INTRODUCTION

The gnaphosid spider fauna of South America has a great level of endemicity; of the 25 genera reported from the region, 13 are exclusive endemics. The recent synopsis of gnaphosid genera by Murphy (2007) expedited the discovery of some of these endemic genera from southern Brazil (e.g., Ott 2012, 2014; Ott & Brescovit 2012), and allowed to appreciate the regional diversity in a global perspective. Of the 14 groups of genera proposed by Murphy, only six (Zelotes, Laronius, Herpyllus, Echemus, Leptodrassex and Hemicloea groups) are well represented in South America and make the bulk of gnaphosid diversity in the region; of the remaining groups, eight are not represented in South America (except by a few, probably misplaced species of Drassodes Westring). We report here a new gnaphosid species from Argentina, extremely atypical and seemingly unrelated with any of the groups present in South America. The specimens were collected in an expedition to the northern part of Santa Fe province, by a team from the Division of Arachnology of the Museo Argentino de Ciencias Naturales. As shown by the progress in the digitization of the National Collection of Arachnology, the northern part of Santa Fe, although extremely diverse, is only superficially sampled for spiders.

MATERIAL AND METHODS

Specimens are deposited in the Arachnological Collection of the Museo Argentino de Ciencias Naturales “Bernardino Rivadavia”, Buenos Aires, Argentina (MACN-Ar, Cristina L. Scioscia and Martín J. Ramírez). Drawings were made using a camera lucida mounted on a Leitz stereoscopic microscope or an Olympus BH–2 compound microscope. The internal genitalia were cleared in clove oil. Photographs of the preserved specimens were taken with a Leica DFC 290 digital camera mounted on a Leica M165 C stereoscopic microscope, and the focal planes were composed with Helicon Focus 4.62.2. Scanning electron mi-
crographs were taken under high vacuum with a FEI XL30 TMP after critical point drying and gold-palladium coating. All measurements are in millimeters. Abbreviations and terminology follow, where possible, Platnick & Shadab (1988); only surfaces bearing spines listed. Laboratory procedures to obtain the DNA barcode were performed at the barcoding molecular laboratory of the Museo Argentino de Ciencias Naturales “Bernardino Rivadavia”. Genomic DNA was extracted from one leg following a glass fiber-based extraction protocol developed by Ivanova et al. (2006). A primer cocktail including the Folmer (Folmer et al. 1994) and Lep (Hebert et al. 2004) primers was used to perform the polymerase chain reaction (PCR). The PCR mix consisted of 82.5 µl water, 125 µl 10X buffer, 62.5 µl MgCl₂ (25 mM), 6.25 µl dNTP (10 mM), 6.25 µl of each primer (0.01 mM) and 6.25 µl Taq DNA polymerase (5 U/ml), for a total volume of 10.5 µl (to which we added 2 ul of genomic DNA). The PCR reaction profile included an initial denaturation at 94°C for 2 min, 5 cycles of 94°C for 30 sec, annealing at 45°C for 40 sec, and extension at 72°C for 1 min, 35 cycles of 94°C for 30 sec, annealing at 51°C for 40 sec, and extension at 72°C for 1 min, and a final extension at 72°C for 10 min. Amplicons were visualized on 2% agarose E-GelH 96-well system. The PCR products were run on 3.5% agarose E-GelH 96-well system and extracted from one leg following a glass fiber-based extraction protocol. Sequences were deposited in the project Spiders of Argentina of the Barcode of Life Data Systems (BOLD; Ratnasingham and Hebert 2007) along with the specimen information.

SYSTEMATICS

Family GNAPHOSIDAE
Genus Verita gen. nov.

Type species: Verita williamsi n. sp., by monotypy.

Etymology: The generic name is noun in apposition, taken from a diminutive of Vera, the department where the type locality is located.

Diagnosis: Verita differs from most other gnaphosids genera in having the ALS with their bases relatively close to each other (Fig. 2E), only two piriform spigots (Figs. 4B, 5B), and the foreleg scopulae with relatively large setae in two lines (Figs. 3A–C). The only genera with this combination of characters are Micaria and some small representatives of the Anzacia group such as Nauhea and Homoeothoele (which are also similar in overall morphology). Verita differs from all of them having three teeth in the cheliceral retromargin (Fig. 6D; one in Nauhea and two in Homoeothoele), and lacking iridescent squamose scales in the abdomen. It also differs from Micaria by having normal, large eyes.

