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FIRST RECORD OF THE GENUS *TAPINILLUS* SIMON FROM COLOMBIA, WITH A NEW SYNONYM OF *T. CALDENSIS* GARCÍA-NETO (ARANEAE: OXYOPIDAE)

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Abstract: A first record of the lynx-spider genus *Tapinillus* Simon, 1898 (Araneae: Oxyopidae) from Colombia is presented, with *T. longipes* (Taczanowski, 1872) being recorded here for the first time from the Amazonas, Boyacá, Guaviare, Meta, Valle del Cauca and Vaupés departments, along with a complementary description of this species. In addition, *T. caldensis* (García-Neto, 1989) is presented as a new junior synonym of *T. longipes*, based on the analysis of the sexual characters of both males and females. Finally, a map with the known distribution of the genus *Tapinillus* in South America is included.
Key words: Araneae, Oxyopidae, lynx-spiders, distribution, taxonomy, South America, Colombia.

Primer registro del género *Tapinillus* Simon de Colombia, con un nuevo sinónimo de *T. caldensis* García-Neto (Araneae: Oxyopidae)
Resumen: Se presenta un primer registro del género de arañas lince *Tapinillus* Simon, 1898 (Araneae: Oxyopidae) de Colombia, registrándose *T. longipes* (Taczanowski, 1872) por primera vez de los departamentos de Amazonas, Boyacá, Guaviare, Meta, Valle del Cauca y Vaupés, junto con una descripción complementaria de la especie. Así mismo, *T. longipes* (García-Neto, 1989) se propone como nuevo sinónimo posterior de *T. longipes,* basado en el análisis de los caracteres sexuales de machos y hembras. Finalmente, se incluye un mapa de distribución del género en América del Sur.
Palabras clave: Araneae, Oxyopidae, arañas lince, distribución, taxonomía, Sudamérica, Colombia.

Introduction

Lynx spiders of the family Oxyopidae Thorell, 1870 are diagnosed by their wide clypeus, eyes occupying a small area on anterior prosoma, normally forming a hexagon, and by their prominent setae on legs (Jocqué & Dippenaar-Schoeman, 2006). Phylogenetic studies have placed the family in the superfamily Lycosoidea (Polotow *et al.* 2015), and more recently in the Oval Calamistrum clade (Griswold, 1993; Wheeler *et al.,* 2017). Is interesting to point out that the family was found as diphyletic in several of the analyses performed by Wheeler *et al.* (2017) *versus* monophyletic in Polotow *et al.* (2015). While in the analysis of Polotow *et al.* (2015) and Fernández *et al.* (2018) Thomisidae appears as the sister group of Oxyopidae, in the analyses of Wheeler *et al.* (2017) this relationship is not recovered clearly.

Currently, more than 450 species in nine genera have been described worldwide for Oxyopidae, with about 110 species in five genera known from the New World, two of which are endemic to the Neotropical region: *Schaenicoscelis* Simon, 1898 and *Tapinillus* Simon, 1898 (World Spider Catalog, 2018). However, information about the diversity and distribution of Colombian lynx spiders is still scarce, with records only for four species in the genera *Oxyopes* Latreille, 1804 and *Peucetia* Thorell, 1869: *O. salticus* Hentz, 1845, *P. longipalpis* F.O. Pickard-Cambridge, *P. macroglossa* Mello-Leitão, 1929 and *P. rubrolineata* Keyserling, 1877) (Cabra-García *et al.* 2010; Santos & Brescovit, 2003). Secondly, *P. duplovittata* Mello-Leitão, 1941 described from Bogotá (Cundinamarca) is considered a junior synonym of *P. rubrolineata* Keyserling, 1877, and *P. smaragdina* described from El Espinal (Tolima) is currently considered as *nomen dubium* (Santos & Brescovit, 2003).

