



ARTÍCULO:

**Description of a new species of *Opisthacanthus* Peters (Scorpiones, Liochelidae) to Brazilian Amazonia**

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**DESCRIPTION OF A NEW SPECIES OF *OPISTHACANTHUS* PETERS (SCORPIONES, LIOCHELIDAE) TO BRAZILIAN AMAZONIA**

Wilson R. Lourenço &amp; Nelson F. Fé

**Abstract:**

A review of the geographical distribution of Neotropical species of the genus *Opisthacanthus* Peters (Scorpiones, Liochelidae) is presented. A new species, *Opisthacanthus borboremai* sp. n., is described from Santa Izabel do Rio Negro in the State of Amazonas, Brazil. This is the second record of a scorpion of the genus *Opisthacanthus* from Brazil. The total number of species in the Neotropical region is now raised to 7 and the known geographical distribution of the genus is enlarged.

**Key words:** Scorpion, Geographical distribution, New species of *Opisthacanthus*, Liochelidae, Amazonia, Brazil.

**Taxonomy:** *Opisthacanthus borboremai* sp. n.

**Descripción de una nueva especie de *Opisthacanthus* Peters (Scorpiones, Liochelidae) de la Amazonia brasileña**

**Resumen:**

Se presenta una revisión de la distribución geográfica del género neotropical *Opisthacanthus* Peters (Scorpiones, Liochelidae). Se describe una nueva especie, *Opisthacanthus borboremai* sp. n., de Santa Izabel do Rio Negro en el estado de Amazonas, Brasil. Este es el segundo registro de un escorpión del género *Opisthacanthus* para Brasil. El número total de especies en la región neotropical se eleva ahora a siete, ampliándose la distribución geográfica conocida del género.

**Palabras clave:** Escorpión, distribución geográfica, nueva especie, *Opisthacanthus*, Liochelidae, Amazonia, Brasil.

**Taxonomía:** *Opisthacanthus borboremai* sp. n.

**Introduction**

Scorpions of the family Liochelidae (formerly Ischnuridae) have been the subject of several studies and revisions during the last twenty years (Lourenço, 1983, 1985, 1987, 1989, 1997a; Monod, 1999; Striffler, 2001). Nevertheless, new discoveries are always possible, as in the case of the description of a new liochelid genus, *Palaeocheleotonus*, from Madagascar (Lourenço, 1996).

The composition of most liochelid genera has remained relatively stable in recent years with few descriptions of new species. Some have been recorded in the genera *Opisthacanthus* (Lourenço, 1980, 1981, 2003), *Liocheles* (Francke & Lourenço, 1991; Monod, in preparation), *Iomachus* (Bastawade, 1986; Lourenço, 2003), and *Chiromachetes* (Lourenço, 1997a).

The present study of a small collection of liochelid scorpions of the genus *Opisthacanthus*, from occidental Amazonia, Brazil has resulted in the discovery of a new species. This was collected in Santa Izabel do Rio Negro, State of Amazonas, Brazil and is related to *Opisthacanthus elatus* (Gervais) and *Opisthacanthus cayaporum* Vellard which are known respectively from Colombia/Panama and Brazil. Some comments on the known geographic distribution of the Neotropical species of *Opisthacanthus* are included in the paper.

**The composition of the genus *Opisthacanthus* Peters, 1861**

The classification given below takes into account some recent taxonomic modifications proposed for the genus: (a) The revalidation of *O. heurtaultae* Lourenço as an endemic element of the fauna of French Guiana. (b) The description of the subgenus *Monodopisthacanthus* Lourenço to accommodate the Malagasy species (Lourenço, 2001).

Subgenus *Opisthacanthus* Peters, 1861

### I. *cayaporum* group

- Opisthacanthus cayaporum* Vellard, 1932  
*Opisthacanthus heurtaaultae* Lourenço, 1980  
*Opisthacanthus weyrauchi* Mello-Leitão, 1948

### II. *lepturus* group

- Opisthacanthus lepturus* (Beauvois, 1805)  
*Opisthacanthus elatus* (Gervais, 1844)  
*Opisthacanthus valerioi* Lourenço, 1980  
*Opisthacanthus borboremai* sp. n.

