

Contributions on the spider families Nesticidae and Pholcidae (Araneae) from Argentina

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Abstract: A new species of *Nesticus* Thorell, 1869, *N. salta* sp. nov., and a new species of *Guaranita* Huber, 2000, *G. dobbey* sp. nov., are described from the Chaco Serrano ecoregion of Salta Province (Argentina). The female of *G. yaculica* Huber, 2000 is described for the first time, and the known distribution of *G. munda* (Gertsch, 1982) is enlarged to Jujuy Province, northern Argentina.

Key words: Spiders, Nesticidae, *Nesticus*, Pholcidae, *Guaranita*, new species, new record, Argentina

1. Introduction

Argentine spider diversity is much greater than that presently known. While progress has been made in taxonomic knowledge of some families for the country in recent decades, there is still much to study and certainly a big amount of different habitats to be sampled. This will sharply increase the number of recorded species in the country, as well as the discovery of ones new to science. For more than a decade, the research group of the IEBI (Instituto para el Estudio de la Biodiversidad de Invertebrados) was sampling in a variety of environments in different ecoregions of northern Argentina. In this work, we consider specimens of the spider families Nesticidae and Pholcidae that belong to the IEBI collection of the Museum of Natural Science (National University of Salta, Argentina).

Nesticidae Simon, 1894 is a spider family that includes 228 species in 13 genera (World Spider Catalog, 2015). They are small and cribellate spiders, recognized by a combination of characters that include a rebordered labium, and the presence of a well-developed basal paracymbium on the palp of the male; the females are characterized by a large palpal claw (Brescovit et al., 2002; Paquin and Hedin, 2005). Three genera were reported in South America, of which only *Nesticus* Thorell, 1869 has been recorded for Argentina, with 3 species (Ott and Lise, 2002; World Spider Catalog, 2015): *Nesticus brignolii* Ott and Lise, 2002; *Nesticus calilegua* Ott and Lise, 2002; and

Nesticus ramirezi Ott and Lise, 2002. The genus actually includes 138 known species (World Spider Catalog, 2015), the majority of which are cavernicoles from temperate areas (Lehtinen and Saaristo, 1980; Gertsch, 1984), while South American species were found on epigeal habitats, such as shrubs near the ground; under stones, bricks, and tiles; and in litter or debris (Ott and Lise, 2002; Faleiro and Santos, 2011). Males of South American species differ from Holarctic ones because the copulatory organs are simpler, with males having 2 processes at the paracymbium and a single suprategular process, and the course of the spermatid ducts (in the suprategulum) configures a loop (Ott and Lise, 2002). Females, on the other hand, can be diagnosed by the prominent epigynum (Gertsch, 1984) and the vulval gland with a gland duct (Lehtinen and Saaristo, 1980; Ott and Lise, 2002).

The spider family Pholcidae Koch, 1850 currently includes 1455 known species distributed in 79 genera (World Spider Catalog, 2015). They are among the most species-rich spider families and most of them occur in tropical and subtropical regions all over the world (Huber, 2014). The members of this family are mostly easily distinguished by the shape of the male pedipalp, which is modified in a characteristic process on the palpal tarsus, called the procurus (Huber, 2000). There is relatively low pholcid diversity in Argentina: 8 genera with 17 known species are reported to date (Torres et al., 2015; World Spider Catalog, 2015), the majority of them recorded in

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the northwestern part of the country (Huber, 2014). The spiders belonging to the genus *Guaranita* Huber, 2000 are tiny, with short legs, globular opisthosoma, and 8 eyes. They are distinguished from other short-legged pholcid genera by the large flap dorsally on the procurus (Huber, 2000). This genus is represented by 3 species, all of them recorded in Argentina (Huber, 2000; World Spider Catalog, 2015): *G. yaculica* Huber, 2000; *G. goloboffi* Huber, 2000; and *G. munda* (Gertsch, 1982). According to Huber (2000), the species of the genera can only be distinguished by features of the palp of the males, not by the characters of the female epigyne because they are very similar among species. Torres et al. (2015) enlarged the known distribution of *G. yaculica* in different localities to North Argentina especially to Calilegua National Park (Jujuy Province) and San Roque Department (Corrientes Province). Of material collected in that natural protected area, we describe and illustrate in this paper the unknown female of *G. yaculica*, and we report the presence of *G. munda* for the first time for Jujuy Province. In addition, we describe 2 new species collected in the Chaco Serrano of the province of Salta: *Nesticus salta* sp. nov. and *Guaranita doobby* sp. nov.

