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### Bayana labordai, new genus and species of Nemesiidae (Araneae: Mygalomorphae) from Northern Uruguay and Southern Brazil

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## ***Bayana labordai*, new genus and species of Nemesiidae (Araneae: Mygalomorphae) from Northern Uruguay and Southern Brazil**

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A new genus and species of a mygalomorph nemesiid spider collected in a hill of Northern Uruguay and in Araucaria forest at Southern Brazil is diagnosed, described and illustrated. A remarkable characteristic of the new genus is its dense body pubescence, unusual in most Nemesiidae. Also genital and somatic characters led to differentiate it from related genera. The habitat is characterized by a tubular burrow followed by an aerial tubular portion made with silk and vegetation. The sexual behaviour is briefly described from a copula between the types, observed in the laboratory.

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**Keywords:** Nemesiidae; *Bayana*; spider-taxonomy; new-genus; new-species; nemesiid-burrow

### **Introduction**

Raven (1985) established the family status of Nemesiidae Simon, 1889, considering as senior synonym of Pycnothelidae Chamberlin, 1917, including several genera previously described in other families. Several authors questioned nemesiid monophyly (Raven 1985; Goloboff 1993, 1995; Hedin and Bond 2006). Although Goloboff (1993) stressed the difficulties of establishing a morphological definition of nemesiids, new species with the character combination attributed to the family remain described up to date in that family.

Nemesiids from Argentina, Chile, Peru and Uruguay were revised by Goloboff (1995), who presented a cladistic analysis of the taxa studied. After that, several contributions on the taxonomy of Brazilian species were done by Indicatti and Lucas (2005), Lucas and Indicatti (2006), Indicatti et al. (2008a), Lucas et al. (2008) and Lucas and Indicatti (2010). Up to 2011 Nemesiidae contained six subfamilies, 43 genera and 364 species (Raven 1985; Platnick 2013). After a cladistic analysis, Indicatti et al. (2011) proposed that all Neotropical Nemesiidae belong to the monophyletic Pycnothelinae, but accepted the clade Diplothelopsini as monophyletic (Indicatti, pers. comm.).

The Pycnothelinae contains the genera: *Hermachura* Mello-Leitão, 1923, *Neostothis* Vellard, 1925, *Prorachias* Mello-Leitão, 1924, *Psalistopoides* Mello-Leitão, 1934, *Pselligmus* Simon, 1892, *Pycnothele* Chamberlin, 1917, *Rachias* Simon, 1892 and *Stenoterommata* Holmberg, 1881 (Raven 1985; Indicatti and Lucas 2005; Lucas and

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Indicatti 2006; Lucas et al. 2008; Lucas and Indicatti 2010). To date, eight species of Nemesiids have been cited for Uruguay.

In this article we describe the new genus *Bayana* included in Nemesiidae by the presence of bipectinate superior tarsal claws (Goloboff 1995), absence of tarsal claw tufts, labium wider than long and low caput. *Bayana* is placed in Pycnothelinae by the conformation of the male bulb with the presence of keels near the embolus and of a developed cheliceral tumescence (Raven 1985), which is covered by setae (Goloboff 1995). We here describe and figure the new genus *Bayana* based on its type species *B. labordai*; we additionally give some data on its sexual behaviour and habitat.

### Material and methods

The material examined was deposited in the arachnological collection of Facultad de Ciencias, Montevideo, Uruguay (FCE-My) and Museu de Ciência e Tecnologia, Pontifícia Universidade Católica do Rio Grande do Sul, Porto Alegre (MCTP). Spination notation follows Pérez-Miles et al. (2008). All measurements are in millimeters. Abbreviations: AME, anterior median eyes; ALE, anterior lateral eyes; PME, posterior median eyes; PLE, posterior lateral eyes; PMS, posterior median spinnerets; PLS, posterior lateral spinnerets; STC, superior tarsal claws; ITC, inferior tarsal claw. D, dorsal; V, ventral; P, prolateral; R, retrolateral; X, mean.

