

## Redescription of *Plesiochactas mitchelli* (Scorpiones: Euscorpiidae): a rare scorpion from Central America

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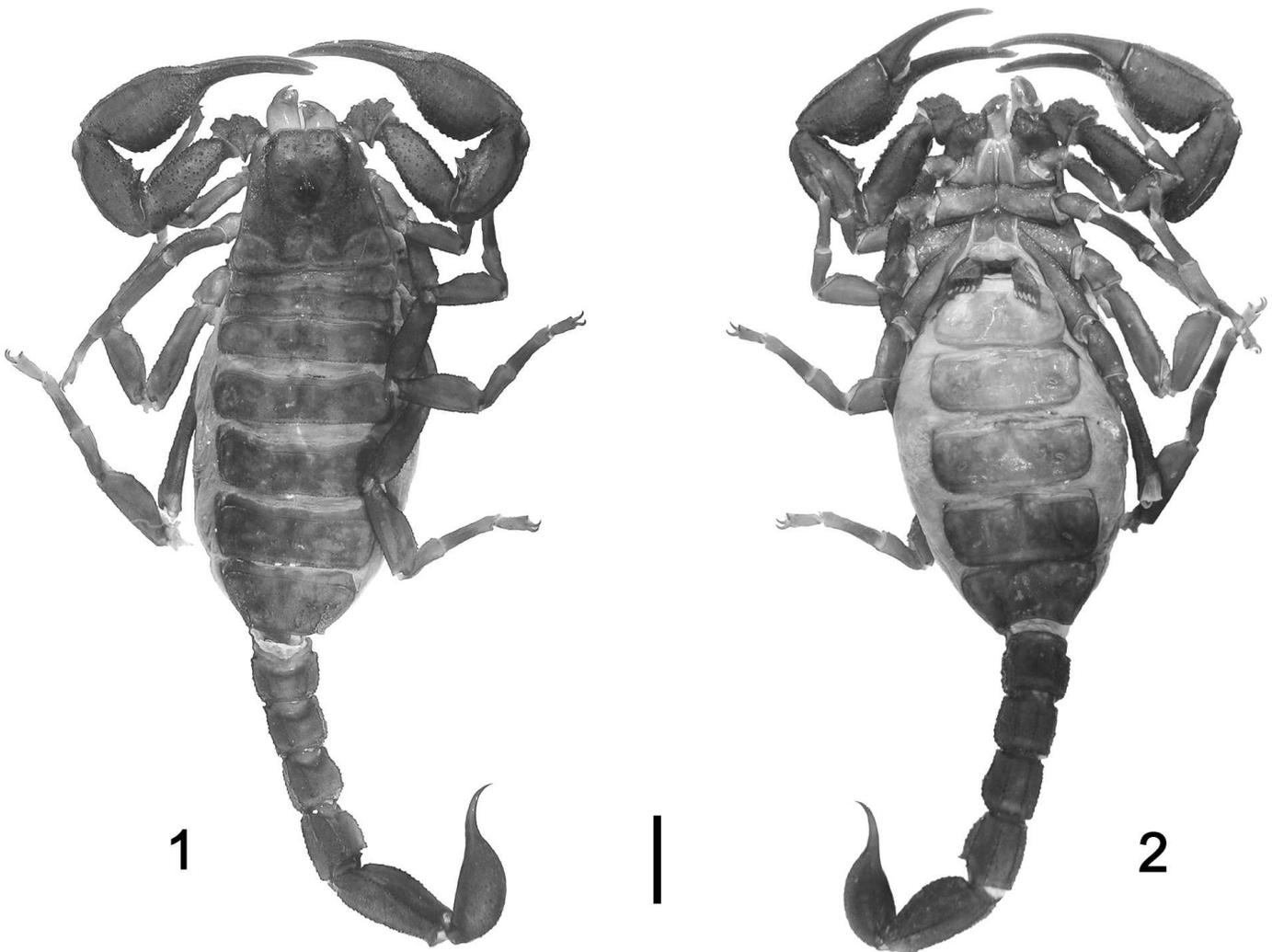
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**Abstract.** *Plesiochactas mitchelli* Soleglad 1976 was originally described from a juvenile female collected in “Guatemala” before 1902. The species is redescribed on the basis of an adult female from a specific locality in the state of Chiapas; it is the first record of this species from México.