2. Materials and methods

Specimens of this study were collected during different ecological studies carried out by the IEI Team realized in northern Argentina, mainly in the provinces of Jujuy and Salta. All of them were collected between 2006 and 2011 using a standardized sampling protocol, which included pitfall traps for epigeal spiders. Samples were taken positioning 10 pitfall traps at 10-m intervals along a transect line in each site; pitfall traps consist of plastic containers (7.5 × 12.2 × 5.2 cm, upper end diameter × depth × lower end diameter) filled with aqueous salt solution (1 kg salt/8 L water) plus a few drops of detergent. Samples were stored and transported in prelabelled polyethylene bags containing ethanol (70%). The material was deposited in FML (Invertebrates Collection of the Miguel Lillo Foundation, Tucumán, Argentina) and in IEI-MCN (Collection of the IEI, Museum of Natural Sciences, Salta National University, Salta, Argentina). The specimens were observed under an Olympus Stereoscopic Microscope SZ4540. All measurements are in millimeters. The terminology used for the new species of *Nesticus* follows Gertsch (1984), and the format of the description and measurements of the new pholcid species follows Huber (2000). The epigynum of *G. yaculica* was dissected under alcohol and cleared in lactic acid (90%) for 15–20 min in a double boiler. SEM images of *G. doobby* sp. nov., taken at low vacuum with backscattering electron scanning signal, were obtained using a JEOL 6480LV

scanning electron microscope at the LASEM (Laboratorio de Microscopía Electrónica de Barrido y Microanálisis, UNSa, Salta, Argentina). Images of *G. munda* were taken using a Canon PowerShot G10 digital camera mounted on the microscope. The distribution map was generated using QGIS Wien-2.8.1 software (QGIS Development Team, 2015).

3. Taxonomy

Family Nesticidae Simon, 1894

Genus *Nesticus* Thorell, 1869

Diagnosis. *Nesticus* resembles *Aituaria* Esyunin and Efimik, 1998 and *Carpathonesticus* Lehtinen and Saaristo, 1980, but can be distinguished by the following characters (Esyunin and Efimik, 1998; Le Peru, 2011): 1, *Nesticus* is distinguished from *Aituaria* and *Carpathonesticus* by the embolus long, thin, without modified apex; 2, the median apophysis moderately longer in *Nesticus* than in *Carpathonesticus*; 3, the paracymbium distally entire in *Nesticus*, but more pointed in *Aituaria* and *Carpathonesticus*; and 4, epigynal plate wide posteriorly in *Nesticus*, but wide anteriorly in *Aituaria* and *Carpathonesticus*.

Distribution. *Nesticus* includes 138 species, worldwide distributed, mainly in the United States of America, Japan, and China. Only nine species are present in South America, especially in French Guyana, Brazil, Chile, Argentina, and Uruguay. In Argentina, only three of these species were reported (World Spider Catalog, 2015).