### Taxonomy

*Bayana* gen. nov.  
(Figures 1–7)

#### *Type species*

*B. labordai* sp. nov.

#### *Diagnosis*

*Bayana* gen. nov. resembles *Neostothis*, *Pycnothele*, *Lycinus* Thorell, 1894 and *Diplothelopsis* Mello-Leitão, 1938 by the dense pubescence in the body (Figure 1 vs. Figures 8, 18 in Lucas and Indicatti (2010)). Resembles *Pycnothele* also by the excavation in male palpal tibia and in the supraspermathecal chamber of females but differ from this genus in the palpal bulb morphology with low keels, embolous long and excavation in male palpal tibia less deep; females differ in the tubular morphology of spermathecae and in the absence of apical scopulae on tibiae I–II. Resembles *Neostothis* in the palpal bulb morphology with a long embolous and in the presence of supraspermathecal chamber in females, but differs from this genus in the presence of palpal bulb keels, male palpal excavation on tibia I and the morphology of spermathecae without fundus differentiated. *Bayana* differs from *Lycinus* and *Diplothelopsis* in the occurrence of thin setae in male cymbium (Figure 2a), absence of prolateral spines on female patella IV (Figure 2b) and PE line recurved (Figure 2c). Differs from *Chilelopsis* Goloboff, 1995 in the absence of strong, elongated spines on prolateral metatarsus IV; from *Flamencopsis* Goloboff, 1995 in the presence of



Figure 1. *Bayana labordai* sp. nov., habitus of the female.

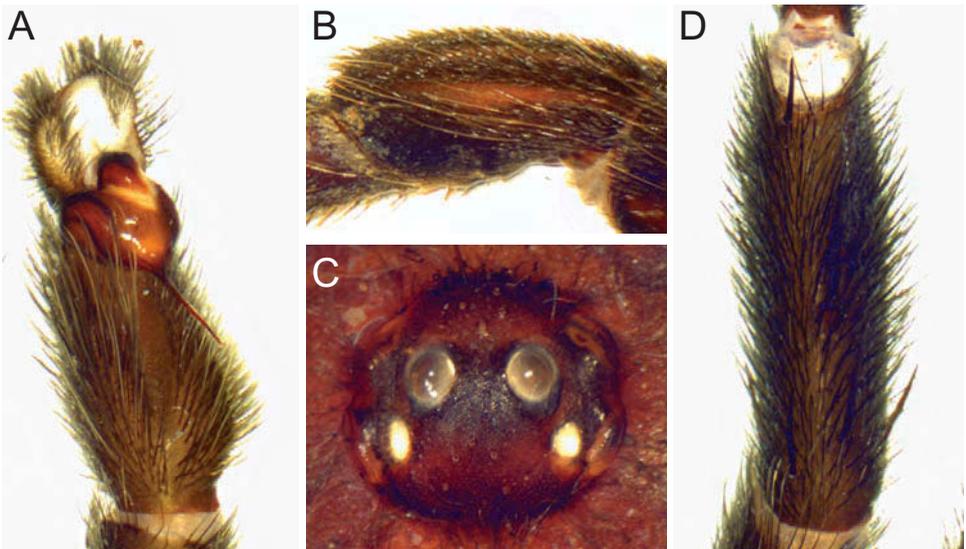


Figure 2. (A–D) *Bayana labordai* sp. nov., (A) male palp showing thin setae on cymbium, ventral view; (B) female patella IV, showing the absence of spines, prolateral view; (C) female ocular area; (D) male tibia I showing the absence of tibial apophysis or megaspines, ventral view.

scopula on all legs and absence of spines on female patella IV. Resembles *Chaco* Tullgren, 1905 in the palpal bulb morphology but differ from this genus in the absence of male tibial apophysis bearing spines (Figure 2d) and non-differentiated spermathecae fundus in females (Figure 6). *Bayana* differs from *Acanthogonathus* Karsch, 1880 in the absence of male tibial apophysis and non differentiated spermathecae fundus in females; from *Rachias* Simon, 1892 in the absence of thickened setae delimiting male scopulae of tarsus IV and non reduced teeth on STC IV; from *Stenoterommata* Holmberg, 1881 by the dense pubescence in the body, and in the male palpal bulb abruptly tapered to embolus (Figures 4a, b).