The genus *Tapinillus* was described by Simon in 1898 to include *Isopus longipes* Taczanowski, 1872, a species described from males and females from Cayenne, French Guiana. This species had been redescribed by Keyserling (1881), who transferred it to *Peucetia*. Subsequently, Mello-Leitão (1929) presented a complementary description of males and females of the species from specimens deposited in the Muséum National d´Histoire Naturelle de París, France (MNHN), from Guyana, Perú, Trinidad, Venezuela and Brazil (Amazonas, Bahía). Posteriorly, Mello-Leitão (1930, 1940) described *T. roseisterni* from a juvenile female from Oriximiná (Pará, Brazil) and *T. purpuratus* from two females from Colatina (Espirito Santo, Brazil), respectively, both of these resulting in dubious species, because the type specimens of the latter one are currently lost (Moreira *et al.,* 2010). Finally, García-Neto (1989) described *Peucetia caldensis* from a female holotype, three males and one female paratypes from Poços de Caldas (Minas Gerais, Brazil) (Fig. 11), posteriorly transferred to *Tapinillus* by Santos & Brescovit (2003).

Of the four species of *Tapinillus*, *T. longipes* has the wider distribution in America, being distributed from Costa Rica and Panamá, to Perú, French Guiana, Brazil, and northern Argentina (Griswold, 1983; World Spider Catalog, 2018), while the other species have distribution only in Brazil. Nevertheless, although Simon (1898) considered the distribution of *T. longipes* as "America Tropica", according with Flórez & Sánchez (1995) and as far as we know, previous surveys have not reported yet the genus *Tapinillus* in Colombia, so here we present a new official record of *T. longipes* from the country, at the Amazonas, Boyacá, Guaviare, Meta, Valle del Cauca and Vaupés departments, along with a complementary description of the species. Additionally, we present *T. caldensis* (García-Neto, 1989) as a new junior synonym of *T. longipes* (Taczanowski, 1872), based on sexual characters of both males and females.

The material examined is deposited in the Arachnological collection of the Instituto de Ciencias Naturales (ICN-Ar,

E. Flórez), Universidad Nacional de Colombia, Bogotá, Colombia. The photographs were obtained from several images taken using a Leica MC-170 HD digital camera attached to a Leica M205A stereomicroscope, and then stacked using the Leica Application Suite version 4.6.0. The information in square brackets was added to complement the label data. Records without coordinates in the label were approximated to locations and/or municipalities via GoogleMaps©, and the gazetteers GeoLocator© and GeoNames©, by means of the point method, with datum WGS84. Morphological nomenclature and description formats follows Santos & Brescovit (2003). The measurements are in millimeters. Morphological abbreviations used in the text and images are as follows: C = conductor, CD = copulatory duct, CO = copulatory opening, E = embolus, FD = fertilization duct, MA = median apophysis, P = paracymbium, S = median septum, SP = spermathecae, Spe = spermophore, T = tegulum, V = ventral tibial apophysis. Museum abbreviations are as follows: MNRJ = Museu Nacional do Rio de Janeiro, Universidad Federal de Rio de Janeiro, Brazil; PAN = Muzeum i Instytut Zoologii, Polska Akademia Nauk (Polish Academy of Sciences), Warsaw, Poland.

This manuscript is part of a series of taxonomic papers about the diversity and distribution of lynx spiders from Colombia.

Results

Oxyopidae Thorell, 1870

Tapinillus Simon, 1898

***Tapinillus longipes* (Taczanowski, 1872)**

Fig. 1-20

Isopus longipes Taczanowski, 1872: 105, pl. 4, fig. 9 (three males and some adult and juvenile females sintypes, from French Guiana, Cayenne, deposited in PAN, not examined).

Peucetia longipes: Keyserling, 1881: 581, pl. 16, figs. 25-25a.

Tapinillus longipes: Simon, 1898: 379; Mello-Leitão, 1929: 518, pl. 2, figs. 37-39; World Spider Catalog, 2018.

Peucetia caldensis García-Neto, 1989: 117, figs. 1-4 (female holotype and male paratype, from Brazil, Minas Gerais, Poços de Caldas, Morro do Ferro, deposited in MNRJ 1479, examined by photographs, fig. 19; and two males and one female paratypes, from Brazil, Minas Gerais. Poços de Caldas, Caixa D'Água).