Description: Small sized gnaphosids (total length 2.33−2.79). Carapace elongate oval in dorsal view (Figs. 1C, 2C), widest at rear of coxae II, gently narrowed at level of palpal insertion, cephalic area elevated, thoracic area with abruptly sloping; thoracic groove short, posterior to declivity; color chestnut brown; all carapace covered with needle-like setae, mostly forwardly oriented. Eyes: from above, anterior eye row slightly recurved, posterior eye row almost straight; from front, both rows strongly procurred (Figs. 1D, 2D); AME circular, dark, PME obliquely rectangular, with silvery oblique tapeta at 90°; ALE and PLE oval, silvery; eyes subequal in size, PLE slightly smaller; all eyes about evenly spaced except ALE nearly touching AME; MOQ longer than wide. Clypeal height less than AME diameter. Chelicerae with three small retromarginal teeth (Fig. 6D), promargen unoothed. Endites rectangular, with oblique depression shallow; labium nearly trapezoidal, almost as long as its basal width, distally truncated; sternum nearly heart shaped, longer than wide, pointed behind coxae IV. Legs: spination reduced to distal tarsi I and II (Fig. 3A–C), absent on III and IV. Tarsi IV pseudosegmented in both sexes. Claw tufts composed of three spinate setae in two lines, from distal end of metatarsi and two in Homoeothoele (which are also similar in overall morphology).
the spinnerets. Tracheal spiracle small, just before spinnerets (Fig. 4A). Spinnerets: Anterior lateral spinnerets with basal article tronco-conical, separated from each other by less than their diameter, distal article only represented by setae at sides of major ampullate field; major ampullate spigots on mesal margin, two piriform spigots on inflatable membranous area, with shaft well differentiated from base (Figs. 4A, B, 5A, B). Cylindrical gland spigots in female, slightly larger than minor ampullate gland spigots, three in a single line on posterior median spinnerets, and two on posterior lateral spinnerets (Fig. 4C, D). Aciniform spigots small, present on posterior lateral spinnerets (Figs. 4C, D). Modified spigot of posterior lateral spinnerets in center of spinning field, atrophied in male (Figs. 4D, 5E). Genitalia: Male palp with simple, pointed retrolateral tibial apophysis (Fig. 6C); copulatory bulb with simple looping sperm duct, median apophysis simple, hook-shaped, articulating, embolus short and thick, articulate (Fig. 6A–C). Epigyne with anterior hood and narrow median field, secondary spermathecae small, large anterior seminal receptacle and complex primary spermathecae; Bennet’s glands small, everted (Fig. 6E, F).

Verita williamsi, new species
(Figs. 1−6)

Type material. Male holotype and female paratype from Argentina: Santa Fe: Vera: Estancia Las Gamas, margin of flooded area on Ruta Nacional 98, 16.5 km (air) W Vera, S 29.41382° W 60.37438° (GPS, +150m), elev. 23 m (GPS), 19–24 Mar. 2014, manual collecting on base of *Cyperus laetus* (Fig. 7A, B), M. Ramírez, C. Grismado, L. Piacentini & M. González Márquez (MJR-Loc-160), deposited in MACN-Ar 31357; collected in copula. Paratypes: same data, 2 males, 1 female, together with 2 juveniles.
(MACN-Ar 31356), 1 male (MACN-Ar 32193, tissue sample CJG-3242/MLB 00751, BOLD Process ID SPDAR842-14).

**Etymology.** The specific epithet is a patronymic in honor to the Fundación Williams, for its important and continued support in the digitization and conservation of the scientific collections of the Museo Argentino de Ciencias Naturales.

**Diagnosis.** As for the genus.

**Description.** **Male** (holotype, Figs. 1, 6A–C): Total length 2.46. Carapace 1.16. Femur II 0.861. Eye sizes and interdistances: AME 0.0678, ALE 0.0646, PME 0.0795, PLE 0.0667; AME-AME 0.0171, AME-ALE almost touching, PME-PME 0.0277, PME-PLE 0.0469, ALE-PLE 0.0331; MOQ length 0.205, front width 0.191,
Ramírez & Grismado: Nuevo género de Gnaphosidae de Argentina

back width 0.191. Leg spination: pattern (only surfaces bearing spines listed): male: femora: I-IV dl-0-0; tibiae: III p1-1, r1subap, v1-0-2ap, IV p1-1, r1subap, v2-0-2ap; metatarsi III p1-1ap, r1-1ap, v1-2ap, IV p1-1, r1-1ap, v2-2-2ap. Spinnerets (spigots from MACN-Ar 31358): Anterior lateral

Fig. 3. *Verita williamsi* sp. nov., female leg I structures, scanning electron microscope. A left leg I, prolateral view, B same, detail of tarsus, C same, detail of tarsal scopula and feathery scales, D tarsal trichobothria, E tarsal organ, F tarsal claws and claw tuft, prolateral view, G same, apical view.
spinnerets with one thin ampullate gland spigot and a posterior nubbin (Fig. 5B). Posterior median spinnerets with one minor ampullate gland spigot, plus a nubbin in a common mound with a large tartipore, and about six aciniform gland spigots (Fig. 5C, D). Posterior lateral spinnerets with atrophied modified spigot, and about 7 aciniform spigots (Fig. 5 E). Genitalia: palp with retrolateral tibial apophysis pointed, slightly curved, displaced to dorsal side (Fig. 6C); bulb with simple looping sperm duct, with small hook-shaped median apophysis arising from non sclerotized area, embolus origin on the prolateral side of tegulum, articulating on dark tegular knob; embolus ribbon-like, with two consecutive marginal extensions, the distal one nearly trans-
lucent; embolus tip fitting in small concavity of distal retrolateral part of tegulum, with elevated borders (Fig. 6A–C).