#### *Etymology*

*Bayana* is a noun in apposition taken from the Uruguayan argot and makes reference to the habitants of the boundary between Brazil and Uruguay; the gender of *Bayana* is feminine.

#### *Description*

See description of the type-species.

#### *Bayana labordai* sp. nov (Figures 1–7)

#### *Type specimens*

Male Holotype from Cerro Miriñaque, Rivera, Uruguay (31°32'04"S 55°37'56"W), Oct. 22 2012. L. Montes de Oca, F.G. Costa, F. Pérez-Miles coll., (adult moult in the laboratory on Dec 25 2012) deposited in FCE-MY:1029. Paratypes: male (FCE-MY:1030), four females (FCE-MY:1031-1034) from the same site, date and collectors; male (MCTP: 14494) from Potreiro Velho (currently, Centro de Pesquisas e Conservação da Natureza Pró-Mata), São Francisco de Paula, Rio Grande do Sul, Brazil (29°28'21"S 50°09'25"W), Jul 19–22 1999, A.A. Lise coll.

#### *Etymology*

The specific name is a patronym in honour of Alvaro Laborda, a Uruguayan arachnologist who first collected the new species in Uruguay.

*Male holotype* (Figure 3a). Colouration (alive): Cephalotorax, legs and abdomen dark brown with longer reddish setae on the lateral faces of legs, edge of the carapace and on the abdomen. Dense body pubescence. Total length, excluding chelicerae and spinnerets 18.70. Cephalothorax 9.70 long, 8.40 wide. Fovea 1.30 wide, slightly procurved. Clypeus 0.26. Anterior eye row procurved, posterior straight to slightly recurve. AME 0.29, ALE 0.38, PME 0.10, PLE 0.41. Eye group subrectangular, 0.8 length, 1.3 wide. Chelicerae with 3 large – 2 small – 3 large teeth on the promargin and 8 small in a line on the retromargin. Rastellum formed by thin setae. Intercheliceral tumescence pale, round, covered by few thin reddish setae. Labium 0.60 long, 1.40 wide, with four cuspules. Palpal coxae with 40 and 34 cuspules