### III. *lecomtei* group

- Opisthacanthus lecomtei* (Lucas, 1858)

Subgenus *Nepabellus* Francke, 1974

### I. *africanus* group

- Opisthacanthus africanus africanus* Simon, 1876  
*Opisthacanthus africanus pallidus* Lourenço, 2003  
*Opisthacanthus capensis* Thorell, 1876  
*Opisthacanthus diremptus* (Karsch, 1879)

### II. *asper* group

- Opisthacanthus asper* (Peters, 1861)  
*Opisthacanthus basutus* Lawrence, 1955  
*Opisthacanthus rugiceps* Pocock, 1897

### III. *laevipes* group

- Opisthacanthus laevipes* (Pocock, 1893)

### IV. *rugulosus* group

- Opisthacanthus lamorali* Lourenço, 1981  
*Opisthacanthus rugulosus* Pocock, 1896

### V. *validus* group

- Opisthacanthus piscatorius* Lawrence, 1955  
*Opisthacanthus validus* Thorell, 1876

Subgenus *Monodopisthacanthus* Lourenço, 2001

### I. *madagascariensis* group

- Opisthacanthus madagascariensis* Kraepelin, 1894  
*Opisthacanthus punctulatus* Pocock, 1896

## Taxonomic treatment

### *Opisthacanthus borboremai* sp. n.

Figs. 1-19, Table I

**DIAGNOSIS:** Medium to large size scorpions: males 59 mm and females 67 mm in total length. Coloration reddish brown to dark brown, with some blackish zones. Pectines with 11-12 teeth in males and 6-8 teeth in females. Hemispermaphore with the distal lamina shorter than in other species and less curved, almost straight. Female genital operculum large and rounded with a very small incision in the base. Trichobothrial pattern of type C, orthobothriotaxy. Trichobothrium **Dt** on the chela very reduced; trichobothrium **db** on the

fixed finger, displaced from the internal face to the dorsal face in males.

The geographical distributions of the new species is markedly different from those of the other Neotropical species of the genus.