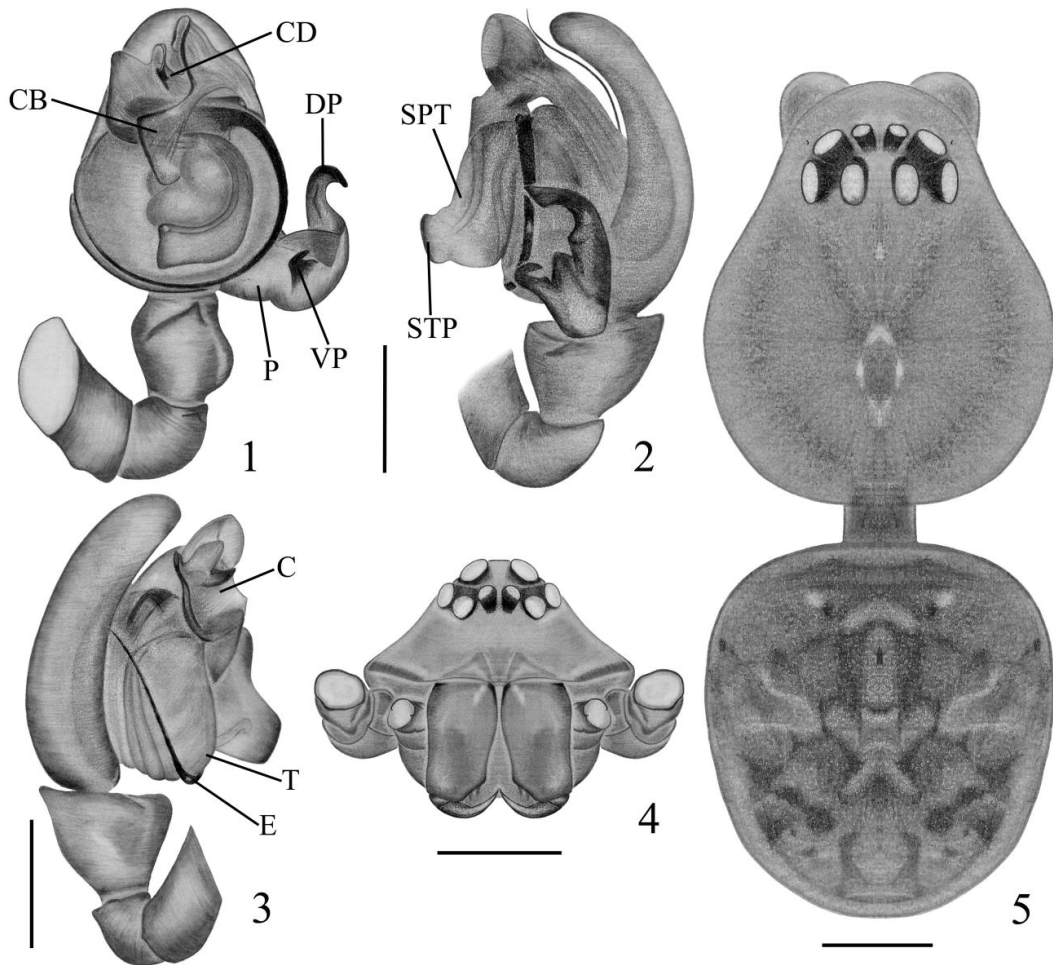
***Nesticus salta* sp. nov.**

Figures 1–6

Type material. Male holotype (FML 02173), Castellanos, Provincial Route 28, 2 km W of north of Salta city (24°43'2.4"S, 65°26'2.4"W, 1286 m a.s.l.), Capital Department, Salta Province, Argentina, 03.XI.2006, IEI Team Cols.

Etymology. The noun in apposition was taken from the type locality.

Diagnosis. Males of *Nesticus salta* sp. nov. can be recognized by: the shape of the two-branched paracymbium showing a translucent membrane between them, the ventral process of the paracymbium is slender and hook-shaped, while the dorsal one is larger, with a keel and blunt ending (Figures 1 and 2); the great conductor with a slender base arising from the center of the bulb (Figure 1) continuing in a very deep concave medial and distal portion ending in a three-lobulated border (Figures 1 and 3) (prolateral lobe subrectangular, the middle one small with a sharp small tip, and retrolateral rounded); and the presence of a quadrangular suprategular process (Figure 2). Males of *N. salta* sp. nov. resemble those of *N. ivone* Faliero and Santos, 2011 and *N. brigolii* by the



Figures 1-5. *Nesticus salta* sp. nov.: male holotype: 1. left palpus, ventral view; 2. retrolateral view; 3. prolateral view; 4. prosoma, frontal view; 5. habitus, dorsal view. Scale bars: 1-3 = 0.10 mm; 4-5 = 0.20 mm. Abbreviations. (C) Conductor, (CB) Conductor basal portion, (CD) Conductor distal portion, (DP) Paracymbium dorsal process, (E) Embolus, (P) Paracymbium, (SPT) Suprategulum, (STP) Suprategular process, (T) Tegulum, (VP) Paracymbium ventral process.

presence of a tegulum wider than the cymbium, but differ from them by the shape of the suprategular process and the conductor. Furthermore, the absence of a median process in the paracymbium and hook-shaped paracymbium processes distinguish the males of *N. salta* sp. nov. from those of the former and latter species, respectively.

