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Four new species and two new genera of theraphosid spider from Bolivia (Araneae: Theraphosidae)

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Abstract

Two new genera, *Bermejoa* **gen. nov.** and *Isiboroa* **gen. nov.** are described to house the species *Bermejoa zoeae* **sp. nov.** and *Isiboroa hamelae* **sp. nov.**, respectively. Two new species of existing genera are also described: *Plesiopelma manni* **sp. nov.** and *Reversopelma herzogi* **sp. nov.** *Homoeomma peruvianum* (Chamberlin, 1916) and *Acanthoscurria sacsayhuaman* Ferretti, Ochoa & Chaparro, 2016 from Peru are transferred to *Isiboroa* **gen. nov.**, based on palpal bulb morphology and the absence of a stridulation organ. Consequently, the new combinations *Isiboroa peruviana* **comb. nov.** and *Isiboroa sacsayhuaman* **comb. nov.** are proposed.

Keywords: biogeography ● Bolivia ● morphology ● Peru ● tarantula ● taxonomy

Introduction

Bolivia is a biogeographically diverse, land-locked, South American country, hosting tropical and subtropical broadleaf forests (both wet and dry), montane grasslands and shrublands, tropical and subtropical savannas, and flooded grasslands (Olson *et al*. 2001). These include world-famous ecoregions such as the Yungas and the Chaco. At present, there are currently 13 genera, with 21 species of theraphosid spider recorded from Bolivia (World Spider Catalog 2023): *Acanthoscurria chacoana* Brèthes, 1909, *Acanthoscurria insubtilis* Simon, 1892, *Acanthoscurria musculosa* Simon, 1892, *Acanthoscurria theraphosoides* (Doleschall, 1871), *Avicularia avicularia* (Linnaeus, 1758), *Avicularia rufa* Schiapelli & Gerschman, 1945, *Cyclosternum ledezmae* (Vol, 2001), *Cyriocosmus blenginii* Pérez-Miles, 1998, *Cyriocosmus perezmilesi* Kaderka, 2007, *Dolichothele bolivianum* (Vol, 2001), *Dolichothele camargorum* Revollo, da Silva & Bertani, 2017, *Grammostola rosea* (Walckenaer, 1837), *Hapalopus aymara* Perdomo, Panzera & Pérez-Miles, 2009, *Hapalotremus albipes* Simon, 1903, *Hapalotremus kuka* Ferretti, Cavalllo, Chaparro, Ríos-Tamayo, Seimon & West, 2018, *Hapalotremus yuraqchanka* Sherwood, Ferretti, Gabriel & West, 2021, *Holothele longipes* (L. Koch in Ausserer, 1875), *Lasiodora boliviana* (Simon, 1892), *Pamphobeteus antinous* Pocock, 1903, *Pseudhapalopus aculeatus* Strand, 1907, and *Umbyquyra acuminatum* (Schmidt & Tesmoingt, 2005). However, much of the country remains understudied faunistically and, as such, there are undoubtedly many more species awaiting discovery.

In this work, we describe two new genera and four new species of theraphosid spider from Bolivia, and transfer two Peruvian species to *Isiboroa* gen. nov.

Materials and methods

Specimens were examined under binocular microscopes, photographs of palpal bulbs, tibial apophyses and spermathecae were made using a Leica M125C auto-montage with images stacked using Helicon Focus software. Description style follows Sherwood *et al*. (2020). Abbreviations, Institutes: MHNC = Museo de Historia Natural de la Universidad Nacional de San Antonio Abad del Cusco, Peru; OUMNH = Oxford University Museum of Natural History. Structures: ALE = anterior lateral eyes, AME = anterior medial eyes, PLE = posterior lateral eyes, PME = posterior medial eyes; PB = prolateral branch (of tibial apophysis); RB = retrolateral branch (of tibial apophysis); TA = tegular apophysis (of palpal bulb). Other: coll. = collector. Leg spine terminology follows Petrunkevitch (1925) with the modifications proposed by Bertani (2001): d = dorsal, v = ventral, r = retrolateral, p = prolateral. Palpal bulb keel terminology follows Bertani (2000) and Gabriel (2016): A = apical keel, PI = prolateral inferior keel, PS = prolateral superior keel, RS = retrolateral superior keel, RI = retrolateral inferior keel, SA = subapical keel, with the additions proposed by Gabriel & Sherwood (2020): ER = embolic ridge; PC = prolateral crease; PR = prolateral ridge; PAR = prolateral apical ridge. Leg formulae start with the longest leg to the shortest in order of decreasing size, e.g. 4,1,2,3. Urticating setae terminology follows Cooke, Roth & Miller (1972). All measurements are given in mm. Altitude is given in metres above sea level. The map was made using SimpleMappr (Shorthouse 2010). Specimens currently held in OUMNH will eventually be transferred to a natural history museum in Bolivia.