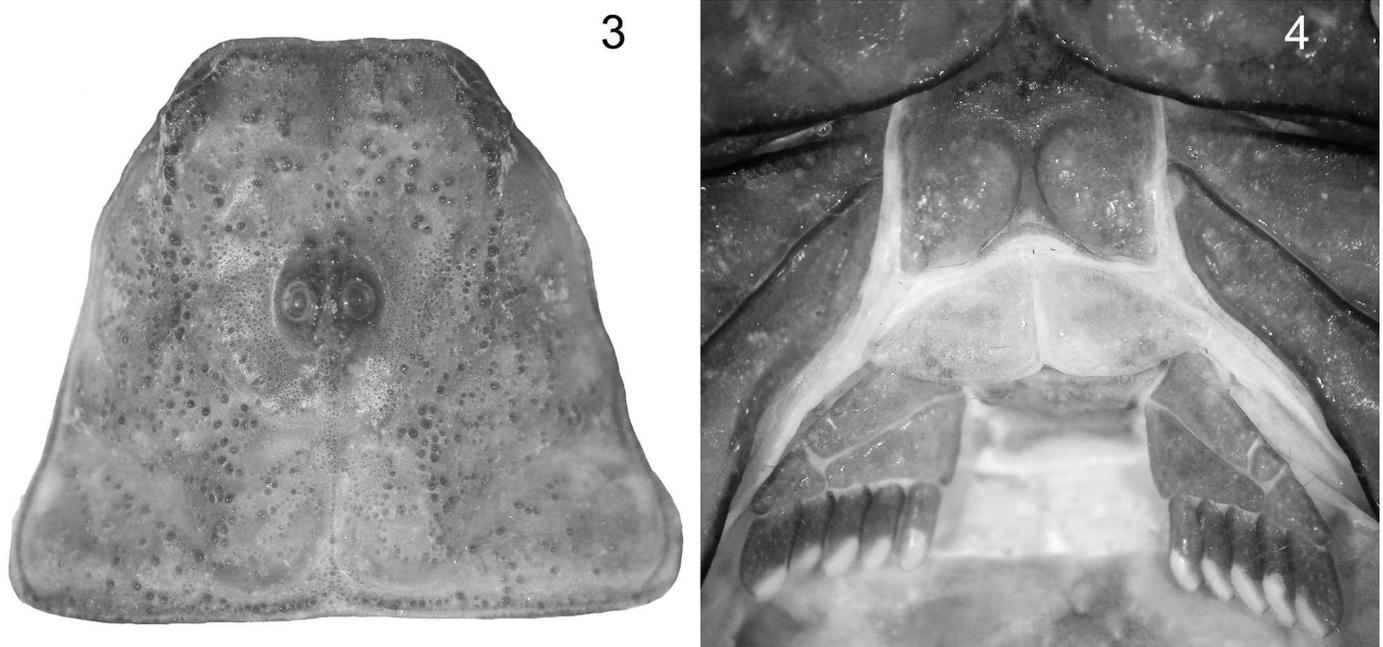
**Keywords:** Euscorpiidae, Chiapas, México, systematics

There is little information available about scorpions of the genus *Plesiochactas* Pocock 1900. This genus consists of only two species: *Plesiochactas dilutus* Karsch 1881, the type species which is known from four specimens (Soleglad

1976; Soleglad & Sissom 2001), and *Plesiochactas mitchelli* Soleglad 1976. The male is undescribed for this genus, and *P. mitchelli* is known only from a single immature specimen.



Figures 1, 2.—*Plesiochactas mitchelli* female adult specimen. 1. Dorsal aspect; 2. Ventral aspect. Scale line: 5 mm.



Figures 3, 4.—*Plesiochactas mitchelli* female adult specimen. 3. Carapace; 4. Ventral aspect of sternum and pectines.

Pocock (1902) mentioned a young specimen from “Guatemala” nearly allied to *P. dilutus*. Soleglad (1976) revised the scorpion subfamily Megacorminae, with limited material available. He described *P. mitchelli* without a precise locality from the same juvenile female reported by Pocock. To this date, no additional specimens of this species have been reported in the literature. In the present paper, we redescribe *P. mitchelli* on the basis of an adult female from southeastern Chiapas, México, from a locality not too distant from the border with Guatemala (see Remarks).

#### METHODS

The new specimen examined for this study is lodged in the Colección Nacional de Arácnidos (CNAN), Instituto de Biología, Universidad Nacional Autónoma de México, México, D.F. Nomenclature and mensuration primarily follow Stahnke (1970), with the following exceptions: metasomal carinal terminology after Francke (1977), pedipalp carinae terminology after Acosta *et al.* (2008), trichobothrial designations after Vachon (1974), and chelal finger dentition terminology after Soleglad & Sissom (2001). Measurements were made with an ocular micrometer at 10X on a Nikon SMZ 800 stereomicroscope; drawings on the same scope with a camera lucida attached; photographs also on the same scope with a Nikon Coolpix 20 camera.