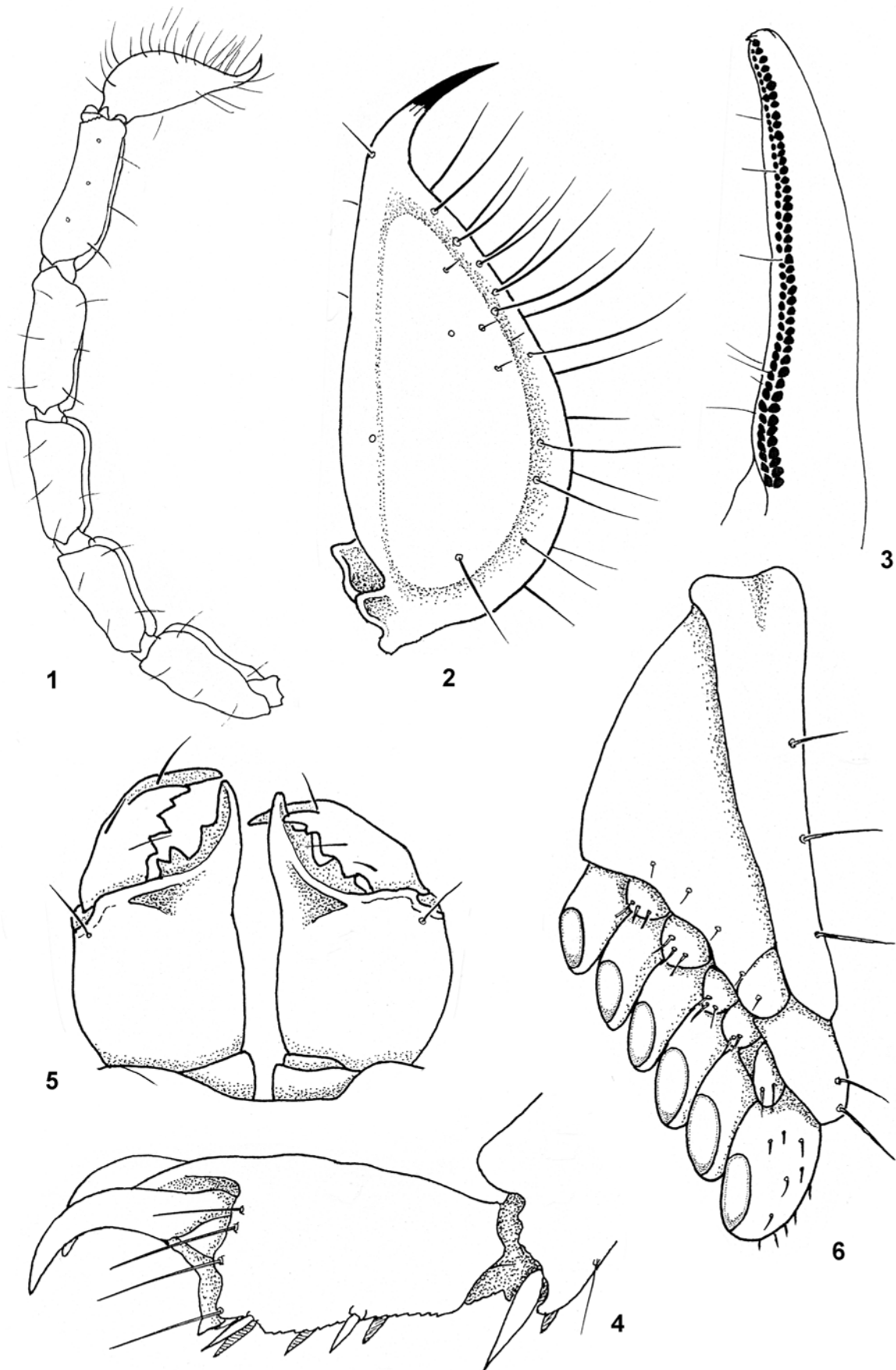
**MATERIAL:** One male **holotype**, 1 male and 3 females paratypes. Brazil, Santa Izabel do Rio Negro, Aldeia Massarabi (0° 28' S – 65° 2' W) (N.F. Fé coll.), 02/XII/1995. Holotype and two paratypes deposited in the 'Fundação de Medicina Tropical de Manaus, Subgerencia de Entomologia' (FMTAM – N° Rg. 227). Two paratypes deposited in the Muséum national d'Histoire naturelle, Paris.

**ETYMOLOGY:** Patronym in honour of Dr. Carlos Augusto Telles de Borborema, former Dean of the Fundação de Medicina Tropical de Manaus.