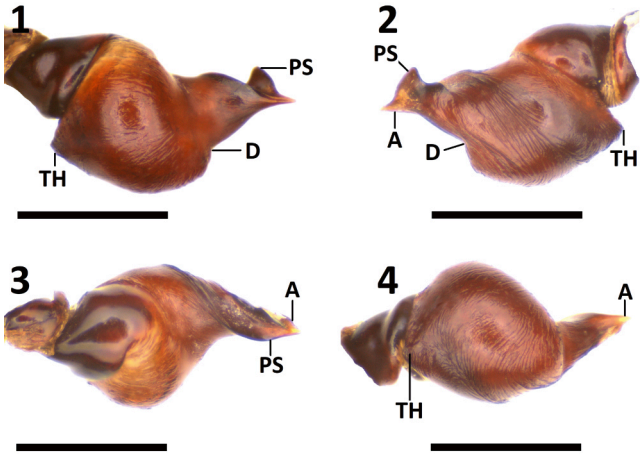
Bermejoa gen. nov.

Type species: *Bermejoa zoeae* sp. nov.

Diagnosis: *Bermejoa* gen. nov. shares a somewhat similar general profile of the palpal bulb with that of *Cymbiapophysa* Gabriel & Sherwood, 2020 but is readily distinguished by the absence of a cymbial apophysis and absence of retrolateral keels on the palpal bulb (cymbial apophysis and retrolateral keel(s) present in *Cymbiapophysa*) in addition to the much more developed branches of the tibial apophysis (branches of tibial apophysis short and less developed or entirely absent in *Cymbiapophysa*).

Etymology: The generic epithet is a noun in apposition derived from Bermejo, both the name of the nearby town and the name of the river that flows close to the type locality of the type species. The gender is feminine.

Distribution: Bolivia



Figs. 1–4: *Bermejoa zoeae* gen. et sp. nov., holotype male (OUMNH 2005-065, Arach 186), palpal bulb. **1** retrolateral view; **2** prolateral view; **3** dorsal view; **4** ventral view. Scale bars = 1 mm.

Species included: *B. zoeae* sp. nov.

***Bermejoa zoeae* sp. nov.** (Figs. 1–6)

Type material: Holotype ♂ (OUMNH 2005-065, Arach 186), BOLIVIA: Dept. Santa Cruz, Bermejo, Refugio Los Volcanes, 18°06′S 63°36′W, 1000 m, semi-deciduous forest, 12 February 2004, coll. D. J. Mann, A. C. Hamel and Z. Simmons.

Diagnosis: As per the generic diagnosis, *B. zoeae* sp. nov. can be distinguished from other known theraphosines by the sole presence of PS and A keels on the palpal bulb, with a distinct crest twice as high as long present on the PS.

Etymology: The specific epithet is a matronym in honour of Zoë Simmons (Head of Life Collections, Oxford University Museum of Natural History) who is one of the collectors of the specimen.

Description of holotype male: Total length including chelicerae 20.6. Carapace length 8.3, width 7.0; caput slightly raised; ocular tubercle raised, length 0.9, width 1.3. Eyes: ALE > AME, AME > PLE, PLE > PME, anterior eye row procurved, posterior row slightly recurved. Clypeus narrow; clypeal fringe long. Fovea deep, transverse. Chelicera length 3.8, width 1.4. Abdomen length 8.3, width 5.1. Maxilla with 80–100 cuspules covering approximately 65% of proximal edge. Labium length 0.9, width 1.7, with 34 cuspules mostly separated by 1.5–2.0× width of a cuspule. Labio-sternal mounds joined. Sternum length 3.7, width 3.6, three pairs of sigilla. Tarsi I–IV divided by band of setae. Metatarsal scopulae: I 40%; II 34%; III 19%; IV 9%.

	I	II	III	IV	Palp
Femur	6.8	6.0	5.1	7.0	4.3
Patella	3.9	3.4	3.2	3.3	2.3
Tibia	5.4	4.3	3.5	6.1	3.5
Metatarsus	4.5	4.1	5.3	7.8	–
Tarsus	3.3	3.0	3.3	3.9	1.7
Total	**23.9**	**20.8**	**20.4**	**28.1**	**11.8**

Table 1: *Bermejoa zoeae* gen. et sp. nov., holotype male, podomere lengths.

Figs. 5–6: *Bermejoa zoeae* gen. et sp. nov., holotype male (OUMNH 2005-065, Arach 186), tibial apophysis. **5** prolateral view; **6** ventral view. Scale bars = 1 mm.