#### SYSTEMATICS

Family Euscorpidae Laurie 1896  
Subfamily Megacorminae Kraepelin 1899  
Genus *Plesiochactas* Pocock 1900

*Plesiochactas* Pocock 1900:470.

Type species.—*Plesiochactas dilutus* (Karsch 1881), by monotypy.

#### *Plesiochactas mitchelli* Soleglad 1976

*Plesiochactas mitchelli* Soleglad 1976:251, 263, 286, 288, 294–298, Table 4, Figs. 17, 21, 86, 87, 117, 118, 121, 123–134; Soleglad & Sissom 2001:29, 58, 67, 92, Figs. 141, 196.

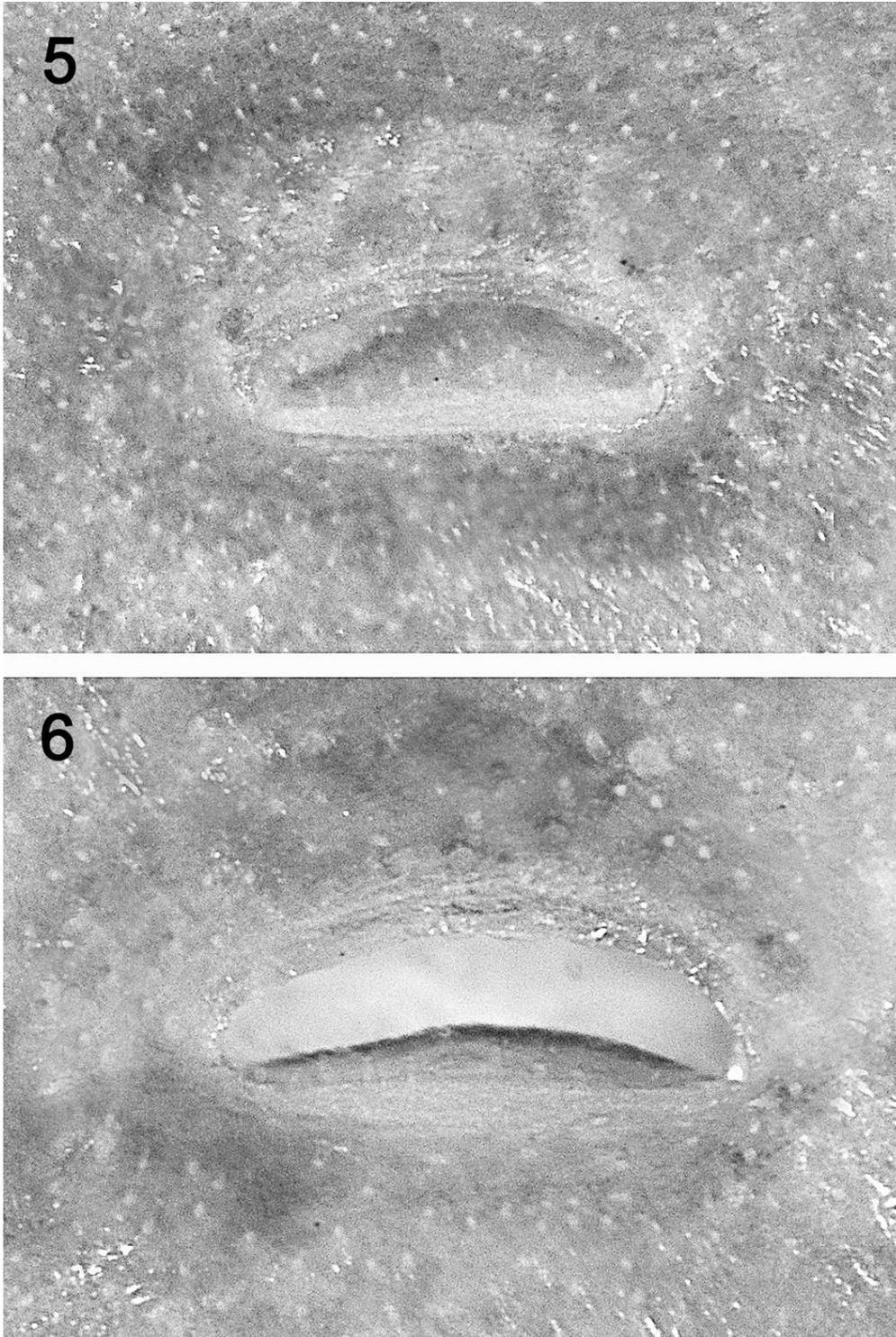
*Plesiochactas dilutus* (in part) Pocock 1902:16, 17, Table 4, Figs. 5a–f.