**Female** (paratype MACN-Ar 31357, Fig. 2): Total length 2.52. Carapace 1.14. Femur II 0.745 long. Eye sizes and interdistances: AME 0.0736, ALE 0.0725, PME 0.0804, PLE 0.0569; AME-AME 0.04, AME-ALE 0.01, PME-PME 0.0324, PME-PLE 0.0457, ALE-PLE 0.0444; MOQ length 0. 207, front width 0.181, back width 0.187. Leg spination: (only surfaces bearing spines listed) femora: I-IV dl-0-0; tibiae: III p1-1, v1-2ap, IV p1-1, r1-1subap, v2-2ap; metatarsi III p1-1ap, r1-1ap, v1-2ap, IV p1-0-1ap, r1-0, v2-2-2ap. Spinnerets (spigots from MACN-Ar 31355): Anterior lateral spinnerets with two ampullate gland spigots (Fig. 4B). Posterior median spinnerets with two minor ampullate gland spigots, one of them flanked by a large tartipore, about four aciniform gland spigots, and three cylindrical spigots on a longitudinal line on posterior end (Fig. 4C). Posterior lateral spinnerets with two cylindrical gland spigots on mesal margin, a modified spigot, and about 10 aciniform spigots (Fig. 4 D). Epigyne with narrow median field, flanked by two posterolateral blind concavities.

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**Fig. 5. Verita williamsi sp. nov., male spinnerets, scanning electron microscope. A overview of spinnerets, B left anterior lateral spinneret, C, D right posterior median spinneret, E right posterior lateral spinneret, F epiandrum. (Ac = aciniform gland spigot; ALS = anterior lateral spinneret; MaAm = major ampullate gland spigot; MiAm = minor ampullate gland spigot; (MS) = nubbin of modified spigot of PLS; Nu = nubbin of ampullate gland spigot; Pi = piriform gland spigot; PLS = posterior lateral spinneret; PMS = posterior median spinneret; Tp = tartipore of ampullate gland spigot; TrSp = tracheal spiracle).**
with curved, elevated borders. Wide copulatory openings leading to lateral, small secondary spermathecae; the copulatory duct continues to a common, large longitudinal duct that connects the anterior, large and oval seminal receptacle with the posterior, complex primary spermathecae from where the fertilization ducts arise; small, everted Bennet’s glands placed laterally (Fig. 6E, F).

**Distribution.** Known only from northern Santa Fe Province, Argentina.

**Other material examined.** Same data as the types, 1 female (MACN-Ar 31355, preparations MJR 1504-1506, CJG 1491), 1 male (MACN-Ar 31358, preparations MJR 1502-1503. Santa Fe: General Obligado: old bridge, 1.7 km SW Berna, S 29.28495° W 59.86164° (GPS, +−50m), elev. 32 m (GPS), 23.Mar.2014, grassland with Coleataenia prionitis and palm trees (Fig. 7C), manual collecting, M. Ramírez, C. Grismado, L. Piacentini & M. González Márquez (MJR-Loc-164) 1 male, 1 juvenile (MACN-Ar 31437); 1 male, 1 juvenile (MACN-Ar 31438).

**Natural history.** All the specimens were collected on the base of plants in flooded areas (Fig. 7).

**Barcode.** Standard barcode with COI of male paratype MACN-Ar 32193 (Fig. 1E):
DISCUSSION AND CONCLUSIONS

The anterior lateral spinnerets of the new species *Verita williamsi* are very atypical for a gnaphosid. While in gnaphosids these spinnerets are cylindrical and widely spaced (Platnick 1990: fig. 1), in *Verita* are tapering and moderately spaced (Figs. 2E, 4A). A close examination of their spinnerets reveals the reduction of the terminal article of those spinnerets, typical of gnaphosids and prodidomids (Platnick 2002; see also Ramírez 2014, character 247). The piriform spigots lack the accompanying setae typical of prodidomids (Platnick 2002; see also Ramírez 2014, character 247). The piriform spigots lack the accompanying setae typical of prodidomids (Platnick 2002; see also Ramírez 2014, character 247). Only few gnaphosid genera were reported with this morphology of piriform spigots (e.g., Platnick 1990: figs. 80, 86), and among these, *Micaria* and the *Anzacia* group as proposed by Murphy (2007) coincide in other characters as well: a small number of piriform spigots (one in *Micaria*, two in *Homoeothele* and *Nauhea*), and the leg scopulae made of relatively large setae in two lines, as in *Micaria*. Other

Fig. 7. Habitats of *Verita williamsi*. A. Type locality, showing sorting of plants at margin of flooded area (collectors Luis Piacentini and Maria Eugenia González Márquez in photo). B. Plant of *Cyperus laetus*, where the specimens were collected. C. Grassland with *Coleataenia prionitis* and palm trees near Bemor; the specimens were collected at the base of the large grasses *C. prionitis*.
The closest matches are specimens of *Zelotes rainier* Platnick & Shadab (GenBank accessions KP650046, KP651402) and an unidentified spider from New Zealand (KP422419). Eight species of *Micaria* had 86–89% sequence similarity. None of these databases contain sufficient coverage to clarify the relationships of *Verita*, but both are compatible with a close relatedness with *Micaria*.

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