REVISTA IBÉRICA de Aracnología

ARTÍCULO:

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Carlos E. Santibáñez López
Email: ironc81@hotmail.com
&
Oscar F. Francke
Email: offb@ibiologia.unam.mx

Colección Nacional de Arácnidos, Departamento de Zoología, Universidad Nacional Autónoma de México, Apartado Postal 70-153, México DF 04510, MEXICO

Milagros Córdova Athanasiadis
Maestría en Gestión Integral de Cuencas. Universidad Autónoma de Querétaro; Querétaro, México

Revista Ibérica de Aracnología
ISSN: 1576 - 9518.
Dep. Legal: Z-2656-2000.
Vol. **19**
Sección: Artículos y Notas.
Pp: 3−13.
Fecha de publicación: 15-Febrero-2011

Edita:
Grupo Ibérico de Aracnología (GIA)
Grupo de trabajo en Aracnología
de la Sociedad Entomológica
Aragonesa (SEA)
Avda. Radio Juventud, 37
50012 Zaragoza (ESPAÑA)
Tef. 976 324415
Fax. 976 535697
C-elect.: amelic@telefonica.net

Director: Carles Ribera
C-elect.: cribera@ub.edu

Indice, resúmenes, abstracts, vols. publicados:
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ARTÍCULO:

The genus *Diplocentrus* Peters (Scorpiones: Diplocentridae) in Morelos, Mexico

Carlos E. Santibáñez López; Oscar F. Francke and Milagros Córdova Athanasiadis

Abstract:
Sixteen scorpion species are recorded from the state of Morelos, including three species of the genus *Diplocentrus* Peters: one species had been previously reported, a second one represents a new state record for the species, and the third one is described as a new species. *Diplocentrus longimanus* sp. n., from the Sierra de Huautla in southern Morelos, is described based on adults of both sexes and it is clearly differentiated from its most similar relatives. Maps of the known distribution of the three species are provided.
Keywords. Diversity, new records, species
Taxonomy. *Diplocentrus longimanus* sp. n.

El género *Diplocentrus* Peters (Scorpiones: Diplocentridae) en Morelos, Mexico

Resumen:
Dieciséis especies de alacrán se reportan para el estado de Morelos, México, incluyendo a tres especies del género *Diplocentrus* Peters. Una especie ya había sido previamente reportada, otra representa en un nuevo registro para el estado y la última es una nueva especie: *Diplocentrus longimanus* sp. n., de la Sierra de Huautla en el sur de Morelos. Se describe en base a adultos de ambos sexos y se diferencia claramente de las especies más parecidas. Se incluyen mapas de la distribución conocida de las tres especies.
Palabras clave. Diversidad, nuevos registros, especies
Taxonomía. *Diplocentrus longimanus* **sp. n.**

Introduction

The genus *Diplocentrus* Peters, 1861 is the most diverse within the family Diplocentridae and the one with the widest distribution (Francke & Ponce-Saavedra, 2005; Francke, 2007; Santibañez-Lopez & Francke, 2008; Francke & Quijano-Ravell, 2009). Despite the recent taxonomic work (loc. cit.) the total diversity of this genus in Mexico is not yet completely known. For the state of Morelos, in south-central Mexico, only *Diplocentrus tehuacanus* Hoffmann 1931 was previously reported by Fet *et al.* (2000), Beutelspacher (2000), and Lourenço & Sissom (2000). Córdova-Athanasiadis (2005) conducted a survey of the scorpiofauna of that state, finding a total of 16 species (table I), including three species of the genus *Diplocentrus* Peters 1861: *D. tehuacanus*, *D. coylei* Fritts & Sissom, 1996 (new state record for the species; previously reported from Estado de Mexico and Guerrero) and a new one. The present contribution consists of the description of this new taxon, and provides detailed information of the geographical distribution of the three species of *Diplocentrus* found in Morelos.

Material and methods

Collecting trips were undertaken to over 40 localities within Morelos, covering the range of elevations and vegetation types present, between August 2003 and September 2004. Scorpions were collected in daylight under rocks and other objects on the ground; and at night using UV light detection, as explained in Sissom *et al.* (1990). Localities names are given as follow: Name of the Country (MEXICO); name of the state in capital letters (MORELOS); the name of the district or municipality in italics (*Tlaquiltenango*) and the name of the locality (Huautla).

Nomenclature and mensuration follows Stahnke (1970) except for the following: The length of the chela manus was measured from the ventral condyle of the movable finger to the base of the chela; trichobothrial terminology follows Vachon (1974), and carination (metasoma and pedipalps) follows Francke (1977). Scorpion classification follows Prendini & Wheeler (2005). The morphosculpture of the carapace, mesosoma, metasoma and pedipalps was observed under UV light (Prendini, 2003; Volschenk, 2005). The hemispermatophore was dissected following Vachon (1952), and cleared with pancreatin (Alvarez-Padilla & Hormiga, 2008). Terminology of the hemispermatophore follows San Martin (1963) and Ojanguren-Affilastro (2005). Measurements were taken with an ocular micrometer calibrated at 10X and are given in millimeters. Photographs were taken with a Nixon Coolpix S10 VR camera supported on a Nikon SMZ800 stereoscope. Abbreviations for depositories: AMNH – American Museum of Natural History; CNAN – Colección Nacional de Arácnidos, Instituto de Biología, Universidad Autónoma de México.