Tapinillus caldensis: Santos & Brescovit, 2003: 97. **NEW SYNONYM.**

DIAGNOSIS. Until a taxonomic revision of *Tapinillus* is made, with the re-description of all its type specimens, no comparison can be made with the other species of the genus. Especially because *T. purpuratus* was described without any illustration (see Mello-Leitão, 1940: 201), and *T. roseisterni* was apparently described with a sub-adult female (see Mello-Leitão, 1930: 368, fig. 74c). However, males of *T. longipes* are characterized by their long embolus and conductor, short paracymbium and cymbium, and long and curved median apophysis (Figs. 5-7). Females can be recognized by their wide median septum, short copulatory ducts and medial copualtory openings and spermathecae (Figs. 8-10).

MATERIAL EXAMINED. Colombia, **Boyacá**: Pajarito, Corinto, Quebrada La Limona, [5.28°N, 72.69°W], 1600 masl, 1 female juvenile, 2/IX/1981, I. de Arévalo (ICN-Ar 69). **Meta**: Acacías, Vereda La Esmeralda, Centro Agroturístico Araguaney, [3.99°N, 73.76°W], 514 masl, 1 male, 2 females, 1 juvenile, 19-22/IV/2004, E. Flórez & Estudiantes Sistemática Animal Universidad Nacional de Colombia (ICN-Ar 2724-2725); [San Luis de Cubarral], Cubarral, Vereda Mayoral, [3.76°N, 73.83°W], 630 masl, 1 female, 1 juvenile, XII/1985, no coll. (ICN-Ar 426); Restrepo, Caney Alto, alrededores Río Caney, [4.29°N, 73.56°W], 700 masl, 1 female, 22/X/1994, M. Camargo, I. León (ICN-Ar 8319); San Juan de Arama, Reserva Natural La Macarena, Estación Inderena, [3.29°N, 73.93°W], 580 masl, 1 female, IX/1991, Estudiantes de Biología Universidad Nacional de Colombia (ICN-Ar 425); San Martín, Reserva Natural El Caduceo, [3.67°N, 73.64°W], [400 masl], 2 females, 4 juveniles, 25-29/X/2010, D. Martínez, C. Romero, T. González, N. Martelo (ICN-Ar 5307, 5309); same locality, 16/V/2006, G. Beltrán (ICN-Ar 4234); Villavicencio, Vereda Apiay, [4.08°N, 73.56°W], 450 masl, 1 male, 1 female, 2 juveniles, 14/X/2003, A. Ricos, V. Phandanouvong (ICN-Ar 4252); same municipality, Vereda La Llanerita, Finca Villa Franca de Oria, Caño Piñalito, [4.18°N, 73.61°W], 450 masl, 1 female, 17/X/2011, Estudiantes Taxonomía Animal Universidad Nacional de Colombia (ICN-Ar 5717). **Valle del Cauca**: [Buenaventura, Parque Nacional Natural Uramba Bahía Málaga], Juanchaco, [3.92ºN, 77.35ºW], [10 masl], 1 female, 2013, C. Cantor (ICN-Ar 8396). **Guaviare**: San José del Guaviare, [2.56°N, 72.64°W], 185 masl, 1 male, 4 females, X/2003, E. Flórez & Estudiantes de Taxonomía Animal Universidad Nacional de Colombia (ICN-Ar 8320); same municipality, Vereda Playa Güio, Finca Puerto Amor, 2.5795ºN, 72.7136ºW, 210 masl, 29.IX.2014, C. Alonso (ICN-Ar 8395). **Vaupés**: Taraira, bajo río Apaporis, Lago Taraira, Estación Biológica Mosiro-Itájura (Caparú), 1.06°S, 69.51°W, 200 masl, 1 female, IX/2002-V/2003, L. Benavides (ICN-Ar 8318). **Amazonas**: Leticia, [4.17°S, 69.96°W], 100 masl, 1 female, 1 juvenile, 5/XI/2001, C. Pinzón (ICN-Ar 815); same municipality, Isla Ronda, [4.15°S, 69.99°W], 95 masl, 1 female, 2/XI/2003, Estudiantes Sistemática Animal (ICN-Ar 2346); same municipality, km 11 vía Tarapacá, [4.14°N, 69.92°W], 100 masl, 1 female, 4/XI/2001, E. Flórez & Estudiantes Sistemática Animal Universidad Nacional de Colombia (ICN-Ar 1184); same municipality, Parque Nacional Natural Amacayacu, Isla Mocagacu, [4.17°S, 69.96°W], 300 masl, 1 female, X/2001, M. Ardila (ICN-Ar 4231).