Lengths of legs and palpal segments: see Table 1, legs 4,1,2,3. Spination: femur I d 0–0–1, II d 0–1–1, III d 0–0–2, IV d 0–0–1, patella III d 0–0–1, IV d 0–0–1, tibia I d 0–0–1, II d 1–0–1, v 1–1–2 (apical), III d 2–0–2, v 1–2–2 (apical), IV d 2–0–2 (apical), v 2–1–3 (apical), palp p 1–2–1, metatarsus I d 0–1–0, v 0–0–1 (apical), II d 0–0–1, v 1–0–3 (apical), III d 1–2–2, v 1–3–3 (apical), IV d 2–3–2 (apical), v 0–3–3 (apical). Tibia I with paired tibial apophysis, RB longer than PB; PB with two developed megaspines, RB with one developed megaspine (Figs. 5–6). Femur III incrassate. Palpal tibia unmodified. Palpal cymbium unmodified. Metatarsus I strongly curved. Posterior lateral spinnerets with three segments: basal 1.0, median 0.7 digitiform apical 1.2. Posterior median spinnerets with one segment. Palpal bulb with TH; embolus short and wide; PS well developed with conspicuous crest, A weakly developed, ER developed, PR and PAR absent, PC present, somewhat widened in posterior half, constricted in anterior half, prolateral, retrolateral and ventral faces of bulb with rugulose striations (Figs. 1–4). Urticating setae Type I present. Stridulation organ absent. Colour in alcohol preserved brown.

Female unknown.

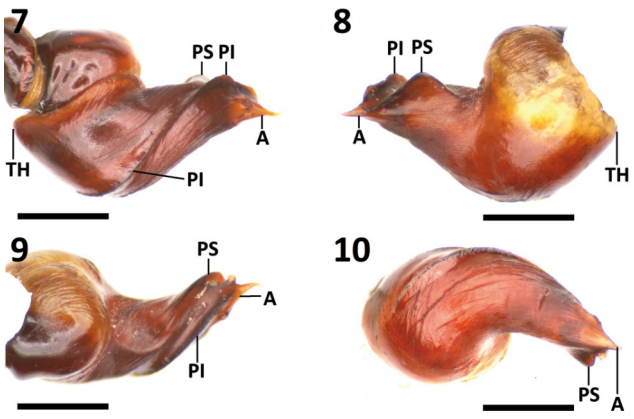
Distribution: Known only from the type locality, Refugio de Los Volcanes, Department of Santa Cruz, Bolivia (Fig. 34)

Ecology: Distributed in the Dry Chaco ecoregion in semi-deciduous forest at an approximate elevation of 1000 m.

***Isiboroa* gen. nov.**

Type species: *Isiboroa hamelae* sp. nov., designated herein.

Diagnosis: *Isiboroa* gen. nov. is similar to *Hapalotremus* Simon, 1903 and *Thrixopelma* Schmidt, 1994 in the male palpal bulb possessing elongate PS and PI keels but *Isiboroa* gen. nov. differs clearly by the much thicker and shorter embolus (cf. Figs. 7–10, 13–14 *v*. Sherwood *et al*. 2021a: figs. 43–46, 51–54, 86–87, 2021b: figs 1–6, 12–17, 25–28, 32–35, 41–46). Further distinguished from *Hapalotremus* females by the spermathecae with two receptacles, each with a single lobe at the apex (spermathecae consisting of a single receptacle with two apical-lateral lobes and two basal projections in *Hapalotremus*, with one sole species of *Hapalotremus* also possessing an exceptional third lobe on the medial apex of the receptacle; see



Figs. 7–10: *Isiboroa hamelae* gen. et sp. nov., holotype male (OUMNH 2006-073, Arach 185), palpal bulb. **7** prolateral view; **8** retrolateral view; **9** dorsal view; **10** ventral view. Scale bars = 1 mm.

Sherwood *et al*. 2021b). Additionally distinguished from *Thrixopelma* males by the absence of a medial crest on the PI, by the shape of the tibial apophysis and further from females by the non-highly sclerotized receptacles (see Sherwood *et al*. 2021a). In general profile, the palpal bulb of males of *Isiboroa* gen. nov. has similarity to that of the male of the Mexican theraphosine *Schizopelma bicarinatum* Pickard-Cambridge, 1897 (see Gabriel 2016) but males of all known *Isiboroa* gen nov. species are easily distinguished from *S. bicarinatum* by the absence of an RS, RI and SA, in addition to their profoundly disjunct distribution.

Etymology: The generic name is a noun in apposition derived from Isiboro, the name of a river flowing over 300 km in Bolivia, which also forms part of the name of the national park in which the type material was collected. The gender is feminine.