Distribution maps of scorpions were generated using point occurrence data and a map base obtained from CONABIO digital database at http://www.conabio.gob.mx/metacarto/metadatos.pl and they were made with ArcView version 3.2.

Taxonomy

Family Diplocentridae Karsch 1880
Genus *Diplocentrus* Peters 1861

DIAGNOSIS. Among the scorpions occurring in Morelos, those belonging to the family Buthidae have an elongated, subtriangular sternum, two teeth on the ventral margin of the cheliceral movable finger, and trichobothrial pattern A (femur with 11 trichobothria; patella with 13, and none on them on the ventral surface; chela with 15); whereas the other three families occurring in the state have pentagonal sterna, fewer than two (one or none) teeth on the ventral margin of the cheliceral movable finger, and trichobothrial pattern C (femur with 3 trichobothria; patella with 19 or more trichobothria, including at least 2 on ventral surface; chela with 16 or more). The family Diplocentridae and the genus *Diplocentrus* can be easily recognized by the presence of a strong, blunt, subconical subaculear tubercle, and the telotarsi on all legs armed ventrally with strong spiniform setae.

Diplocentrus coylei Fritts & Sissom 1996

Diplocentrus coylei Fritts & Sissom, 1996: p. 43-47; Kovarík, 1998: 130; Fet *et al.*, 2000: p. 337; Beutelspacher, 2000: p. 27; Teruel, 2003: p. 54 (in part); Francke & Ponce-Saavedra, 2005: p. 52 (in part); Armas, 2006: p. 11 (in part).
Diplocentrus malinalco Armas & Martin Frias, 2003: pp. 75-76; Armas, 2006: p. 11.

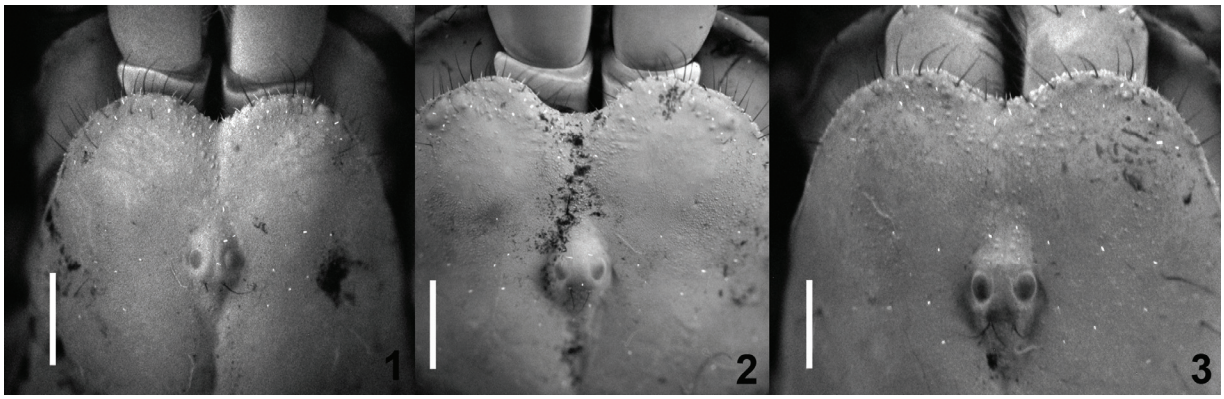
DIAGNOSIS. Adults 48 to 60 mm long, brownish orange to pale brown in color. Carapace anterior margin "V" shaped, finely granular (Fig. 1). Pedipalp femur wider than deep; dorsal surface slightly convex basally, flat otherwise, weakly granular (Fig. 4). Pedipalp patella in males with dorsal external carina faint to weak, smooth (Fig. 5); ventral median carina obsolete; internal surface granular. Males with pedipalp chela digital carina strong, smooth; dorsal secondary carina weak, smooth; dorsal surface reticulated (Fig. 6). Females with pedipalp chela digital carina strong, smooth; dorsal and external surfaces smooth; chela more rounded than in male. Telotarsal spiniform seta formula: 4/5:5/5:6/6:6/6. Pectinal tooth count on males: 14-16 (mode=14) and on females: 11-13 (mode=12).

Accordingly with Fritts & Sissom (1996) *D. coylei* is most similar to *D. tehuacanus* by geographical proximity and similar coloration but it is distinguished by the anterior margin of the carapace (very finely granular in *D. coylei* whereas on *D. tehuacanus* it is granular (Figs. 1 and 3)). In *D. coylei*, the metasomal carinae are stronger, with the dorsolaterals and lateral supramedians distinctly granular. Metasomal segment III bears ten carinae in *D. coylei* (the lateral inframedians are present), but only eight carinae in *D. tehuacanus*. The dorsolateral, lateral supramedian, and ventrolateral carinae of metasomal segment IV are all moderate to strong in *D. coylei*, but are obsolete or vestigial, weak, and smooth in *D. tehuacanus*. Males of *D. coylei* have the dorsal and external surfaces of the pedipalp chelae reticulate, but only the dorsal face bears reticulations in *D. tehuacanus* (Fritts & Sissom, 1996). Chela is longer and slender on males of *D. coylei* (see Figs. 9 to 10).

D. coylei is similar to *D. zacatecanus* too on account of similar pectinal tooth count and geographical proximity at its northern range, but it can be separated by the following: Males of *D. coylei* with a slender and longer pedipalp chela, whereas males of *D. zacatecanus* with a shorter and rounded chela. Anterior margin of the carapace on *D. coylei* is more granular and is "V" shaped" whereas on *D. zacatecanus* it is smooth or weakly and finely granular and is "U" shaped. Telotarsal formula is higher on the last pair of legs on *D. zacatecanus* (6/7).