**Type data.**—GUATEMALA: Holotype juvenile female from “Guatemala (Sarg),” date unknown (deposited in Natural History Museum, London).

**Additional specimen.**—MÉXICO: Chiapas: 1 adult ♀, Santa Rosa, [Municipio] La Trinitaria, August 1974, [col.] A. Ramírez V. (CNAN).

**Diagnosis.**—Adult female 53.3 mm long. Pectines quite reduced; 5 teeth for female; fulcra absent. Median carina of sternite VII obsolete. Stigmata elongate oval. Patella with 23 trichobothria on external face: 5 each in **em** and **et** series; 8–10 ventral trichobothria in a straight row along posterior margin. *P. dilutus*, the only other species in the genus has 8–9 pectinal teeth in females, 10 in the male; the pectines have well developed fulcra; and median carina of sternite VII weak to moderately strong, smooth.

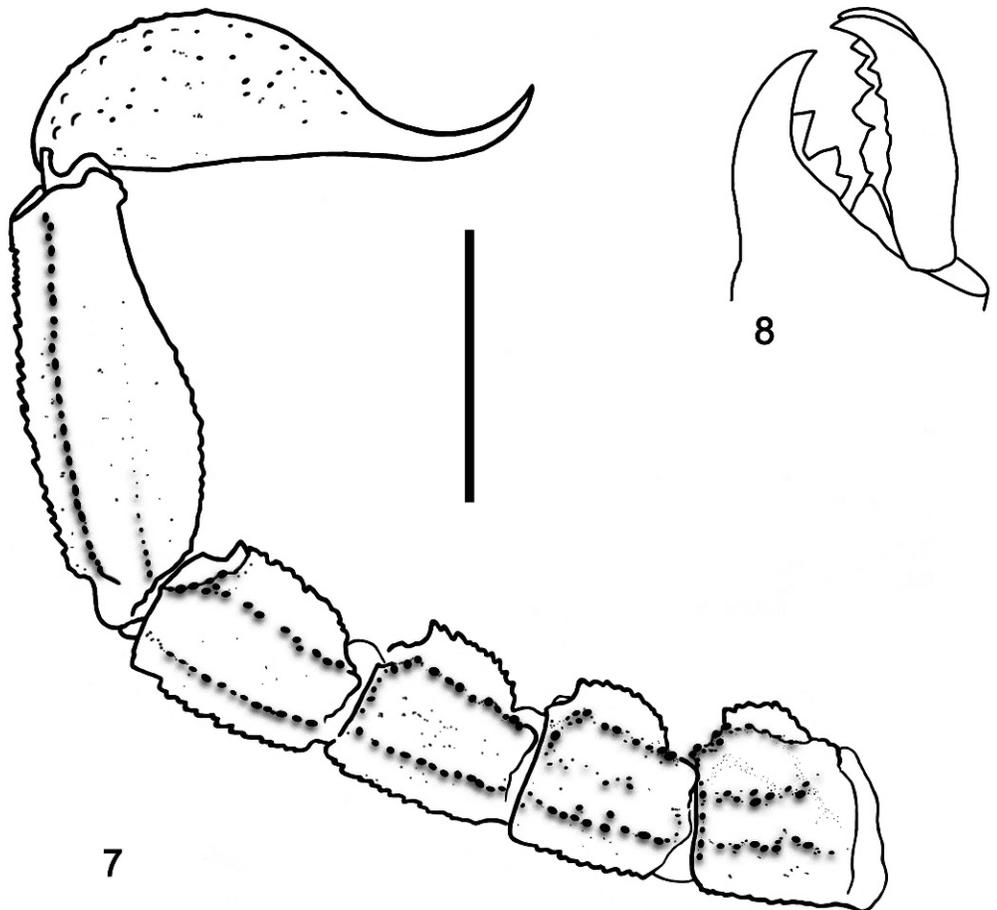
**Description of adult female (Figs. 1, 2).**—*Coloration*: uniformly orange-brown, darkening to reddish brown in carapace, pedipalps, metasomal segments and telson. *Prosoma*: carapace 1.2 times wider than long, densely covered with random mixture of large, medium, and small granules, anterior margin straight. Lateral eyes, two per side, well developed, posterior eye slightly smaller. Median ocular tubercle very well developed and prominent, one-fifth width of carapace at that point; placed on anterior two-fifths of carapace (Fig. 3). Sternum wider than long with some granules distally, deep median groove (Fig. 4). *Mesosoma*: tergites rough, minutely and densely granulose, with larger,