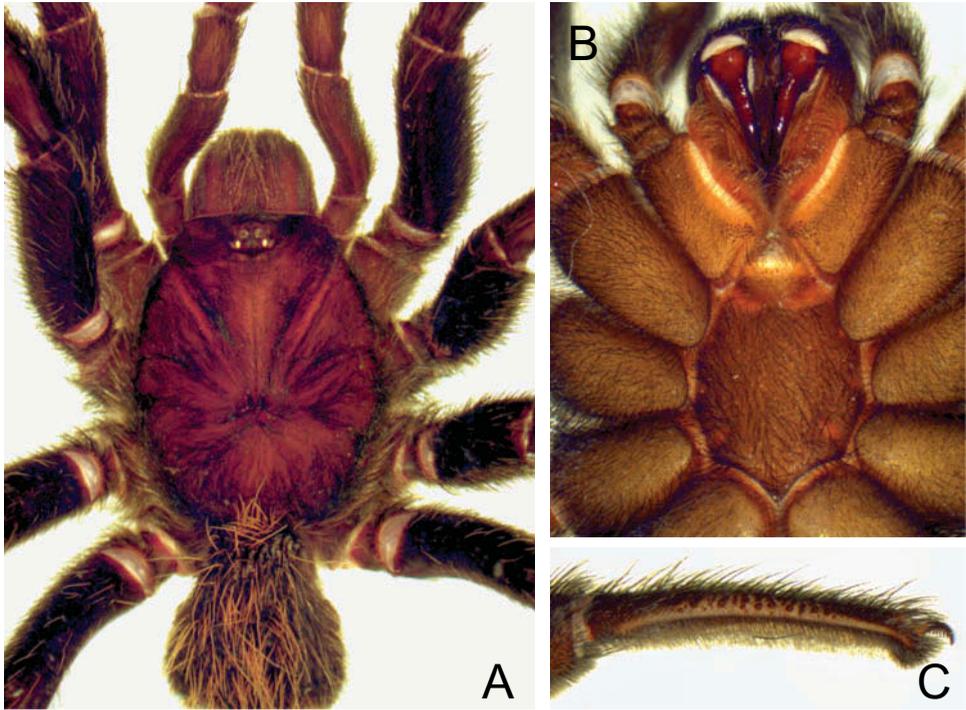


Figure 3. (A–C) *Bayana labordai* sp. nov., (A) male body, dorsal view; (B) male sternum, labium and endites, ventral view; (C) male tarsus IV flexible (lateral view).

disposed in a triangle in the angle between basal and prolateral edges. Serrula present. Sternum 4.10 long, 3.80 wide. Posterior sternal sigillae subtriangular, marginal; anterior and median sigillae present round and marginal (Figure 3b). Palp measurements: femur 4.4, patella 2.6, tibia 2.6, cymbium 1.4. Palp spination: femur 0, patella 0, tibia 2p, cymbium 0. Leg measurements: **I** femur 7.9, patella 5.0, tibia 5.5, metatarsus 5.6, tarsus 3.7; **II** 7.5, 4.2, 5.1, 5.5, 4.2; **III** 6.7, 4.1, 4.4, 6.4, 4.3; **IV** 8.8, 4.2, 6.6, 9.0, 4.8. Leg spination: **I** femur 1p, patella 0, tibia 5v2p, metatarsus 1p1v (with an elevated base), tarsus 0; **II** femur 0, patella 1p, tibia 5v2p3r, metatarsus 2v2p, tarsus 0; **III** femur 0, patella 1p, tibia 5v2p3r, metatarsus 2v2p, tarsus 0; **IV** femur 0, patella 0, tibia 2v1p3r, metatarsus 3v4p5r2d, tarsus 0. Tibia I thickened with subapical spine. Scopulae present on all tarsi; I–III entire, IV divided by a row of longer setae. Scopula present on 2/3 of metatarsi I–II, absent on III–IV. Tarsi I–IV flexible (Figure 3c). STC with a double row of 6 teeth on all tarsi, ITC absent on all tarsi. Four spinnerets, apical segment of PLS short and domed. Palp with incrassate tibia (Figure 2a), palpal bulb piriform, abruptly tapered to embolous; 12 small, short parallel keels on the basis of the embolous (Figures 4a, b). Palpal bulb which rests on a large and deep tibial excavation (Figure 2a).

*Female paratype* (FCE-MY: 1031) (Figure 1). Colouration (alive): as in male but with reddish setae more extended on abdomen, dense body pubescence. Total length excluding chelicerae 30.5. Cephalothorax 11.3 long, 8.6 wide. Fovea 2.2 wide, straight. Clypeus narrow 0.4. Anterior eye row procurved, posterior slightly recurved.