DISTRIBUTION. (Fig. 7) MEXICO. ESTADO DE MEXICO: Malinalco. GUERRERO: Buenavista de Cuellar, Iguala, Picaya, Tetipac. MORELOS: Amacuzac, Coatlán del Rio, Huajintlán, Miacatlan, Palpan, Tlaquiltenango.

SPECIMENS EXAMINED. MEXICO. MORELOS. *Amacuzac*, Huajintlán, 18° 36.6' N 99° 25.8'W, 1510 m, 4 IX



Figures 1-3. Close-up of carapace, showing differences on the anterior margin on the males of the three species of *Diplocentrus* from the state of Morelos, Mexico. **1**. *D. coylei* (V-shaped). **2.** *D. longimanus* sp. nov. (U-shaped) **3**. *D. tehuacanus* (V-shaped). Scale bars= 2mm.

Figures 4-6. *Diplocentrus coylei*, male. **4**. Dorsal aspect of the femur. **5**. External aspect of the patella. **6**. Dorsoexternal aspect of the chela. Scale bars= 2 mm (white circles highlight trichobothrial positions).

2004 (M. Córdova & A. Gotilla) 1 adult female (CNAN). *Coatlán del Rio*, El Oyanco, 18° 43.8' N 99° 25.8' W, 1022 m, 6 VIII 2004 (M. Córdova & O. Sotelo) 1 adult female (CNAN-S03005). El Oyanco, 18° 43.8' N 99° 25.8' W, 1022 m, 6 VIII 2004 (M. Córdova & O. Sotelo) 4 adult females, 1 adult male and 10 juveniles (CNAN). *Miacatlán*, Palpan, 18° 51' N 99° 25.2' W, 1587 m, 7 VIII 2004 (M. Córdova & O. Vázquez). *Tlaquiltenango:* "El Comal" on border between Morelos and Guerrero, 18° 27.086' N 99° 17.139' W, 1749 m, 13 VI 2007 (O. Francke, J. Ponce, M. Córdova-Athanasiadis, H. Montaño, L. Beltrán & A. Ballesteros), 10 adult males and 6 females.

OTHER RECORDS: MEXICO. GUERRERO. *Buenavista de Cuellar*, 2 km S Casino Unión, 18° 35.53'N 99° 28.91' W, 1178 m, 28 VIII 2009 (O. Francke, T. López, C. Santibañez & A. Valdez) 2 adult females and 6 juveniles. *Picaya*, Cacahuamilpa, 18° 24.6' N 99° 20.4' W, 1520 m, 11 VIII 1984 (R. Rios) 1 adult male, 1 adult female and 2 juveniles (CNAN). Cacahuamilpa, 18° 24.6' N 99° 20.4' W, 1520 m, 15 VII 2001 (M. Córdova & A. Burgos) 1 adult female. *Tetipac*, Dos Bocas, 18° 39.6' N 99° 30.6' W, VI 1946 (unknown collector) 1 adult female and 1 juvenile male (CNAN). *Iguala,* Iguala, 18° 21' N 99° 33.6' W, VI 1961 (unknown collector) 1 adult female (CNAN)

HABITAT. This species has been collected at night time with UV light detection on the ground; at daytime under small rocks on the ground. The dominant type of vegetation is oak forest.

***Diplocentrus longimanus* sp. nov.**

Figs. 2, 8, 9, 12-19

TYPE MATERIAL: Holotype male (CNAN-T0636). MEXICO. MORELOS. *Puente de Ixtla,* "El Comal" on border

between Morelos and Guerrero, 18° 27.086' N 99° 17.139' W, 1749 m, 13 VI 2007 (O. Francke, J. Ponce, M. Córdova-Athanasiadis, H. Montaño, L. Beltrán & A. Ballesteros). Paratopotypes (same data as holotype): one subadult male, two adult females and one subadult female (CNAN-T0637); one subadult male; one adult, one subadult and one juvenile females (AMNH). Paratypes: *Tlaquiltenango*, Quilamula, 18° 49.8' N 99° 0.6' W, 1080 m, 7 VI 2004 (M. Córdova & Maison); one adult male (CNAN-T0638); Chimalacatlan, 18° 27.6' N 99° 0.6' W, 1066 m, 11 VII 2004 (M. Córdova & O. Sotelo); one subadult female (CNAN-T0639).

ETYMOLOGY: The specific epithet refers to the distinctively elongated pedipalp chela on adult males of this species.

DISTRIBUTION: (Fig. 7) Known only from the Sierra de Huautla in the southern region of the state of Morelos and the boundary with Guerrero.

DIAGNOSIS: Adults reaching 70 to 80 mm long. Coloration brownish. Carapace with anterior margin "U" shaped, moderately granular. Pedipalp femur wider than deep; dorsal surface flat, weakly granular. Pedipalp patella in males with dorsal external carina moderately strong, crenulate; ventral median carina weak, slightly granular. Pedipalp chela digital carina in males strong, smooth; dorsal secondary carina weak, smooth; external secondary carina weak, granular; dorsal surface moderately reticulated. Pedipalp chela digital carina in females strong, smooth; dorsal and external surfaces reticulated; chela rounder and shorter than in male. Telotarsal spiniform seta formula: 5/5-6:5-6/6:6/6-7:6/7. Pectinal tooth count on males 15-17 (mode=16) and on females 13-15 (mode=15).