Figures 5, 6.—Stigmata of *Plesiochactas mitchelli* female adult specimen. 5. Stigmata closed; 6. Stigmata open.

sparse granules on posterolateral regions. Median carina weak to vestigial in all tergites. Tergite VII with two pairs of crenato-granulose carinae. *Genital operculum*: relatively small, subtriangular, with complete median longitudinal membranous connection. *Pectines* (Fig. 4): reduced, three marginal

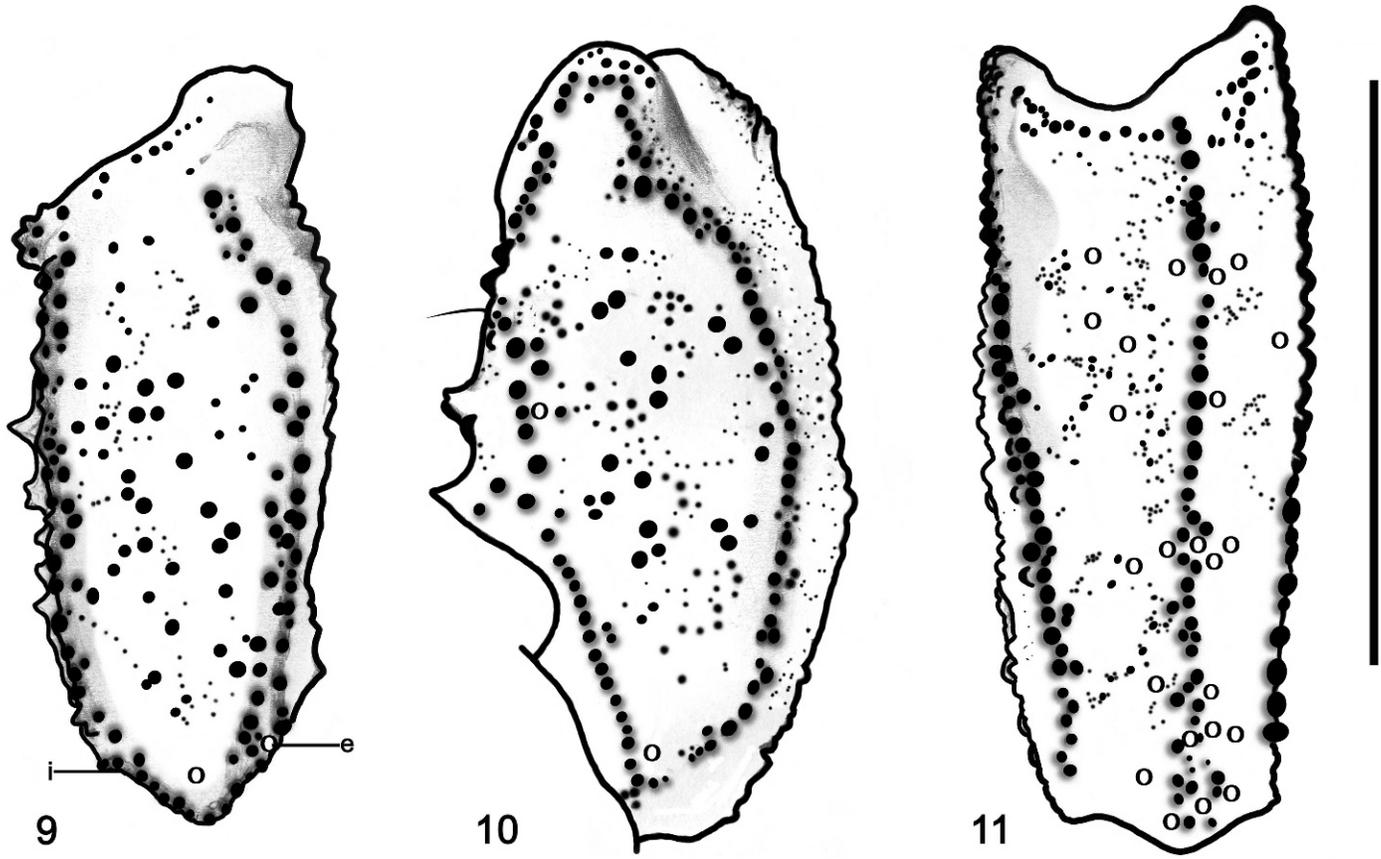
and one middle lamellae well defined; fulcra absent; pectinal teeth 4 times longer than wide, sensorial areas present distally, on  $\frac{1}{3}$  to  $\frac{1}{2}$  of tooth; tooth count 5-5. *Sternites*: III-VI lustrous; VII with a pair of vestigial lateral carinae, hinted by some granules; median carina obsolete. *Stigmata*: reniform



