; in *T. extinctus* they are parallel whereas in *T. trinitatis* they are fused in the distal portion to form a Y shape (Figs. 9 and 10), (ii) movable finger with 14 oblique rows of granules in *T. extinctus*, whereas in *T. trinitatis* there are 17, (iii) granular subaculeus very small in *T. extinctus* whereas it is strong in *T. trinitatis* (iv) marked differences in almost all morphometric values (Table 1).

Table 1. Morphometric values (in mm) of male specimens of the two species considered in this study

	<i>Tityus extinctus</i>	<i>Tityus trinitatis</i>
Carapace:		
Length	6.9	7.6
Anterior width	5.2	5.5
Posterior width	7.7	8.0
Metasomal segment I:		
Length	6.6	9.2
Width	3.5	3.6
Metasomal segment V:		
Length	11.1	13.9
Width	3.6	3.7
Depth	3.5	3.7
Vesicle:		
Width	3.2	3.5
Depth	2.8	3.7
Pedipalp:		
Femur length	7.3	10.2
Femur width	2.3	2.3
Tibia length	8.2	10.0
Tibia width	3.3	2.7
Chelae length	14.2	16.8
Chelae width	4.0	3.3
Chelae depth	3.2	2.9
Movable finger:		
Length	8.2	9.7

SOME BIOGEOGRAPHICAL AND ECOLOGICAL CONSIDERATIONS

Prior to European colonization the genus *Tityus* most certainly had a wider range of distribution in the Lesser Antilles. The absence of this genus from several islands of Lesser Antilles and, in particular from major islands as Guadeloupe and Martinique can probably be explained by both human impact on the environment and by natural catastrophes as volcanic eruptions and hurricanes. Equilibrium spe-

cies invariably suffer from major modifications of their natural habitats and their populations regress or even disappear. Newly created habitats which are unfavourable to equilibrium species are colonized by opportunistic species which are ecologically more plastic.

The biogeographical patterns observed today are in accordance with this hypothesis. Most of the Lesser Antilles are colonized by one or two opportunistic species of the genus *Centruroides*, namely *C. barbudensis* (Pocock) and *C. pococki* Sissom & Francke (Lourenço, 1984c). This pattern of distribution is interrupted, however, in Martinique. No *Centruroides* species are to be found in the southern islands whereas two species of *Tityus* are present there (Lourenço, 1984a). *Tityus exstinctus* was most certainly endemic to Martinique. It was possibly an equilibrium species, as is *T. insignis* Pocock in St. Lucia, and may have suffered the effects of both human impact and volcanic activity (e.g. the explosion of the Mount Pelée in 1902) and became extinct. Its former habitat, largely modified was then colonized by *Centruroides barbudensis*, an opportunistic species, which rapidly occupied all the open niches in the island.

ACKNOWLEDGEMENTS

I am very grateful to the directorate of the Laboratoire de Zoologie, Arthropodes, of the Muséum National d'Histoire Naturelle, Paris for facilities during the study of the described material, and to Prof. John L. Cloudsley-Thompson of University College London, for reviewing the manuscript.

LITERATURE CITED

- LOURENÇO, W.R. 1984a. Considérations sur les espèces de *Tityus* (Scorpiones, Buthidae) décrites des Petites Antilles. *Rev. Arachnol.* 5(3): 91-105.
- LOURENÇO, W.R. 1984b. Notas taxonômicas sobre *Tityus trinitatis* Pocock, 1897 (Scorpiones, Buthidae). *Rev. Brasil. Biol.* 44(1): 15-19.
- LOURENÇO, W.R. 1984c. Contribution à la connaissance de *Centruroides barbudensis* (Pocock, 1898) (Scorpiones, Buthidae). *J. Arachnol.* 11: 327-335.
- LOURENÇO, W.R. 1987. Les scorpions des Petites Antilles. Approche biogéographique. *Bull. Soc. Zool. France* 112(3-4): 355-362.
- LOURENÇO, W.R. 1992. Les peuplements des scorpions des Antilles; facteurs historiques et écologiques en association avec les stratégies biodémographiques. *Stud. Neotr. Fauna Envir.* 27(1): 43-62.