Male holotype. *Description.* Carapace yellow-brown, with margins slightly darkened and inconspicuous fovea (Figure 4). Chelicerae, endites, and labium yellowish; sternum yellowish slightly dotted by dark points, margins darker; black circle around eyes (Figures 4 and 5); legs yellowish. Opisthosoma rounded, dorsal color pattern with light brown spots as in Figure 4. All tegument with microsetae. *Measurements.* Total length 1.3. Carapace 0.75 long, 0.65 wide, 0.18 high. Clypeus 0.15 high. Chelicerae 0.20 long, 0.15 wide. Endites 0.18 long, 0.18 wide. Labium

0.13 long, 0.15 wide. Sternum 0.50 long, 0.45 wide. Eyes diameter and interdistances: AME 0.04, ALE 0.08, PME 0.08, PLE 0.08, AME-AME, AME-ALE, and PME-PLE 0.01, PME-PME 0.05. MOQ 0.13 long, on both, dorsal and frontal view, 0.15 anterior wide and 0.10 posterior wide. Opisthosoma 0.55 long, 0.45 wide, 0.56 high. Legs: I. femur 0.80, patella 0.30, tibia 0.78, metatarsus 0.63, tarsus 0.45, total 2.96; II. 0.56, 0.30, 0.56, 0.46, 0.38, 2.26; III. 0.48, 0.43, 0.40, 0.35, 0.35, 2.01; IV. 0.43, 0.33, 0.80, 0.56, 0.45, 2.57. Palpus. 0.35, 0.10, 0.13, 0.30, 0.88. Note: first right leg missing.

Female. Unknown.

Distribution. Known only from the type locality (Figure 6).

Family Pholcidae Koch, 1850

Genus *Guaranita* Huber, 2000

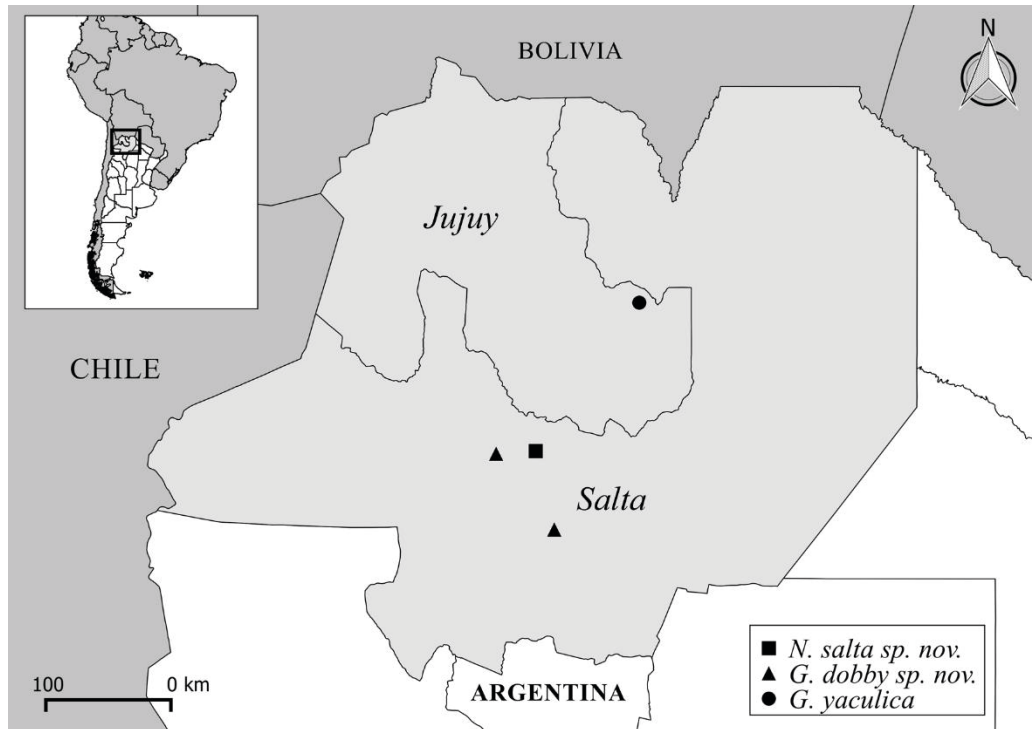


Figure 6. Geographic distribution of *Nesticus salta* sp. nov., *Guaranita doobby* sp. nov., and *G. yaculica* Huber, 2000.

Diagnosis. Tiny pholcids (total length ~1 mm), with short legs, globular opisthosoma, eight eyes; distinguished from other short-legged genera by the large flap dorsally on the procurus (Huber, 2000).

Distribution. *Guaranita* is represented by 3 species, all of them recorded in Argentina: *G. yaculica* Huber, 2000; *G. goloboffi* Huber, 2000; and *G. munda* (Gertsch, 1982), the last also reported for Brazil (World Spider Catalog, 2015).