Figures 7, 8.—*Plesiochactas mitchelli* female adult specimen. 7. Lateral aspect of metasomal segments and telson, Scale line: 5 mm; 8. Ventral aspect of left chelicerae. Scale line: 1 mm.

elongate, with a distinctly sclerotized lid hinged distally, which opens inward to the book lung cavity (Figs. 5, 6). *Metasoma*: intercarinal spaces with sparse granules. Segments I–II wider than long, III as long as wide and IV longer than wide. Dorsolateral and lateral suprmedian carinae crenulated to serrated. Posterior spines on dorsal carinae weakly developed, gradually stronger on distal segments (Fig. 7). Lateral infra-median carinae on I, granulose and complete; on II with few granules posteriorly, and on III–IV obsolete. Ventrolateral carinae on I–II, granulose; on III–IV crenulated to serrated. Ventral median carina on I weak, granulose; on II–IV crenulated to serrated. Segment V: dorsolateral and ventrolateral carinae crenulated to serrated; lateral median carina weak, indicate only on proximal region; ventral median carina, serrated; anal arc with subtle granulation. *Telson*: segment elongated, aculeus-vesicle juncture not sharply defined. Vesicle dorsally smooth, lateral and ventrally covered with low, rounded granules. Aculeus slightly curved. Subaculear tubercle/spine absent. *Chelicera*: movable finger with two subdistal denticles on dorsal edge; inferior margin with 2–4 small denticles; without serrula (Fig. 8). *Pedipalps*: dorsal face of patella and femur with scattered granules; ventral face smooth to rough. Femur orthobothriotaxic (Fig. 9): 2.6 times longer than wide; retrodorsal, prodorsal and proventral carinae, strong and crenulated; retroventral carina present only on

proximal region, strong and granulose; retrolateral face with granulose to serrated median carina; prolateral face with a median carina indicate by some longer spiniform granules. *Patella* neobothriotaxic (Figs. 10, 11): retrolateral face with 23 trichobothria (5 et, 4 est, 5 em, 2 esb and 7 eb); ventrally on right side with 9 v trichobothria, left with 10 v; 2.3 times longer than wide; all carinae crenulated to serrated; retrolateral aspect with well developed median carina, crenulated; proximal projection of prolateral face with one medium and one small spine. *Chela*: Orthobothriotaxic (Figs. 12, 13): movable finger shorter than carapace and slightly shorter than fifth metasomal segment. Digital and retrolateral secondary carinae strong, crenulated; dorsal secondary and prodorsal carinae weak, granulose; retroventral carina very strong and crenulated; proventral carina weak, crenulated; ventral median carina vestigial, only present and granulose proximally; prolateral median carina crenulated. Intercarinal spaces with sparse granules. Chelal finger dentition, based on right movable finger (Fig. 14): median denticle row flanked by groups of one outer denticle plus two inner denticles; in addition, the median denticle corresponding to each group is slightly enlarged, resulting in transverse rows of four denticles each, which divide the median denticle row into distinct sub-rows. Distally there are no accessory denticles; basal to distal group 3 inner accessory denticles appear, and basal to distal



Figures 9–11.—*Plesiochactas mitchelli* female adult specimen. 9. Dorsal aspect of pedipalp femur; 10. Dorsal aspect of pedipalp patella; 11. Retrolateral aspect of pedipalp patella. Scale line: 5 mm.

group 5 outer accessory denticles are present. Basal to distal group 6 a poorly defined “double row” formed by the median denticle row and the inner accessory denticles can be discerned. *Measurements*: (in mm; L = length, W = width, D = depth). Total L 53.3; carapace L/W 8.0/9.3; mesosoma L 17.2; metasoma L 19.4; segment I L/W/D 2.3/3.8/3.1, segment II L/W/D 2.6/3.3/3.0, segment III L/W/D 3.0/3.2/3.1, segment IV L/W/D 4.0/3.0/3.1, segment V L/W/D 7.5/2.7/2.8. Telson L 8.7; vesicle L/W/D 5.1/3.0/2.6; pedipalp L 26.7; femur L/W 6.6/2.5, patella L/W 6.8/3.0, chela L/W/D 13.3/4.0/4.3, movable finger L 7.0, fixed finger L 5.9.