Diplocentrus longimanus sp. nov. seems to be related to *Diplocentrus cueva* Francke, 1978, from Oaxaca, and to *Diplocentrus luisae* Guijosa, 1973, from Campeche, on account of the similar chela shape (long fingers) and relatively long pedipalps, but it can be easily distinguished by the following: *D. cueva* presents reduction of the median eyes (inhabits caves); the anterior margin of the carapace is "V" shaped (contrasting with "U" shaped on *D. longimanus*) and presents a lower telotarsal spiniform seta formula 4/5:5/5:5/6:5/6 (contrasting with 5/5-6:5-6/6:6/6-7:6/7 in *D. longimanus*).

From *D. luisae* it can be easily distinguished by a higher telotarsal spiniform seta formula on the last two legs (7/7:7/7-8; contrasting with 6/6-7:6/7on *D. longimanus*); chela dorsal secondary carina weak and granular on *D. longimanus,* whereas on *D. luisae* it is weak and smooth; chela external secondary carina moderately strong, smooth, whereas on *D. luisae* it is strong, smooth. It also can be distinguished by the carapace anterior margin ("U" shaped on *D. longimanus* and "V" shaped on *D. luisae*).

D. longimanus also can be distinguished from its geographical neighbors (*D. tehuacanus* and *D. coylei*) on account of its larger body (reaching 80 mm whereas the other two species up to 60 mm) and a darker coloration; its higher telotarsal spiniform seta formula on the last two legs (6/6-7:6/7 in *D. longimanus* whereas on the other two it is 6/6:6/6); the carapace anterior margin on *D. longimanus* is "U" shaped, whereas in the other two it is "V" shaped. The males of the three species have slender chelae; however, in *D. longimanus* the fingers are longer than the chela manus, whereas in the other two species, the fingers are shorter than the chela manus (Figs. 8-10).

DESCRIPTION OF THE HOLOTYPE MALE (Figs.11-13): Measurements in table II.

Coloration. Carapace medium to dark brown to orange, with moderate fuscosity throughout, uniform around median eyes and variegated elsewhere; venter brown. Mesosoma tergites brown to dark brown with dense variegated fusco-piceous pattern; sternites medium brown to pale brown. Metasoma medium brown to reddish orange, carinae weakly to moderately infuscate. Telson brown to reddish-brown, uniformly infuscate. Pedipalps brown to reddish brown, with carinae darker. Legs pale brown to pale orange-brown, uniformly infuscate.

Prosoma. Carapace with posterior region wider than the total length; anterior margin "U" shaped (Fig. 2), notch moderately deep, sparsely setose, moderately granular. Three pairs of lateral eyes, subequal in size. Carapacial surface smooth to slightly shagreened.

Mesosoma. Tergites I-VI with post tergite feebly granular only, tergites I-VI surface shagreened. Tergite VII surface weakly granular laterally; with submedian carina weak, granular and only present on distal fourth. Sternite VII with submedian and lateral carinae weak, crenulate. Pectinal tooth count: 16–16.

Metasoma. Ventral submedian carinae: on I-II strong, slightly crenulate to granular; on III moderately strong, slightly crenulate to granular; IV moderately strong, granular. Ventrolateral carinae: on I-III moderately strong, smooth to crenulate; on IV weak, slightly granular. Lateral inframedian carinae: on I-II moderately strong, granular to slightly crenulate; on III-IV moderately strong to weak, slightly granular. Lateral supramedian carinae on I moderately strong, granular; on II-IV moderately strong to strong, granular. Dorsal lateral carinae: on I-IV moderately strong to strong, granular. Segment V longer than pedipalp femur: ventromedian carina moderately strong, granular--with subconical granules; ventral transverse carina moderately strong, with six subconical granules; ventrolateral carinae moderately strong, granular; lateral median carinae weak to faint, sparsely granular; dorsolateral carinae weak to moderately strong, granular. Intercarinal spaces: ventral on segments I-III smooth; on IV-V slightly granular; lateral on segments I smooth; on II-IV slightly reticulated but formed by small granules; on V sparsely granular; dorsal on segments I-IV slightly reticulated, formed by small granules to smooth; on V smooth to slightly reticulated but the reticulations are formed by