***Guaranita doobby* sp. nov.**

Figures 6–12

Type material. Male holotype (FML 02179), Provincial Route 47, 9 km E of Cabra Corral dam (25°17'40.8"S, 65°17'1.8"W, 947 m a.s.l.), La Viña Department, Salta Province, Argentina, 03.XI.2006, IEBI Team Cols. Male paratype (MCN-IEBI 003-000918) 1 km N of Charrillos (24°44'16.8"S, 65°45'16.8"W, 2238 m a.s.l.), Rosario de Lerma Department, Salta Province, Argentina, 24.II.2006, IEBI Team Cols.

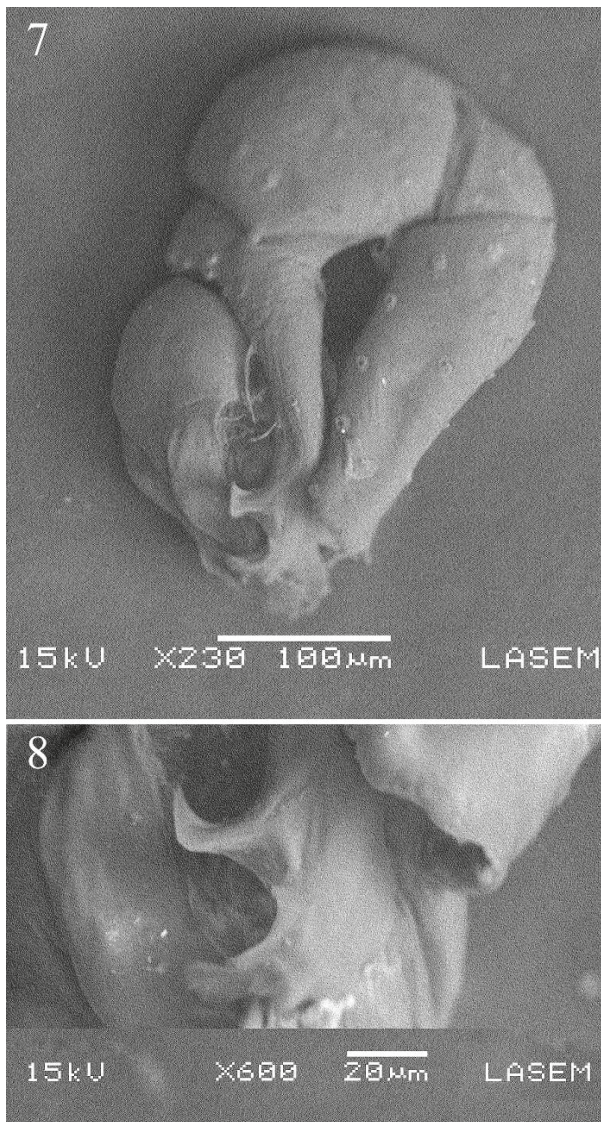
Etymology. The specific name is a noun in apposition taken by the second author from “*Dobby*” of the Harry Potter saga, an elf whose nose resembles the frontal clypeal projection in this species.

Diagnosis. The species is distinguished from all other members of the genus (*G. yaculica*, *G. goloboffi*, and *G. munda*) by the procurus with a smaller concave dorsal

flap (Figures 7 and 8) and the anterior hooked clypeal projection (Figure 9).

Male holotype. Total length 1.16, carapace width 0.42; leg 1: (0.15 + 0.08 + 0.63 + 0.14 + 0.59 + 0.50, tarsus missing), tibia II: 0.50, tibia III: 0.45, tibia IV missing; tibia I L/d: 9. Lateral habitus as in Figure 9; entire prosoma pale ocher-yellow. Carapace without thoracic groove; distance PME–ALE about 30% of PME diameter; clypeus with an anterior hooked projection; sternum with a pair of small frontal humps (Figure 373, in Huber, 2000); chelicerae resemble those of *G. goloboffi*, with a pair of long, distally hooked, and frontal apophyses, with few stridulatory ridges laterally (Figure 10), stridulatory pick is a modified hair proximally on palpal femur (see arrow in Figure 11); palp in general as in *G. munda*, except by meaningfully different procurus, with a smaller and concave dorsal flap and slightly different distal sclerites (Figure 12), coxa without a retrolateral apophysis, femur almost cylindrical, wider distally, tibia globular, bulb as in Figure 11. Legs without rings; probably without spines, without curved and vertical hairs (most hairs missing). Opisthosoma gray, ventrally pale, with slightly darker genital plate (Figure 9).