**Remarks.**—Francis Charles Sarg (whom we presume collected the holotype) was born in Guatemala; in the 1880s he lived in Cobán and around 1902 he owned a farm called “El Chicabal” in Quetzaltenango. It is possible the holotype was collected in or near that farm.

There are four settlements called Santa Rosa in the Municipio of La Trinitaria, Chiapas, and we do not know from which of them the specimen was collected; thus we can not provide geographical coordinates or elevation for the specific location. Quetzaltenango, Guatemala, is approximately 100 km from the Municipio of La Trinitaria.

#### DISCUSSION

The principal difference, other than size, between the juvenile holotype and the adult female of *P. mitchelli* is the patella

ventral trichobothrial number: eight in the holotype, nine and ten in the adult female specimen. This character shows similar variability in the other described species of *Plesiochactas* (*P. dilutus*: 9–12), and is also variable in species of the genus *Megacormus* Karsch 1881 (Soleglad 1976; Sissom 1994; Francke pers. obs.). The submedian and lateral carinae of sternite VII are obsolete in the holotype, and on the adult female a pair of vestigial lateral carinae are present, and the submedian carinae are also obsolete. One somewhat large denticle on the distal aspect of the ventral edge of the movable cheliceral finger of the holotype, the adult female has two to four spaced denticles. The movable finger of the pedipalp chela on the adult female is shorter than the carapace and slightly shorter than the fifth metasomal segment; in the holotype it is slightly shorter than the carapace, and longer than segment V of the metasoma. Several differences of mesosomal, metasomal, and pedipalpal carinae between the holotype and the adult female are ascribable to ontogenetic changes. Both the presence or absence of fulcra on the pectines, and the pectinal tooth counts on females, are diagnostic characters that separate the two species of *Plesiochactas*. Also, the median carina on sternite VII is weak to moderate and smooth on *P. dilutus*, and it is smooth and vestigial to obsolete on *P. mitchelli*.

The taxonomic status of this genus and its species remains uncertain. Originally, *Plesiochactas* was separated from *Megacormus* by the presence of distinct fulcra in the pectines,