DESCRIPTION. **Male** (ICN-Ar 8320, Figs. 1-2). Carapace light brown, thoracic groove brown. Clypeus, chelicerae, labium and endites yellow. Sternum light brown and legs brown with coxae I and II with dark brown marks, all legs with metatarsi darker. Palp light brown with cymbium brown and pilose, with short paracymbium and long median apophysis (Figs. 5-7). Dorsum of abdomen yellowish with two marginal pale-white bands (Figs. 1-2), and venter of abdomen orange. Spinnerets dark brown. Total length 6.75, carapace 2.58 long, 2.13 wide. Eye diameters: AME 0.11, ALE 0.28, PME 0.24, PLE 0.17. Abdomen 4.17 long, 0.47 wide. Tibia I length 4.17, II absent, III 3.75, IV 3.19.

Female (ICN-Ar 8320, Figs. 3-4). Carapace pale yellow, thoracic groove brown. Clypeus light brown, chelicerae distally dark brown, labium and endites dark brown. Sternum yellowish with the anterior edge dark brown and legs brown with coxae I and II with dark brown marks, distal tibiae with one brown rings and metatarsi with three brown rings. Palp light brown. Dorsum of abdomen gray with marginal white bands. Venter of abdomen orange. Spinnerets dark brown.

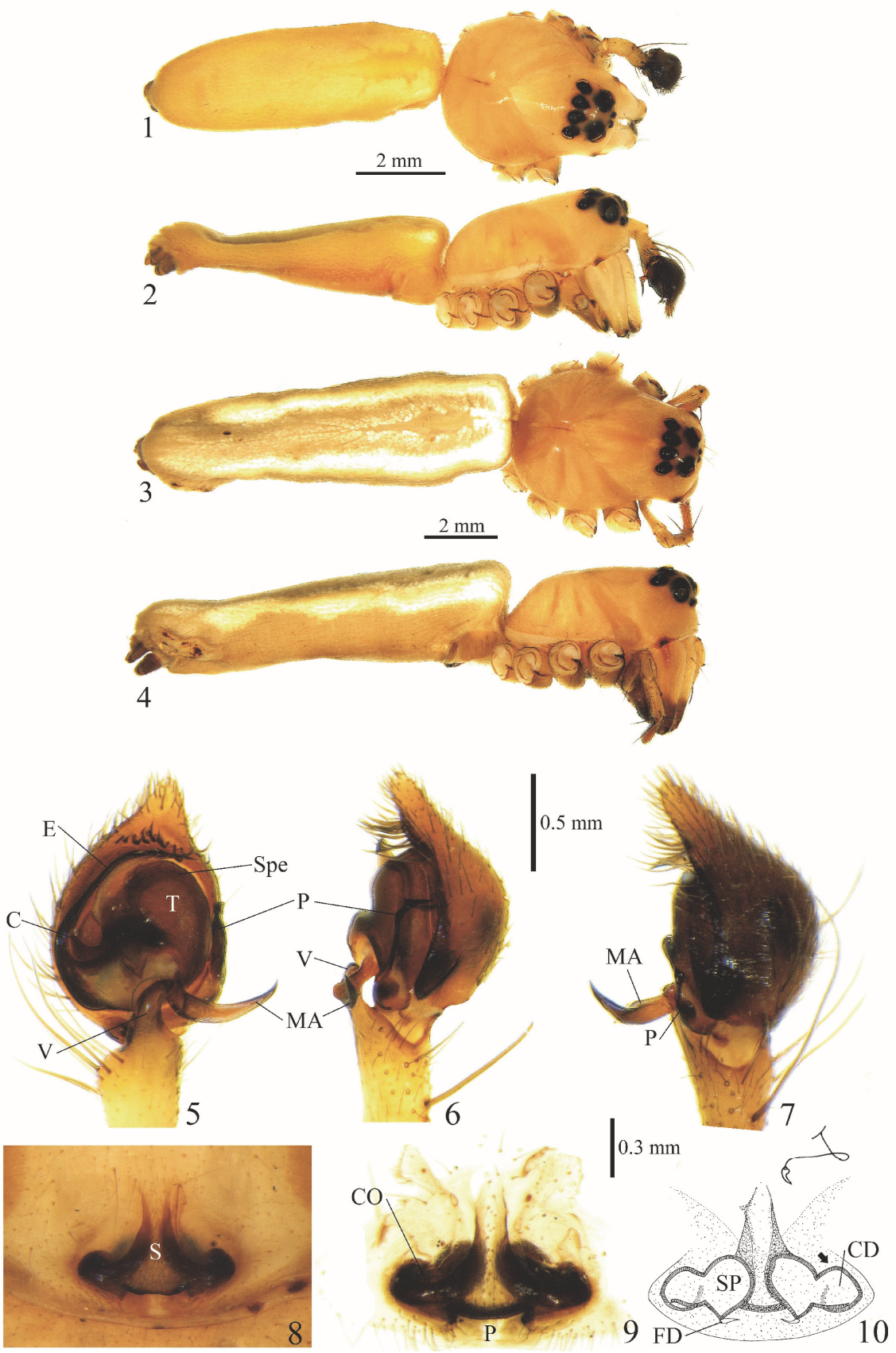


Fig. 1-10. *Tapinillus longipes* (Taczanowski) from Colombia. **1.** male from San José del Guaviare (Guaviare, ICN-Ar 8320), habitus; **2.** same, lateral view; **3.** female from Restrepo (Meta, ICN-Ar 8319), habitus; **4.** same, lateral view. **5.** left male palp, (ICN-Ar 8320), ventral view; **6.** same, retrolateral view; **7.** left male palp (ICN-Ar 2725), retrolateral view; **8.** female epigyne, (ICN-Ar 8319), ventral view; **9.** same, cleared, ventral view; **10.** same, cleared, dorsal view.