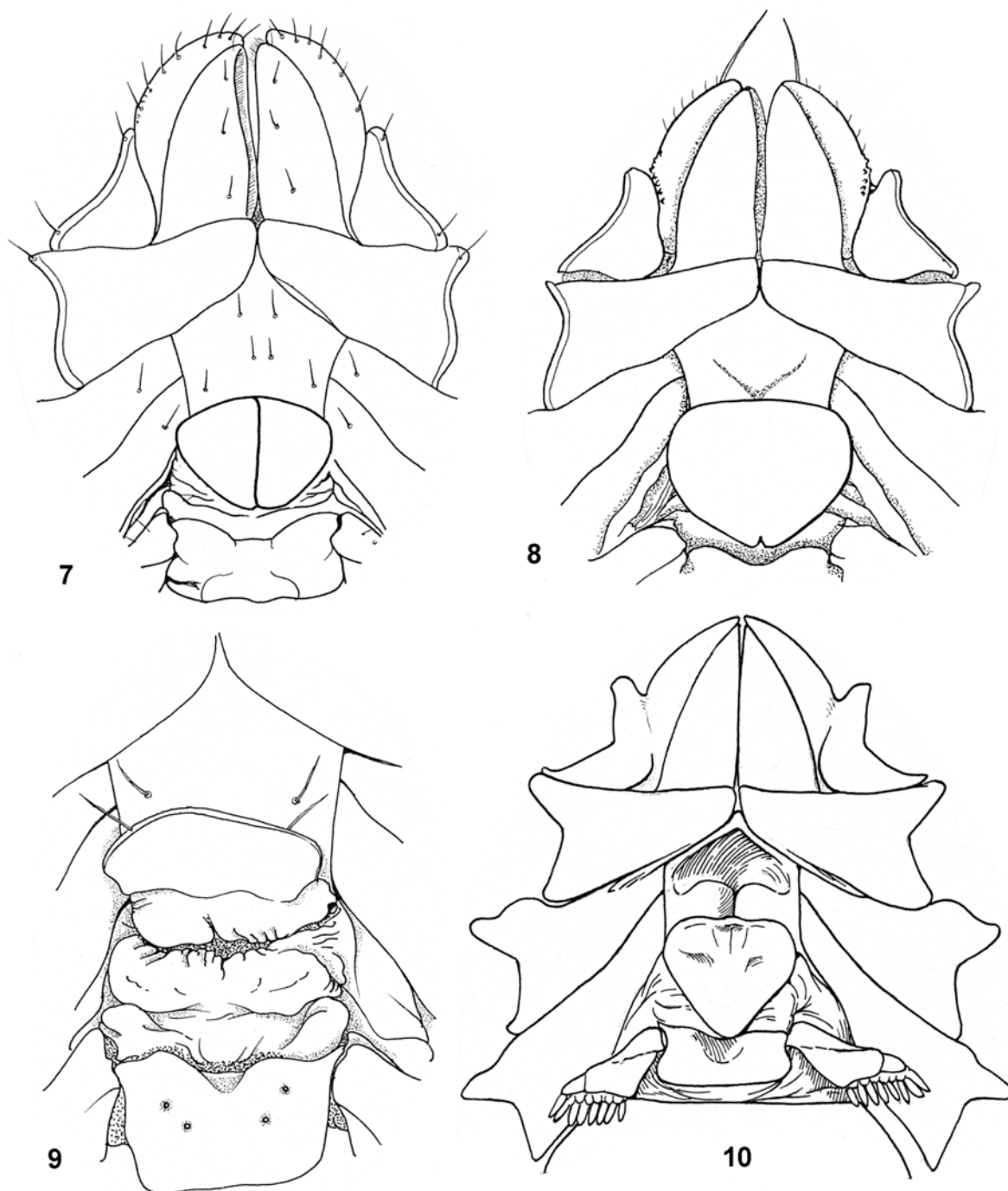
**DESCRIPTION BASED ON MALE HOLOTYPE AND FEMALE PARATYPE.**

**Coloration.** Basically reddish brown to dark brown with some blackish zones on the pedipalp carinae. Carapace reddish brown with a paler zone on the posterior edge; median and lateral eyes surrounded with black pigment. Tergites dark brown with two longitudinal series of yellowish spots. Metasomal segments reddish brown, darker in females; vesicle reddish in males dark brownish in females; aculeus blackish brown. Chelicerae reddish brown; base of fingers blackish; the whole surface with a diffuse variegated fuscous colour; fingers brownish with dark teeth. Pedipalps blackish brown; extremities of femur and patella with some reddish. Venter and sternites reddish brown; pectines and genital operculum paler than sternites; legs brownish with the extremities of tarsi yellowish.

**Morphology.** Carapace with a thin but intense granulation and no punctuation; furrows shallow. Anterior margin with a strong concavity reaching as far as the level of the 3rd lateral eye. Median ocular tubercle flattened and almost in the centre of the carapace; median eyes moderate, separated by less than one ocular diameter; three pairs of large lateral eyes. Sternum pentagonal, wider than long. Genital operculum formed by two semi-oval plates in males, and one single heart-like shaped plate in females. Tergites with one vestigial median carina, and with thin but intense granulation. Pectinal tooth count 11-12 in males and 6-8 in females. Sternites smooth and shiny; VII acarinate with a few punctuations. Metasomal segments I to V longer than wide, almost smooth and shiny, except for some sparse granulations ventrally on segment V. All carinae vestigial in segments I-IV; segment V rounded. All segments with strong chetotaxy, better marked in males. Telson with a pear-like shape; smooth and covered with strong chetotaxy. Pedipalps: femur with dorsal internal, dorsal external, ventral internal and ventral external carinae strong, tuberculate; dorsal face with very thin granulation; ventral face smooth; internal face moderately granulate. Patella with all faces strongly granulated