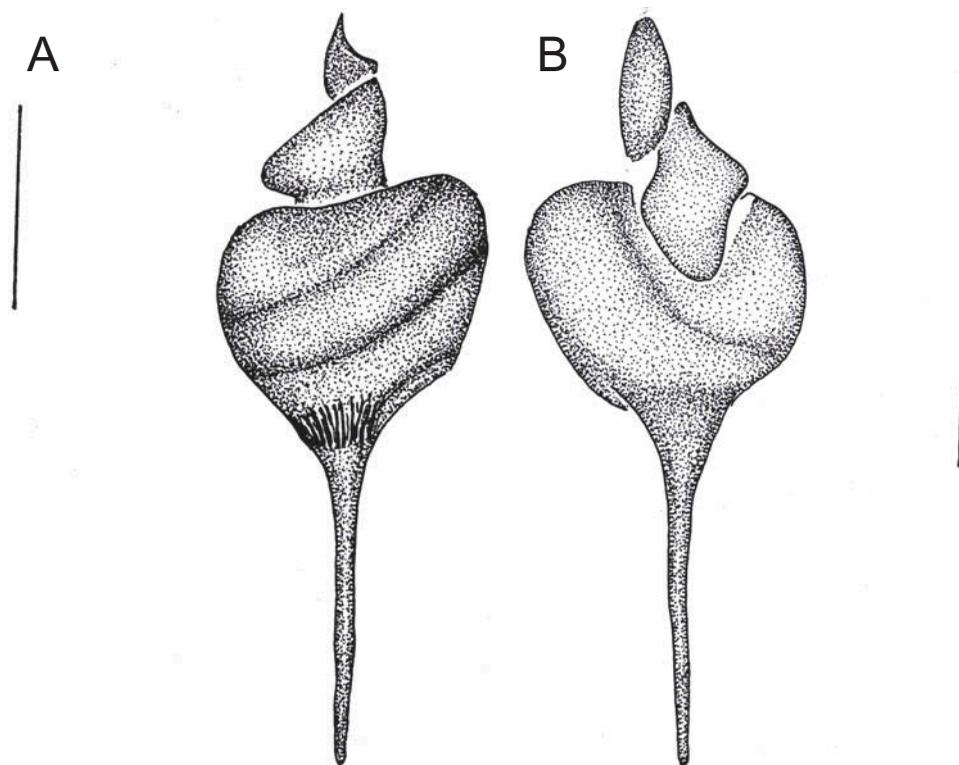


Figure 4. (A–B) *Bayana labordai* sp. nov., left male palpal bulb; (A) dorsal view; (B) ventral view (Scale 1 mm).

AME 0.31, ALE 0.41, PME 0.16, PLE 0.27. Eye group subrectangular, 0.79 long, 1.27 wide. Chelicerae with 7 large teeth on the promargin and 20 small on the retromargin, disposed in three lines. Rastellum formed by thin setae. Intercheliceral tumescence absent. Labium 1.1 long, 1.8 wide, with five cuspules. Palpal coxae with 40 and 47 cuspules disposed in a triangle in the angle between basal and prolateral edges. Serrula absent. Sternum 5.5 long, 5.3 wide. Posterior sternal sigillae subtriangular, marginal; anterior and median sigillae present round and marginal (Figure 5a). Palp measurements: femur 5.6, patella 3.2, tibia 3.2, tarsus 2.4. Palp spination: femur 0, patella 0, tibia 3v2p1r, tarsus 0. Palpal femur strongly curved (Figure 5b). Leg measurements: **I** femur 8.5, patella 5.5, tibia 5.3, metatarsus 4.8, tarsus 3.3; **II** 7.5, 5.1, 4.2, 4.4, 3.6; **III** 6.9, 4.0, 4.1, 4.7, 3.7; **IV** 7.7, 5.3, 6.5, 9.3, 4.4. Leg spination: **I** femur 0, patella 0, tibia 0, metatarsus 0, tarsus 0; **II** femur 0, patella 0, tibia 2v, metatarsus 2v1p, tarsus 0; **III** femur 0, patella 3p, tibia 3v, metatarsus 3v3p3r, tarsus 0; **IV** femur 0, patella 0, tibia 2v2r, metatarsus 1v2r2p, tarsus 0. Scopulae present on all tarsi, I–III entire, IV less dense and divided by a row of longer setae. Scopula complete on metatarsi I–II, III 1/5 apical, IV absent. Tarsi I–IV flexible. STC with a double row of 6 teeth; ITC absent on all tarsi. Four spinnerets, PLS with apical segment short and domed. Spermathecae formed by two subcylindrical receptacles, supraspermathecal chamber less developed (Figure 6).