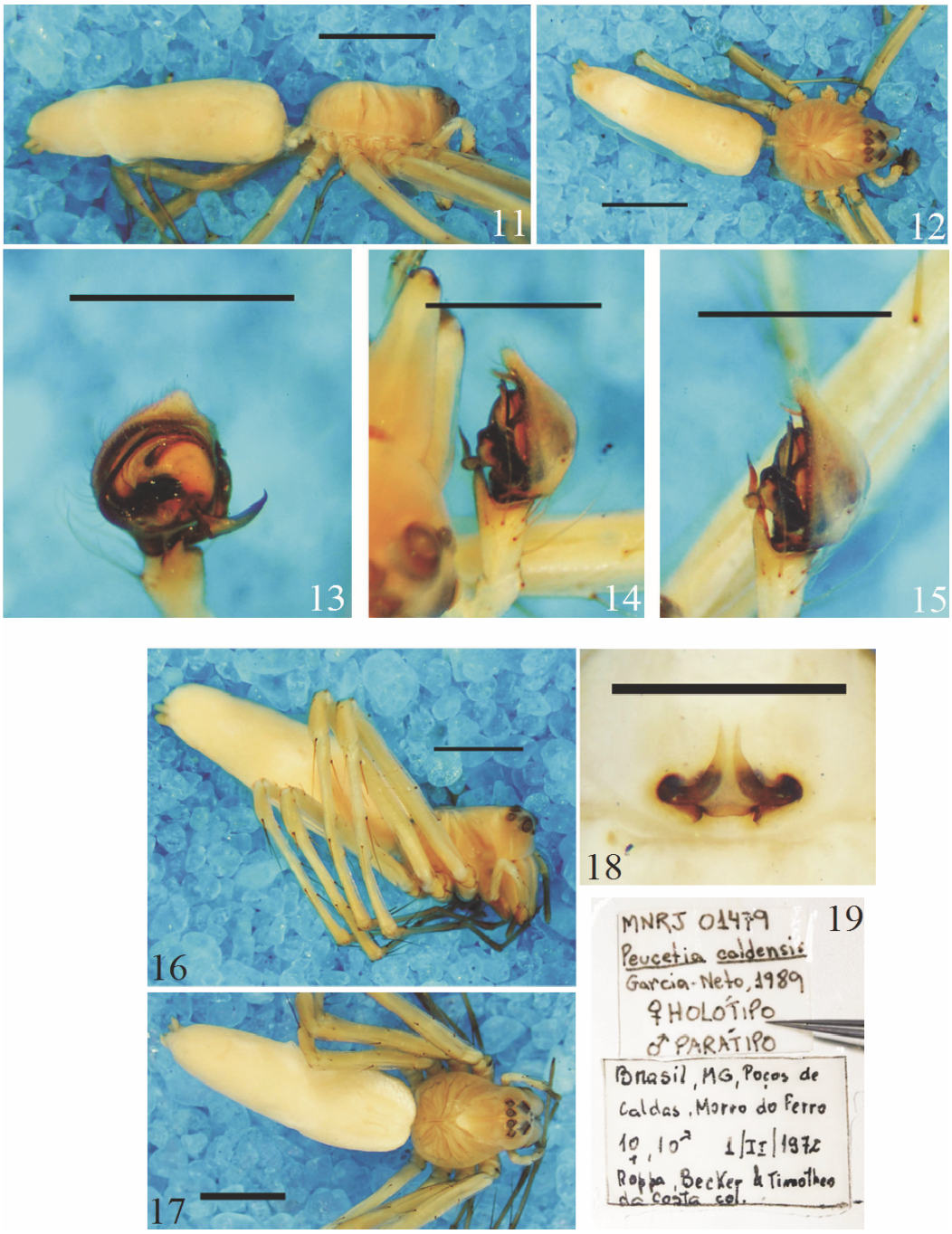


Fig. 11-15. Male paratype of *Tapinillus caldensis* (García-Neto) **new synonym** (MNRJ 1479). **11.** lateral view; **12.** same, dorsal view; **13.** right palp, ventral view; **14-15.** same, prolateral view. **Fig. 16-19.** Female holotype of *Tapinillus caldensis* (García-Neto) **new synonym** (MNRJ 1479). **16.** lateral view; **17.** same, dorsal view; **18.** epigyne, ventral view; **19.** same, original label. Scale bars: 2.0 mm (11-12; 16-17); 1.0 mm (13-15; 18).

Internal genitalia with two oval spermathecae, with posterior-median and external copulatory openings, short and wide copulatory ducts and posterior fertilization ducts, and a wide median septum (Fig. 8-10). Total length 8.71, carapace 3.24 long, 2.53 wide. Eye diameters: AME 0.09, ALE 0.31, PME 0.21, PLE 0.20. Abdomen 6.22 long, 1.70 wide. Tibia I length 5.06, II 4.92, III 3.94, IV 3.85.

Variation. Total length: males 6.75-8.53 (n=4), females 8.39-10.09 (n=19). Males of *Tapinillus caldensis* (Figs. 11-15) presented a little shorter cymbium, and females (Figs. 16-18) presented a little wider medial septum. These size differences are not enough no keep these species as separate lineages.

Distribution and Comments. Costa Rica (Heredia), Colombia (Amazonas, Boyacá, Guaviare, Meta, Valle del Cauca, Vaupés), Trinidad & Tobago (Trinidad Island), French Guiana (Cayenne), Brazil (Amazonas, Bahía, Minas Gerais), and unknown localities in Panama, Venezuela, Peru and northern of Argentina (Fig. 20). New record of the genus from Colombia. Known altitudinal distribution: 30-1600 masl. Avilés (1994) and Griswold (1983) presented information about the ecology and behavior of the genus/species.

Note. Photographs of the type material of *T. longipes* were requested but apparently is lost (*pers. comm.* Wioletta Wawer, at PAN).



Fig. 20. Known distribution of the genus *Tapinillus* Simon (Oxyopidae) in South America. Dots = *T. longipes* (big yellow dot: type locality; green dots: new records; white dots: previous published records); Square = *T. purpuratus*; Star = *T. longipes* (type locality of *T. caldensis* **new synonym**); Triangle = *T. roseisterni*.

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