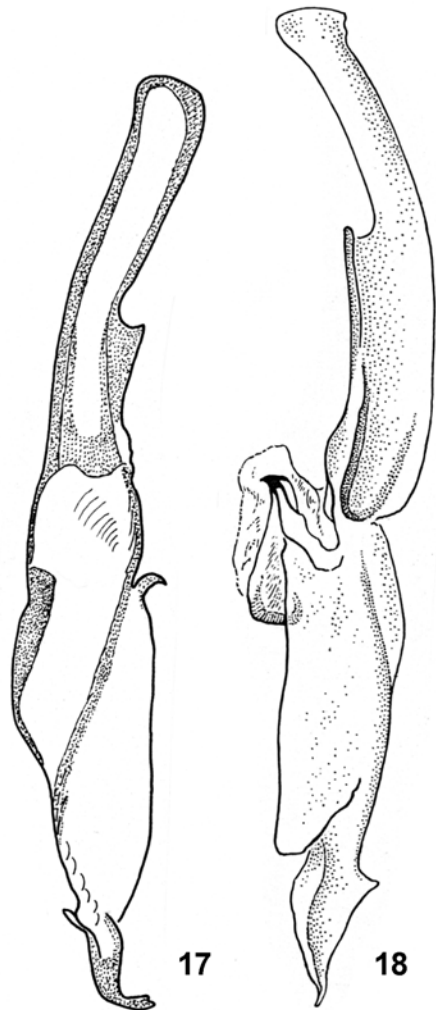
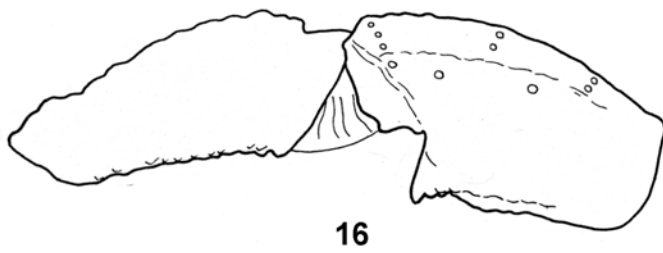
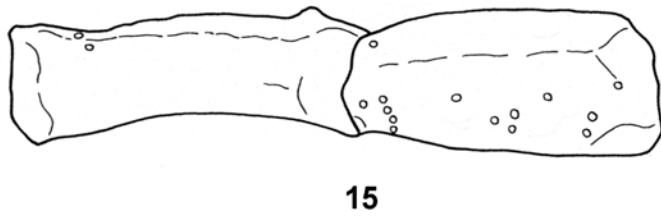
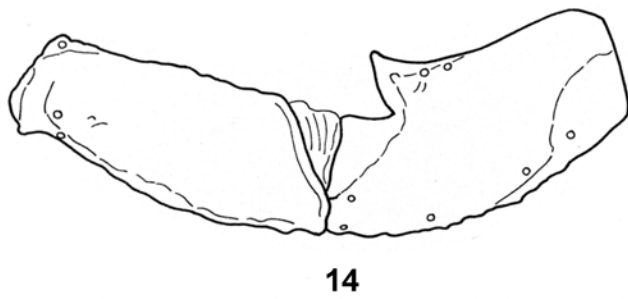
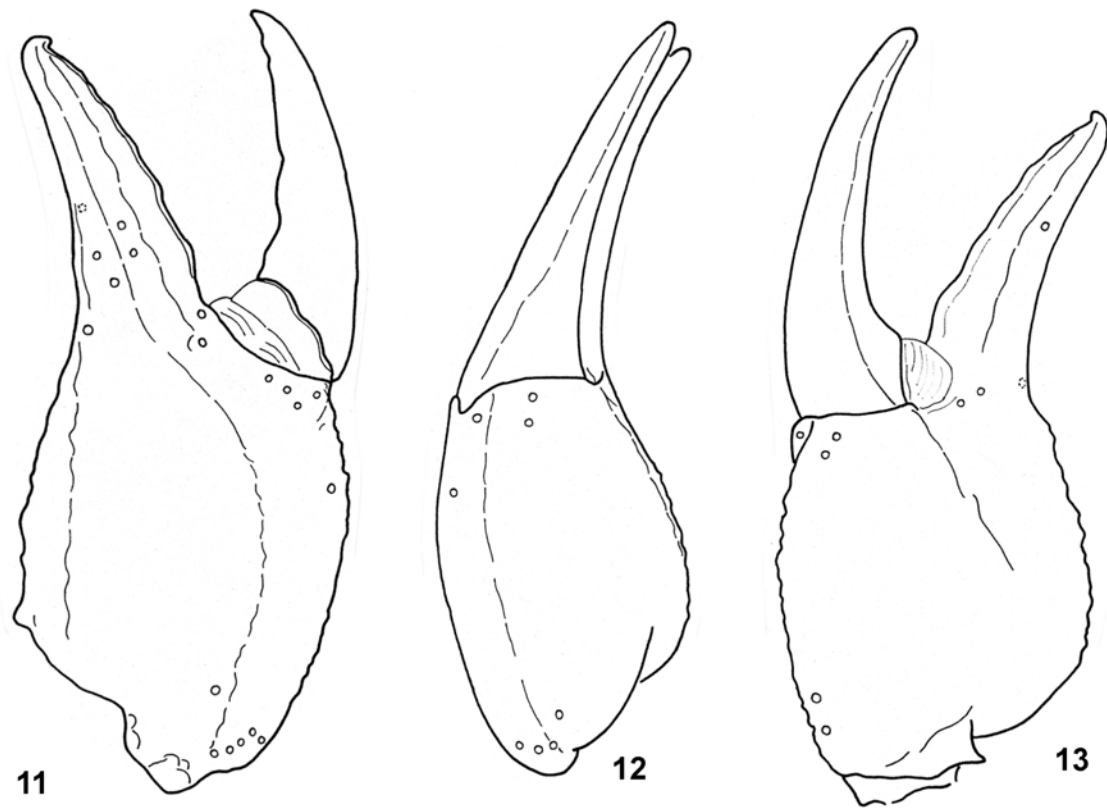