Remark. The types of *G. doobby* sp. nov. come from the Yungas and Monte de Sierras y Bolsones ecoregions of the province of Salta. The holotype was collected from



Figures 7-8. *Guaranita dobyi* sp. nov.: 7. left palpus, retrolateral view; 8. dorsal flap on the procurus.

a humid rainforest (Yungas) considered one of the most diverse regions in the country. The Monte is characterized by a semiarid environment dominated by xerophilous plants such as *Larrea* sp., *Prosopis* sp., and *Atriplex* sp., and several cactus species such as *Cereus* sp. and *Trichocereus* sp. (Bertonatti and Concuera, 2000; Morello et al., 2012). This ecoregion is important for conservation, since it presents a certain grade of degradation due to natural desertification processes and anthropogenic activities (González Reyes et al., 2012).

Female. Unknown.

Distribution. Known for Salta Province, Argentina (Figure 6).

Guaranita yaculica Huber, 2000

Figures 6 and 13–15

Guaranita yaculica: Huber, 2000: 97, Figure 378. Male holotype from Aguas Blancas -Yaculica (22°43'S, 64°24'W, 520 m a.s.l.), Salta, Argentina, in American Museum of Natural History, not seen.

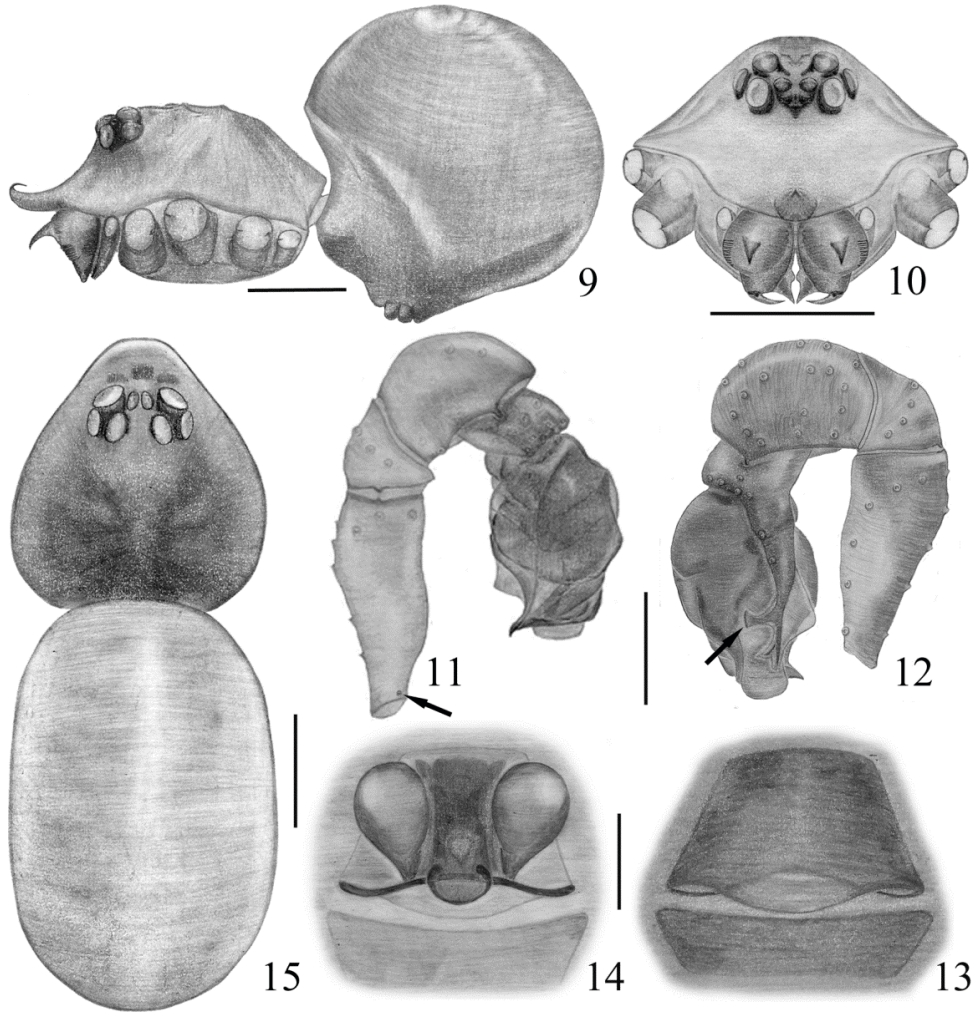
Diagnosis. Huber (2000) diagnosed the species by the size and the shape of the male procurus dorsal flap, being large and roundish. The female of *G. yaculica* is distinguished from *G. goloboffi* and *G. munda* by a wider separation between plates of epigynum, and the larger posterior plate with straight anterior border (Figures 13 and 14).