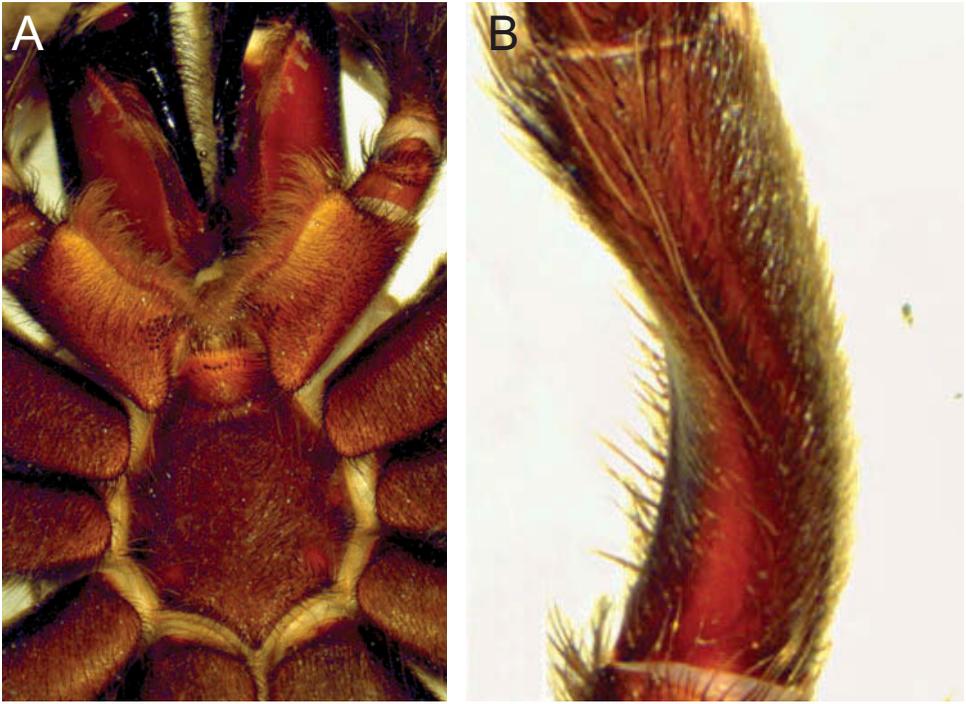


Figure 5. (A–B) *Bayana labordai* sp. nov., (A) female sternum, ventral view; (B) female palpal femur strongly curved, dorsal view.

*Variation.* Carapace length, males: 8.12–9.70; females: 9.13–12.25 ( $X = 10.61 \pm 1.45SD$ ). Length of palp and legs, males: palp 9.14–11.00, **I** 24.26–27.70, **II** 21.72–26.50, **III** 20.51–25.9, **IV** 29.64–33.40; females palp 13.01–15.51 ( $14.25 \pm 1.05$ ), **I** 23.13–27.77 ( $26.91 \pm 1.67$ ), **II** 21.75–25.14 ( $24.14 \pm 1.60$ ), **III** 19.51–24.01 ( $22.48 \pm 2.02$ ), **IV** 28.01–