**Figs. 1-6:** *Opisthacanthus borboremai* sp. n. 1-5: Male holotype. 1. Metasoma and telson, lateral aspect. 2. Telson, lateral aspect, showing chetotaxy. 3. Disposition of the granulation over the dentate margins of the movable finger of the pedipalp-chela. 4. Tarsus of leg IV, lateral aspect. 5. Chelicera, dorsal aspect. 6. Female paratype, Pecten.



**Fig. 7-9:** *Opisthacanthus borboremai* sp. n. **7.** Ventral aspect, showing Coxapophysis, sternum and the shape of the genital operculum plates (male holotype). **8.** Idem (female paratype). **9.** Idem (female paratype) with in detail the entry of the genital operculum. **10.** Idem, female of *Opisthacanthus elatus*.

**Figs 11-17:** *Opisthacanthus borboremai* sp. n., Male holotype. **11-16:** Trichobothrial pattern. **11-13.** Chela, dorso-external, ventral and internal aspects. **14-16.** Femur and patella, dorsal, external and ventral aspects. **17.** Hemispermaphore, external aspect. **18.** Idem for *Opisthacanthus elatus*.



**Table I. Measurements (in mm) of the male holotype and female paratype of *Opisthacanthus borboremai* sp. n. and the male and female neotypes of *Opisthacanthus elatus*.**

Character	<i>Opisthacanthus borboremai</i>		<i>Opisthacanthus elatus</i>	
	%%	&&	%%	&&
Total length	59.1	67.0	69.2	90.7
Carapace:				
- length	10.6	11.4	11.8	13.6
- anterior width	8.3	9.3	7.6	8.8
- posterior width	13.8	14.8	12.9	14.7
Metasomal segment I:				
- length	4.2	4.8	4.1	5.3
- width	3.7	3.8	3.3	4.0
Metasomal segment V:				
- length	8.2	7.9	7.4	9.3
- width	2.6	2.6	2.5	2.8
- depth	2.9	3.0	2.8	3.0
Vesicle:				
- width	3.2	3.1	2.7	3.0
- depth	3.3	3.3	3.1	3.4
Pedipalp:				
- Femur length	11.4	12.3	10.4	12.1
- Femur width	4.6	5.1	4.5	5.1
- Patella length	11.5	12.2	10.1	11.8
- Patella width	6.6	7.3	5.2	5.9
- Chela length	23.8	27.2	24.4	27.5
- Chela width	7.5	7.6	9.2	10.5
- Chela depth	5.6	6.0	4.8	5.8
Movable finger:				
- length	12.5	13.6	11.9	13.4