Description of the female (FML 02180). Total length 1.00, carapace width 0.45, length 0.55; leg I: 2.21 (0.60 + 0.18 + 0.55 + 0.53 + 0.35), tibia II: 0.43, tibia III: 0.44, tibia IV: 0.66; tibia I L/d: 9. Habitus as in Figure 15, carapace orange-ocher; darkened on borders, without thoracic groove, eyes circled with black, distance PME–ALE about 30% of PME diameter. Clypeus orange-ocher with dark spots and chelicerae and sternum orange-ocher, without humps. Legs without spines, without curved and vertical hairs; tarsus I with ~5 pseudosegments. Opisthosoma oval, ocher-gray, with microsetae. Epigynum simple externally, light brown flat plate as in Figure 13, internally with small semicircular median structure, and a pair of receptacles (Figure 14).

Examined material. Argentina. Jujuy Province: Ledesma Department: Calilegua National Park, Caimancito oilfield, around Oil Well 4 (23°37'01.5"S, 64°36'03"W), male, immature, (MCN-IEBI 003-000691), 26.X.2010, IEBI Team Cols.; Caimancito oilfield, around Oil Well 35 (23°37'10.3"S, 64°35'41.7"W), male, female, (FML 02180), 07.VI.2011, IEBI Team Cols.; Caimancito oilfield, around Oil Well 1, male, (MCN-IEBI 003-000693), 07.VI.2011, IEBI Team Cols.; Calilegua National Park, north margins of Zanjón Seco string (23°41'13.1"S, 64°34'26.2"W), male, (MCN-IEBI 003-000694), 07.VI.2011, IEBI Team Cols.

Remark. Female was assigned to *G. yaculica* because she was collected together with a male of that species in the same pitfall trap. In the same locality, near the site where this species was reported, we collected for the first time for the province of Jujuy together a male and a female of *G. munda*. Actually, there is no other species of this genus registered in these localities. It permits us to assert without doubt that the female here described belongs to *G. yaculica*.

Distribution. Known for Salta and Corrientes provinces (Huber, 2000; Torres et al., 2015), and Jujuy Province (Figure 6), Argentina.



Figures 9–15. *Guaranita dobbie* sp. nov.: male holotype: 9. habitus, lateral view; 10. prosoma, frontal view; 11. left palpus, prolateral view (arrow points to stridulatory pick); 12. retrolateral view (arrow points to dorsal flap on the procurus). Scale bars: 9–10 = 0.20 mm; 11–12 = 0.10 mm. *Guaranita yaculica* Huber, 2000: female: 13. epigynum, dorsal view; 14. epigynum, ventral view; 15. habitus, dorsal view. Scale bars: 13–14 = 0.10 mm; 15 = 0.20 mm.

***Guaranita munda* (Gertsch, 1982)**

Figures 16–18

Pholcophora munda Gertsch, 1982: 104, Figures 31–33, 42–44.

Guaranita munda (Gertsch): Huber, 2000: 100, Figures 379–380.