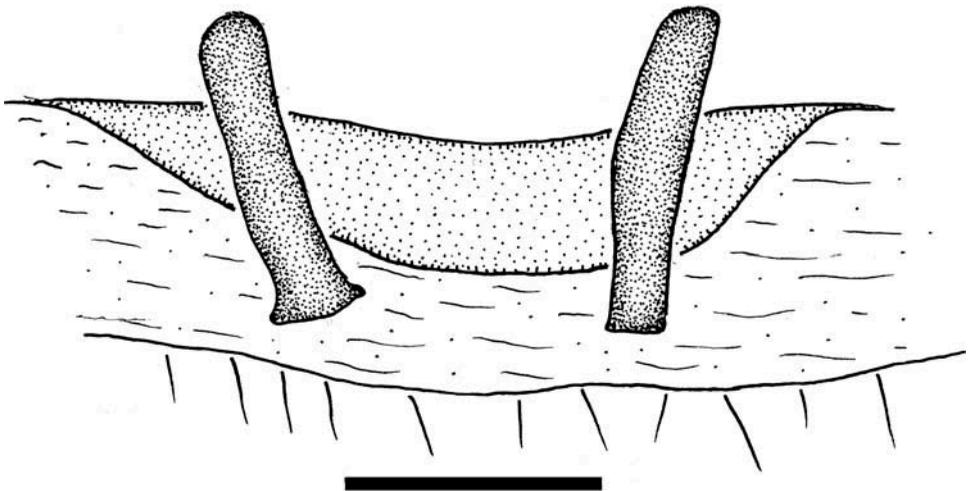


Figure 6. *Bayana labordai* sp. nov., female spermathecae, dorsal view (Scale 1 mm).

33.38 (32.08 ± 2.73). Labial cuspules, males 4–5; females: 3–11; cuspules on palpal coxae, males: 34–42, females: 30–53. Colouration dark to very dark brown with reddish longer setae on the lateral face of legs, edge of the carapace and on the abdomen.

### *Natural history*

Females and juveniles inhabit tubular basket-like burrows with a portion dug in the soil (about 15 cm deep) and an aerial portion (10 cm) constructed with silk and surrounding vegetation, mainly the Gramineae *Elyonurus muticus* (Spreng.) (Figure 7). The burrow has homogeneous diameter of 1.5–2.0 cm. Burrows were found on the southern slope and top of Miriñaque hill. Miriñaque is a flat hill of 282 m height, considered a relict as product of the erosive action on the basaltic shield. On the sandstone soil, a dense meadow matrix predominates with more than 80 species of grasses registered, most of them aestival. Also there are some patches of arborescent vegetation including *Myrrhinum lorantoides* (Hook. and Arn.), *Blepharocalix angustifolius* O.Berg in Mart., *Daphnopsis racemosa* Griseb., *Shinus lentiscifolius* March., *Shinus engleri* Barkley and *Litraea brasiliensis* (L.) March. The dwarf palm *Butia paraguayensis* (Barb.Rodr.) is a rare species present in this hill (Evia and Gudynas 2000). Other mygalomorph spiders present in this site are the theraphosids *Plesiopelma longisternale* (Schiapelli and Gerschman, 1942) and *Grammostola anthracina* (C.L. Koch, 1842).

The specimen from Brazil was collected by pit-fall trap in a different habitat: Mixed Ombrophilous Forest dominated by *Araucaria angustifolia* (Bertol.) Kuntze, with savannas at altitudes of about 900 m (see Indicatti et al. 2008b, p. 31); also occurring there are the theraphosid *Magulla brescoviti* Indicatti et al. 2008, the nemesiids *Stenoterommata arnolisei* Indicatti et al. 2008, *S. curyi* Indicatti et al. 2008, *S. grimpa* Indicatti et al. 2008, *S. palmar* Goloboff, 1995, *Acanthogonatus ericae* Indicatti et al. 2008 and the microstigmatid *Xenonemesia araucaria* Indicatti et al. 2008 (Indicatti et al. 2008a).

### *Sexual behaviour*

Both males moulted to adults in the laboratory on the 25 December 2012 (holotype and paratype FCE-MY 1030) and the female on 14–16 December 2012 (paratype FCE-MY 1031). The male holotype copulated the female paratype FCE-MY 1031 in the laboratory. Male initiated courtship after contacting the female silk tube, performing body vibrations. After touching the female, male placed his forelegs between the retrolateral face of female chelicerae and palps. The distal end of the first tibia of male was retained between the bases of female chelicerae and palp. The second pair of male legs surrounds the female between the second and third pair of legs. Forelegs push and the second pair of legs pulls the female, raising her and adopting the typical mygalomorph mating position (Type I, Foelix 2011). Probably the curved palpal femur of the female facilitates the passage of the male first leg. Fifteen alternate palpal insertions were observed during copulation. Mating duration was 44 minutes and took place in the entrance of the tubular burrow. After copulation the male walked away; we did not observe any attacks.



Figure 7. *Bayana labordai* sp. nov., female at the burrow entrance.

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