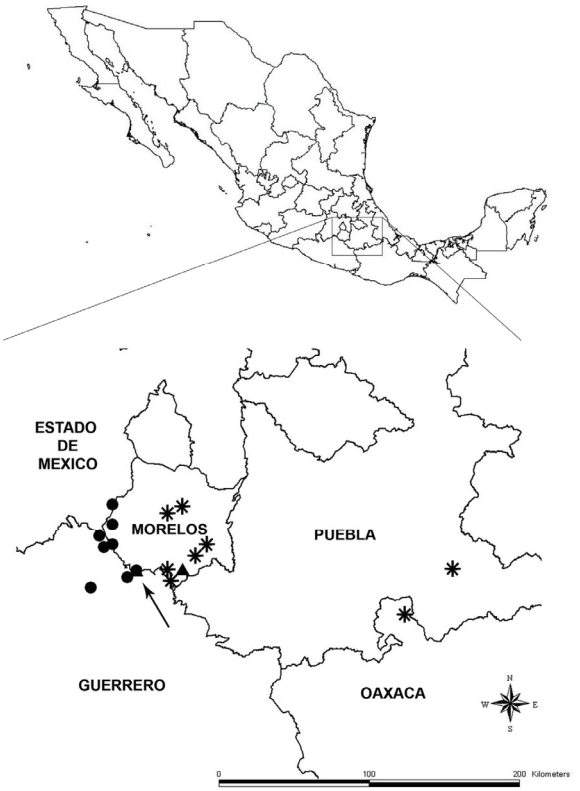


Figure 7. Known distribution in Mexico of the three species of the genus *Diplocentrus* found in Morelos, Mexico: *Diplocentrus coylei* in black circles; *Diplocentrus longimanus* sp. nov. in black triangles and *Diplocentrus tehuacanus* in black asterisks. Black arrow indicates the locality in which *D. coylei* and *D. longimanus* where collected sympatric.

faint marks. Anal arc: anal subterminal carina formed by 12 conical granules. Telson smooth; with granules at base of telson. Subaculear tubercle strong, subconical.
Pedipalp. Orthobothriotaxic type "C" (Vachon, 1974); pattern typical for the genus (Francke, 1977). Femur (Fig. 14) wider than deep. Dorsal internal carina strong, granular. Dorsal external carina moderately strong, granular. Ventral internal carina moderately strong, granular, fading on the distal portion to faint. Ventral external carina weak to vestigial, weakly granular. Dorsal surface flat, with weak, sparse granulation. Ventral surface flat, shagreened. Internal surface densely granular, with large, dark granules.
Patella (Fig. 15): dorsal internal carina weak to obsolete with a basal tubercle moderately strong and consisting of four or more granules fading to be confused with the granulation of the internal surface. Dorsal median carina moderately strong, crenulate. Dorsal external carina moderately strong, crenulate. External carina weak to moderately strong, smooth. Ventral external carina weak to moderately strong, smooth. Ventral median carina moderately strong, smooth to slightly granular. Ventral internal carina strong, with large granules. Dorsal surface smooth; external and ventral surfaces reticulate. Internal surface granular.
Chela (Fig. 16): Dorsal marginal carina moderately strong, strongly granular. Digital carina moderately strong to strong, smooth. Dorsal secondary carina weak, granular. External secondary carina moderately strong to weak, smooth. Ventral external carina originating at external condyle of movable finger articulation, converging towards ventral median carina and fading on the middle portion of the chela; weak, slightly granular. Ventral median carina strong, smooth. Ventral internal carina moderately strong, smooth. Three internal carinae weak, smooth to slightly granular, all with a shallow longitudinal depression where chela flexes against patella. Dorsal and external surfaces moderately reticulated, ridges granular. Fixed finger base with dorsal surface smooth, with dense setation; external surface flat; internal surface feebly concave. Fingers moderately curved.
Legs. Prolateral surfaces of femora and tibiae shagreened. Telotarsal spiniform seta formula: 5/6 5/6:5/6 6/6:6/6 6/7:6/7 6/7.
Hemispermatophore. (Figs. 18- 19) 6 mm total length; lamellate, weakly sclerotized, poorly preserved; distal lamella 3 mm long. Capsular region 1.3 mm wide. Opercular "hook" narrow, with 4 weak lobules (Fig. 20).
Paratype female. Differs from the male as follows, and as indicated in Table I:
Mesosoma. Tergites with darker coloration. Pectinal tooth count 15-15.
Metasoma. Carination moderate, but more granular than on male. Telson less hirsute.
Pedipalp. Patella with dorsal median carina moderate, smooth; dorsal external carina weak to moderate, smooth; dorsal surface smooth. Chela rounder than on male (Fig. 17); length/width ratio 5.04 on holotype male, 3.62 on paratype female; with dorsal secondary and external secondary carinae weak to vestigial, smooth; digital carinae moderately strong to weak, smooth. Dorsal and external surfaces reticulated, but ridges weaker than on male.
INTRASPECIFIC VARIATION.
Diplocentrus longimanus sp. nov. exhibits marked sexual dimorphism. Males with metasoma longer than females. Telson longer and slender in males, shorter and rounded in females. Chela on males slender with long fingers, rather than short fingers and rounded in females; on males fixed finger longer than manus, and on female fixed finger shorter than manus. Selected measurements from 2 adult males and 3 adult females presented in Table III. Pectinal tooth counts on males (n=8): 2 combs with 15 teeth, 4 with 16 and 2 with 17 teeth; on females (n=16): 1 comb with 13 teeth, 7 combs with 14 and 8 combs with 15 teeth. The typical telotarsal formula appears to be: 5/5-6:5-6/6:6/6-7:6/7.
Telotarsal spiniform seta counts (n=24):
Leg I prolateral: 4 tarsi with 4, 19 with 5 and 1 with 6 setae.
retrolateral: 12 tarsi with 5 setae and 12 with 6.
Leg II prolateral: 10 tarsi with 5 setae and 14 with 6.
retrolateral: 23 tarsi with 6 and 1 with 7 setae.
Leg III prolateral: 3 tarsi with X setae, 20 with 6 and 1 with 7 setae.
retrolateral: 3 tarsi with X setae, 1 with 5, 8 with 6 and 12 with 7 setae.
Leg IV prolateral: 1 tarsus with X setae, 18 with 6 and 5 with 7 setae.
retrolateral: 1 tarsus with X setae, 7 with 6 and 16 with 7 setae.