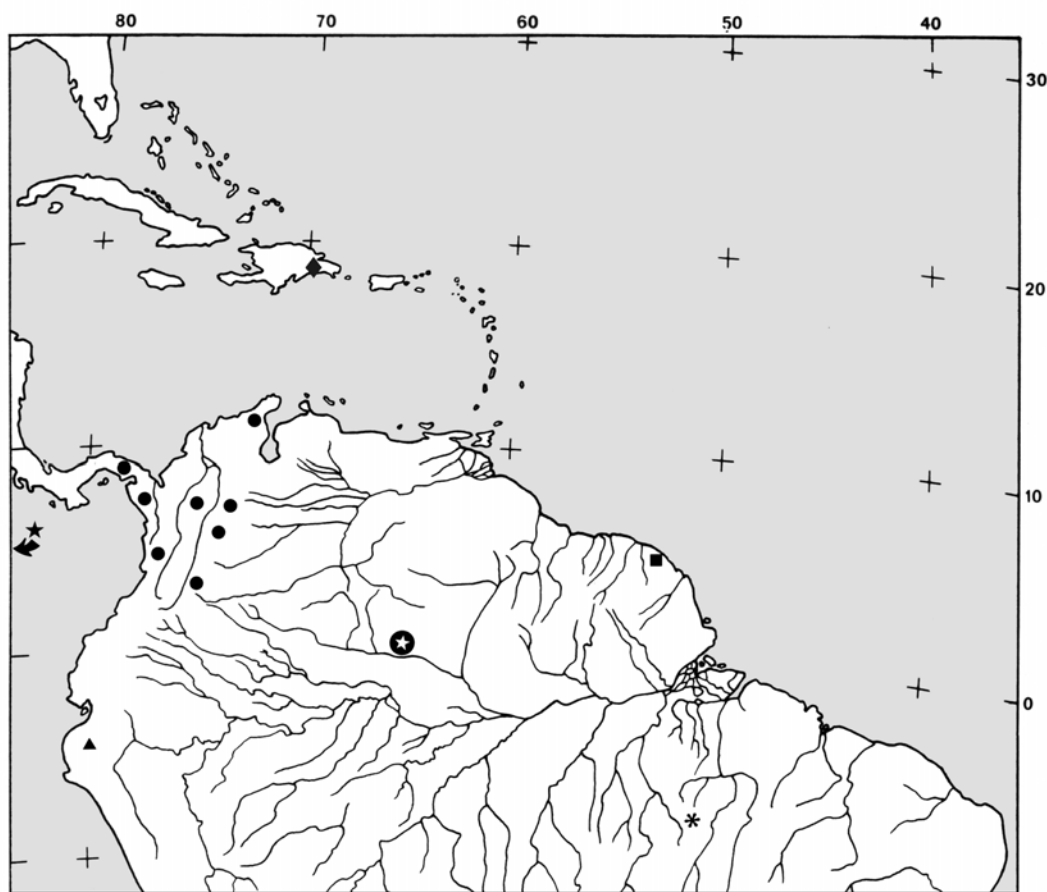
excepted for the ventral face which is smooth and lustrous; dorsal internal, ventral internal, ventral external and external carinae strong; other carinae less well marked. Chela strongly granular excepted on internal face; dorsal marginal, external secondary, ventrointernal and ventral median carina strong; other carinae less well marked. Chelicerae typical of Scorpionoidea (Vachon, 1963). Trichobothriotaxy type C; orthobothriotaxic (Vachon, 1974). Trichobothrium **Dt** on the chela very reduced; trichobothrium **db** on the fixed finger, displaced from the internal face to the dorsal face in males. Legs: tarsi with two lateral rows of spines, surrounded by several long setae. Spurs moderate to strong. Hemispermatophore as in Figure XX with the distal lamina short and weakly curved, almost straight.