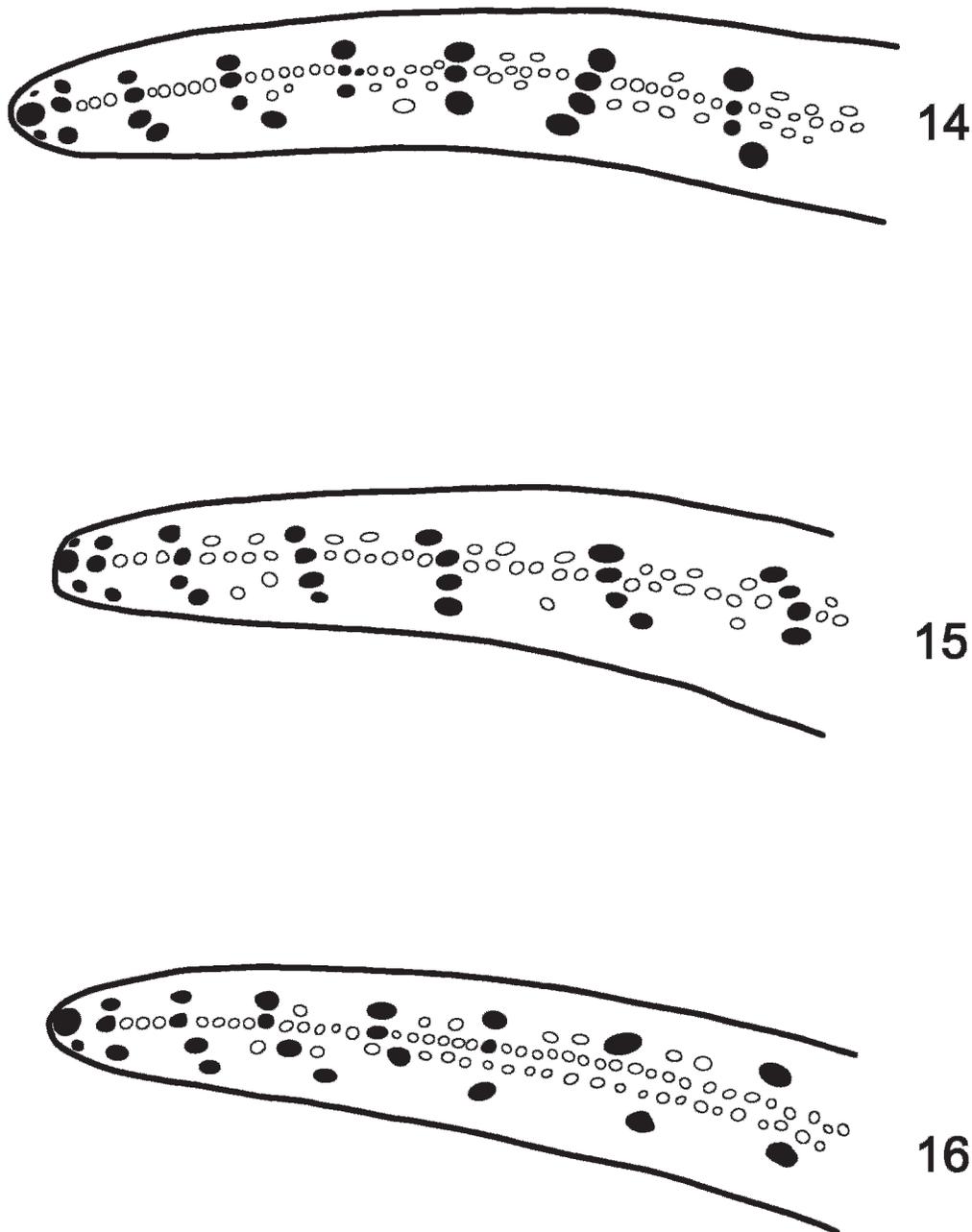


Figures 12, 13.—*Plesiochactas mitchelli* female adult specimen. 12. Retrolateral aspect of right pedipalp chela; 13. Dorsal aspect of right pedipalp chela. Scale line: 5 mm.

but *P. mitchelli* lacks the pectinal fulcra. *Plesiochactas dilutus* and *P. mitchelli* share having five trichobothria on the external terminal series of the patella, as opposed to only 3–4 on *Megacormus*, and on that basis *P. mitchelli* was placed in *Plesiochactas* by Soleglad (1976). However, the number of trichobothria on that region of the patella is quite variable in the family Euscorpidae Laurie 1896 (Soleglad & Sissom 2001), and thus the similarity between the two species currently placed in *Plesiochactas* could be a symplesiomorphy.

Soleglad (1976) and Soleglad & Sissom (2001) also indicate that *Plesiochactas* and *Megacormus* can be separated on the basis of chelal finger dentition: the former with 45+ small, inner accessory denticles, arranged row-like; the later with 35+ small outer accessory granules, scattered, irregular row-like. A

direct comparison of the denticle pattern in *P. mitchelli* (Fig. 14), against those of *Megacormus gerstchi* Díaz 1966 (Fig. 15), and *P. dilutus* (Fig. 16) clearly indicate a stronger similarity between the first two, which share transverse “tetrads” along the movable finger length. In *P. dilutus*, however, the tetrads tend to disappear after distal group 3 and only enlarged inner and outer denticles are present, and a “double row” of median plus inner accessory denticles is quite distinct on the basal 2/3 of the movable finger. The second author has undertaken a revision of the tribe Megacormini Kraepelin 1899 [*Megacormus* + *Plesiochactas*], including a cladistic analysis of the phylogenetic relationships of all included taxa, which should help resolve the current uncertainty (ms. in preparation).



Figures 14–16.—Movable finger dentition of right pedipalp chela. 14. *Plesiochactas mitchelli* adult female; 15. *Megacormus gertschi* adult female from Hidalgo, Tianguüstengo; 16. *Plesiochactas dilutus* juvenile female from Oaxaca, Sta. Maria Tlahuitoltepec.

#### ACKNOWLEDGMENTS

Our thanks to Dr. Carlos R. Beutelspacher Baigts for donating the specimen to the CNAN, Belen Chávez Galván kindly researched the information on Mr. Francis C. Sarg, Alejandro Valdez Mondragón helped with the photographs, and Carlos Santibáñez López kindly reviewed the manuscript. Financial support was provided by FOMIX-Chiapas through the project with key: CHIS-2006-C06-45752.

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*Manuscript received 12 January 2009, revised 22 July 2009.*