Figures 8-10. Dorsal aspect of the right pedipalp chela of the three species of *Diplocentrus* found in Morelos. **8**. *D. longimanus* sp. nov. **9.** *D. coylei*. **10.** *D. tehuacanus*. Scale bar= 5 mm.

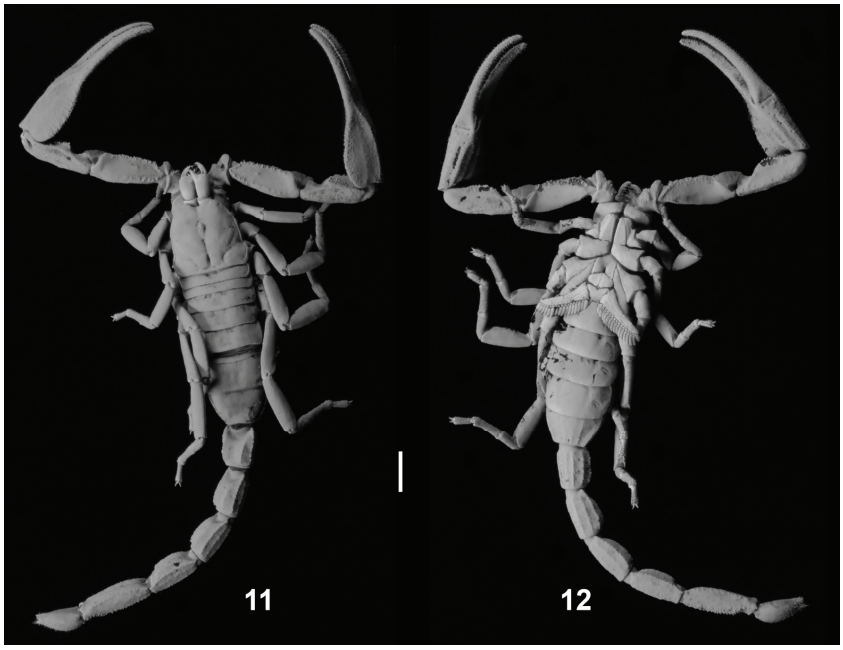


Figure 11-12. Habitus of holotype male of *Diplocentrus longimanus* sp. nov. Scale bar = 5 mm

HABITAT. This species was collected with the aid of UV light detection at night, and the scorpions were on the ground. The dominant type of vegetation at the type locality is pine forest.

Diplocentrus tehuacanus **Hoffmann, 1931**

Diplocentrus keyserlingi tehuacanus Hoffmann, 1931: pp. 312-323; Diáz Nájera, 1964: p. 20; Guijosa, 1973: pp.145, 150; Diáz Nájera, 1975: pp. 5, 30.
Diplocentrus tehuacanus Francke, 1977: pp. 150, 174-179; Sissom, 1991: pp. 124; Sissom, 1994: 265; Fritts & Sissom 1996: 44; Kovaríik 1998: 131; Beutelspacher & Trujillo-Olvera 1999: pp. 9; Fet *et al.*, 2000: pp 343; Beutelspacher, 2000: pp. 34; Armas & Martín-Frías, 2003: pp. 39; Teruel, 2003: pp. 54.

Figure 13. Habitus of paratype male of *Diplocentrus longimanus* sp. nov. Scale bar = 5 mm.

DIAGNOSIS. Adults medium sized, 55-60 mm long. Coloration pale yellow to ochre-yellow. Carapace with anterior margin "V" shaped, finely granular (Fig. 3). Pedipalp femur (Fig. 21) wider than deep; with dorsal surface slightly convex, weakly granular on middle portion. Pedipalp patella on males (Fig. 22) with dorsal external and ventral median carinae obsolete. Pedipalp chela (Fig. 23) with digital carina on males moderately strong to strong, smooth; dorsal surface granular. Telotarsal spiniform seta formula: 4/5:5/5:6/6:6/6. Pectinal tooth count on males 11 to 14 (mode=14) and on females 11 to 13 (mode=11).

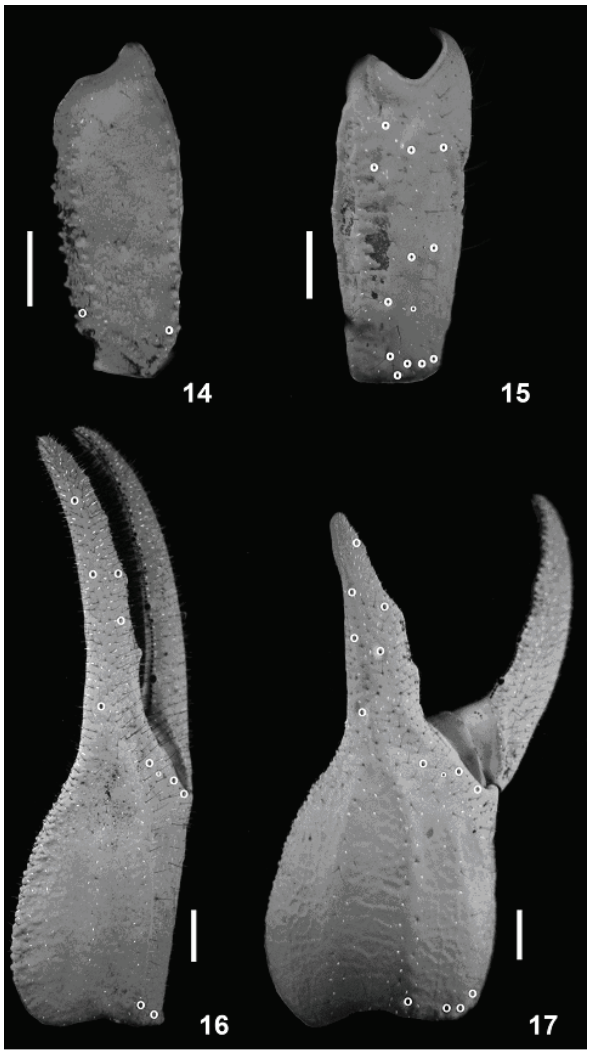
Diplocentrus tehuacanus is most similar to *D. zacatecanus* and *D. bellator* but it can be easily distinguished by the following: Males of *D. zacatecanus* with a chela rounded and short whereas on males of *D. tehuacanus* with chela slender and long. A higher telotarsal formula on the last pair of legs on *D. zacatecanus* (6/7). Anterior margin of the carapace is "U" shaped on *D. zacatecanus* and it is smooth. A higher pectinal tooth count and a higher telotarsal formula on *D. bellator* distinguish it from *D. tehuacanus* (last two pairs of legs on *D. bellator* are 7/8; holotype male of *D. bellator* with 18-19 pectinal teeth).