**RELATIONSHIPS:** Within the Neotropical species of the genus *Opisthacanthus*, subgenus *Opisthacanthus*, the new species is allied to *Opisthacanthus elatus* (Gervais) and *Opisthacanthus cayaporum* Vellard. It can, however, be distinguished from these two species by the following characters.

From *O. elatus*, by smaller overall size; the morphology of the hemispermatophore with a distal lamina shorter and less curved; the morphology of female genital operculum plate, more rounded and less triangular with a small incision on its base; by the dorsal position of chela trichobothrium **db** in males.

From *O. cayaporum*, it can be distinguished by the trichobothrial pattern. Orthobothriotaxy in the new species, whereas in *O. cayaporum* this pattern is major neobothriotaxy

**COMMENTS:** As explained in previous publications (Lourenço, 1985, 1989), some doubtful records for *Opisthacanthus* exist in the literature. Among others, the species *Opisthacanthus lepturus* has been cited from Venezuela by Dagert (1957). Subsequently, this citation was commented on by Gonzalez-Sponga (1984), who admitted that he never studied Dagert's material. More recently Gonzalez-Sponga (1996), indicated one *Opisthacanthus* sp. in Venezuela, from a locality in Estado Amazonas. He confirmed that he never saw the material described by Dagert (1957). Dagert's material come from Estado Zulia in the North range of Venezuela, near to the border with Colombia. This record could therefore indeed correspond with *O. elatus* found in the North of Colombia (Lourenço, 1997b). The *Opisthacanthus* sp., cited by Gonzalez-Sponga in the Estado Amazonas, could, to some extent correspond with *O. borboremai* sp. n. described here. In fact, the two geographical regions have many similarities in their faunistic composition. The impossibility of consulting the material deposited in Venezuela, postpones any final decision on this matter.



**Fig. 19.** Map showing the distribution of the Neotropical species of *Opisthacanthus* (subgenus *Opisthacanthus*). *Opisthacanthus lepturus* (→). *Opisthacanthus elatus* (○). *Opisthacanthus cayaporum* (~). *Opisthacanthus weyrauchi* (●). *Opisthacanthus heurtaultae* (□). *Opisthacanthus valerioi* (∇). *Opisthacanthus borboremai* sp. n. (△). (★).

### Some comments on the geographical distribution of the Neotropical species of *Opisthacanthus*

The taxonomy of *Opisthacanthus lepturus*, remained unclear for a long time and, until recently, this species was considered to be the same as *O. elatus*. The status of *O. lepturus* was finally clarified by Lourenço (1995), who confirmed that it represents an element endemic to the island of Hispaniola in the Caribbean area. It lives in tropical forests, but the population has apparently regressed with the destruction of its natural habitat.

*Opisthacanthus elatus* is today found in the tropical forests of Panama, Colombia and Northwest Venezuela. In Panama, where the species seems to be abundant, it is found in the palm '*Scheelea zonensis*' (Lourenço, 1988).

*Opisthacanthus valerioi* is an endemic species to 'Cocos Island' on the Pacific coast of South and Central Americas. It also inhabits tropical forests.

*Opisthacanthus cayaporum* lives exclusively in a transition area between the central savannas of Brazil, and the Amazon forest. This region, called 'Campos dos Cayapos' can be considered already as part of the Amazon region, but is a savannah type formation. Due to intense human activity in the area, mainly cattle

raising, the habitat of *O. cayaporum* is severely threatened and the scorpion population has experienced an important regression in the last 20 years.

*Opisthacanthus weyrauchi* is only known by a few specimens collected exclusively from the North of Peru. Its habitat is altitudinal savannah between 700-1000 m called the 'Punas' domaine.

*Opisthacanthus heurtaultae* has been found exclusively in coastal savannas of French Guiana, in the area of Kourou. The habitat of this species has also been considerably modified by human activity. Its population has severely regressed and will probably vanish.

*Opisthacanthus borboremai* sp. n. is the first species of this genus to be described from the Amazon tropical rain forest (the status of the Venezuelan population remains unclear). It lives in the forests of the middle Rio Negro bordering the Riparian zones. It was found under death log in aggregated groups. New studies, will be necessary to obtain further ecological information regarding *O. borboremai*.

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