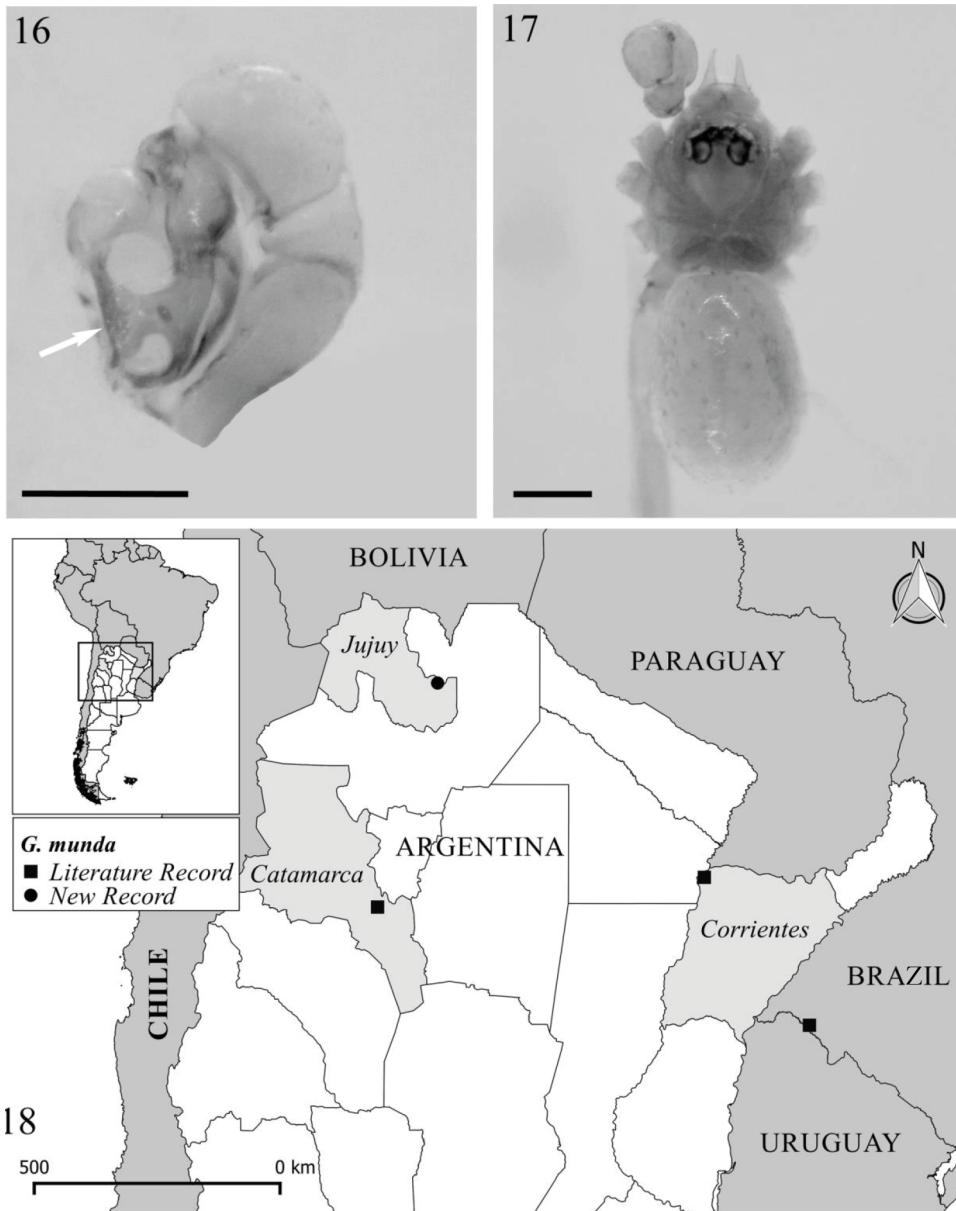
Diagnosis. Distinguished from congeners by the large T-shaped dorsal flap on the procurus (arrow in Figure 16) and the slightly different embolar division (Huber, 2000).

Distribution. *G. munda* (Figure 17) is known from the Cerro Colorado locality of Catamarca Province (Huber, 2000), in Laguna Brava locality of Corrientes Province (Avalos et al., 2006), both of them from Argentina; and

in Quarái, Rio Grande do Sul state, from Brazil (Huber, 2000). Here, we enlarge the distribution of this species to the province of Jujuy (Argentina) (Figure 18).

Examined material. Argentina. Jujuy Province: Ledesma Department: Caimancito oilfield, around Oil Well 1 (23°38'43.24"S, 64°36'15.50"W), male, female, (MCN-IEBI 003-000919), 07.VI.2011, IEBI Team Cols.

Remark. We report a new record of *G. munda* for the Caimancito oilfield in Calilegua National Park, of the province of Jujuy, Argentina. This new record expands the northern distribution limit of this species. This place corresponds to a mountain forest of Yungas, which is a dense and humid forest of perennial vegetation with a



Figures 16–18. *Guaranita munda* (Gertsch, 1982): male: 16. left palpus, retrolateral view (arrow points to dorsal flap on the procurus); 17. habitus, dorsal view. Scale bars 16–17 = 0.20 mm. 18. Geographic distribution of *G. munda* (Gertsch, 1982).

high biodiversity in the north of Argentina (Bertonatti and Corcuera, 2000). Environments where *G. munda* and *G. yaculica* were found correspond to a highly modified environment due to oil exploitation activities over the last 3 decades (Administración de Parques Nacionales and Fundación ProYungas, 2006). The presence of both species in this area might be a hint about the ability of these species to tolerate that kind of disturbance.

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