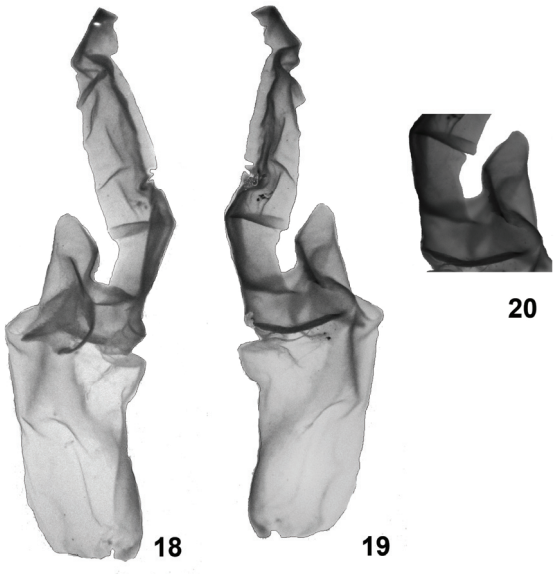
DISTRIBUTION. (Fig. 7) MEXICO. GUERRERO: Atenango del Rio. MORELOS: Tepalcingo, Tlaquiltenango. OAXACA: Santiago Chazumba, PUEBLA: Acatlán, Tehuacán.

SPECIMENS EXAMINED. MEXICO. MORELOS. *Tepalcingo*, El Limón, 18° 32.4' N 98° 55.8' W, 1191 m, 12 IX 2004 (M. Córdova & G. Obregón) 2 adult females (CNAN). Cerro Venando, 18° 36.6' N 98° 51.72'W, 1380 m, 01 IX 2003 (M. Córdova & D. Horin) 2 adult females and 2 juveniles (CNAN-S03037). *Tlaquiltenango*, Huautla, 18° 23.4' N 99° 4.8' W, 976 m, no date (M. Córdova & A. Jaimes) 15 adult males (CNAN-S03213). 5 km from CEANISH station in Quilamula, 18° 50.4' N 99° 0.6' W, 1100 m, 15 VIII 2003 (M. Córdova) 1 adult male, 4 adult females and 4 juveniles (CNAN-S03038). 2 km from the archeological ruins of Chimalacatlán, 18° 27.6' N 99° 6' W, 1066 m, 11 VII 2004 (M. Córdova & O. Sotelo) 2 adult males, 1 adult female and 2 juveniles (CNAN-S03036). GUERRERO. *Atenango del Rio*, 18° 48' N 99° 6' W, 15 VIII 2003 (E. González & O. Francke) 1 adult male and 1 adult female. PUEBLA. *Acatlan*, San Pedro Yeloixtlahuaca (no geographical data provided), 1 X 1976 (J. Julia) 1 adult female (CNAN-S00721). *Tehuacán*. Mesa del Riego 18° 27.666' N 97° 23.616'W, 1620 m, 22 I 1964 (L. Vazquez) 1 adult male, 3 adult females and 6 juveniles (CNAN-S00726).

HABITAT. This species was found under stones in a thorny xerophytic scrubland during daytime collecting, and during nighttime with UV light detection.

Acknowledgments.
We would like to thank Javier Ponce, Hector Montaño, Alfonso Ballesteros, G. Obregón, D. Horin, A. Jaimes, O. Sotelo, A. Gotilla, and O. Vazquez for assistance with field work; and L. Beltrán for guiding us to "El Comal". Comments and suggestions by two reviewers improved our manuscript. The senior author would like to thank to the Biological Sciences Graduate Program of Universidad Nacional Autónoma de Mexico and to CONACYT for financial support. This contribution is part of the undergraduate thesis of the third author, and now also part of the doctoral research of the senior author. Collecting trips were partially financed by NSF grant DEB 0413453 to Dr. Lorenzo Prendini, and by Instituto Bioclon, S. A., México. Collections were done under Scientific Permit FAUT-0175 to Dr. Oscar Francke by SEMARNAT, Mexico.





Figures 18 – 20. Paratype male hemispermatophore. 18. Ental view; scale bar= 1 mm. **19** Dorsal view; scale bar= 1 mm. **20.** Detail of the capsular region and the opercular "hook" showing four weak lobules on the hook region; scale bar= 0.5 mm

Figures 14-17. *Diplocentrus longimanus* sp. nov. **14.** Dorsal aspect of the male's femur. **15.** External aspect of the male's patella. **16**. Dorsoexternal aspect of the male's chela. **17.** Dorsoexternal aspect of the female's chela. Scale bars= 2 mm (white circles highlight trichobothrial positions).

Figures 21-23. *Diplocentrus tehuacanus*, male. **21**. Dorsal aspect of the femur. **22.** External aspect of the patella. **23.** Dorsoexternal aspect of the chela (white circles highlight trichobothrial positions). Scale = 2 mm.

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Table I. Scorpion species occurring in the state of Morelos (see Córdova-Athanasiadis, 2005 for specific locality records).

Family	Genus	Species	Municipalities
Buthidae	*Centruroides* Marx 1889	*C. balsasensis* Ponce-Savedra & Francke, 2004	Amacuzac, Axochiapan, Cuautla, Coatlan del Rio, Emiliano Zapata, Juitepec, Jonacatepec, Miacatlan, Temixco, Tepalcingo, Tlaquiltenango, Tlaltizapan, Villa de Ayala, Xochitepec, Yautepec, Yecapixtla, Zacualpan de Amilpas
		*C. limpidus (*Karsch, 1879)	Amacuzac, Cuautla, Cuernavaca, Coatlan del Rio, Juitepec, Jonacatepec, Miacatlan, Ocuituco, Puente de Ixtla, Temixco, Tepalcingo, Tepoztlan, Tetecala, Tlaquiltenango, Tlaltizapan, Totolapan, Villa de Ayala, Xochitepec, Yautepec, Yecapixtla
Diplocentridae	*Diplocentrus* Peters, 1861	*C. margaritatus* (Gervais, 1841)	Cuernavaca
		D. coylei Frtiis & Sissom, 1996	Amacuzac, Coatlan del Rio, Miacatlan
		D. longimanus sp. n.	Puente de Ixtla, Tlaquiltenango
		D. tehuacanus Hoffmann, 1932	Tepalcingo, Tlaquiltenango
Iuridae	*Hadrurus* Thorell, 1876	*H. gertschi* Soleglad, 1976	Tlaquiltenango
Vaejovidae	Vaejovis C. L. Koch, 1836	*V, curvidigitus* Sissom, 1991	Cuautla, Miacatlan
		V. granulatus Pocock, 1898	Cuernavaca, Huitzilac, Ocuituco, Puente de Ixtla, Tetela del Volcan, Tlalnepanltla, Tlayacapan
		V. mexicanus C. L. Koch, 1836	Huitzilac, Puente de Ixtla
		V. smithi Pocock, 1898	Cuernavaca, Huitzilac, Ocuituco, Tepoztlan, Tlalnepantla, Totolapan
		V. subcristatus Pocock, 1898	Jonacatepec, Yecapixtla, Zacualpan de Amilpas
		V. variegatus Pocock, 1898	Amacuzac, Axochiapan, Cuautla, Cuernavaca, Coatlan del Rio, Juitepec, Jonacatepec, Miacatlan, Puente de Ixtla, Temixco, Tepalcingo, Tepoztlan, Tetecala, TlaquiltenagoTlaltizapan, Xochitepec, Yautepec, Yexapixtla, Zacualpan de Amilpas

Table II. Measurements of the holotype male and paratype female of *Diplocentrus longimanus* sp. nov. Abbreviations: L= Length, W= Width, D= Depth.

	Diplocentrus longimanus sp. nov	
	♂ Holotype	♀Paratype
Total L	69.7	75.8
Carapace L	9	10
Carapace W	10	11.5
Mesosoma L	18.4	27.7
Pedipalp L	40.3	36.9
Femur L	8.9	8.4
W	2.9	3.5
D	2.2	3
Patella L	9.7	9.3
W	3.2	3.5
D	3.6	3.5
Chela L	21.7	19.2
W	4.3	5.3
D	6.5	7.8
Movable finger L	14.1	12.1
Fixed finger L	12.2	8.9
Chelicera L	5.5	6
W	2	2.2
Movable finger L	2.9	2.7
Fixed finger L	1.6	1.6
Metasoma L	34.1	30.2
Segment IV L	7.2	6.5
W	3.3	3.7
Segment V L	9.4	8.9
W	3	3.5
D	2.7	3.5
Telson L	8.2	7.9
Vesicle L	6.7	6.4
W	3.1	3.7
D	2.9	3.3

Table III. Selected measurements from adult specimens from the type series indicating sexual dimorphism and individual variation within sexes.

	Diplocentrus longimanus				
	♂ **H**	♂	♀ **P**	♀	♀
Carapace L	9	9.5	10	9.4	9.4
Segment V L	9.4	10	8.9	7.8	7.9
Femur L	8.9	9.6	8.4	7.3	7.4
Telson L	8.2	8.2	7.9	7	7.1
Telson W	3.1	3	3.7	3.4	3.4
Chela L	21.7	22.8	19.2	17.1	17.5
Chela D	6.5	6.7	7.8	7.1	7
Chela Fixed Finger L	12.2	12.1	8.9	7.8	7.9
Chela manus L	9.5	10.7	10.3	9.3	9.6