Distribution: Bolivia and Peru

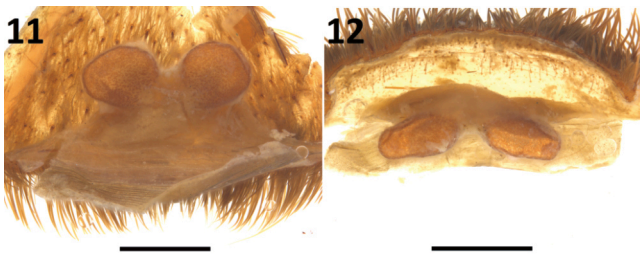
Species included: *I. hamelae* sp. nov., *I. peruviana* comb. nov., *I. sacsayhuaman* comb. nov.

***Isiboroa hamelae* sp. nov.** (Figs. 7–12)

Type material: Holotype ♂ (OUMNH 2006-073, Arach 185), BOLIVIA: Dept. Cochabamba, Cordillera Mosetenes, Isiboro-Secure National Park, 16°14′S 66°24′W, 1350–1400 m, September 2003, humid montane forest, herpetological pitfall trap, coll. D. Embert and A. C. Hamel; allotype ♀ (OUMNH 2006-073, Arach 185), BOLIVIA: Dept. Cochabamba, Cordillera Mosetenes, Isiboro-Secure National Park, 16°14′S 66°24′W, 1350–1400 m, September 2002, manually collected by A. C. Hamel, general collection A. C. Hamel; paratypes 3♂♂ (OUMNH 2006-073), BOLIVIA: Dept. Cochabamba, Cordillera Mosetenes, Isiboro-Secure National Park, 16°13′S 66°24′W, 1350–1400 m, 03 September 2003, humid montane forest, coll. A. C. Hamel; 2♂♂ (OUMNH 2006-073), BOLIVIA: Dept. Cochabamba, Cordillera Mosetenes, Isiboro-Secure National Park, 16°13′S 66°24′W, 1250–1600 m, September 2003, pitfall trap in humid montane forest, coll. S. Herzog and A. C. Hamel; 2♂♂ (OUMNH 2006-073), BOLIVIA: Dept. Cochabamba, Cordillera Mosetenes, Isiboro-Secure National Park, 16°14′S 66°24′W, 1350–1400 m, September 2003, humid montane forest, herpetological pitfall trap, coll. D. Embert and A. C. Hamel; 1♂ (OUMNH 2006-073), BOLIVIA: Dept. Cochabamba, Cordillera Mosetenes, Isiboro-Secure National Park., 16°14′10″S 66°24′46″W, 1350 m, 17 September 2003, humid montane forest, herpetological pitfall trap, coll. D. Embert and A. C. Hamel; 1♂ (OUMNH 2006-073), BOLIVIA: Dept. Cochabamba, Cordillera Mosetenes, Isiboro-Secure National Park., 16°14′10″S 66°24′46″W, 1350 m, 08 September 2003, humid montane forest, herpetological pitfall trap, coll. D. Embert and A. C. Hamel.

	I	II	III	IV	Palp
Femur	12.1	10.8	9.8	12.3	8.7
Patella	5.9	5.1	4.0	4.4	4.0
Tibia	9.2	8.4	7.7	10.3	8.5
Metatarsus	8.5	8.4	10.2	14.7	–
Tarsus	6.6	6.6	5.8	6.2	2.1
Total	**42.3**	**39.3**	**37.5**	**47.9**	**23.3**

Table 2: *Isiboroa hamelae* gen. et sp. nov., holotype male, podomere lengths.

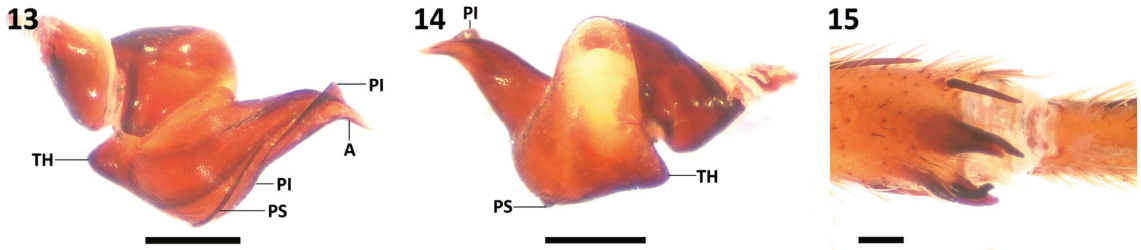


Figs. 11–12: *Isiboroa hamelae* gen. et sp. nov., paratype female (OUMNH 2006-073, Arach 185), spermathecae. **11** dorsal view; **12** apical view. Scale bars = 1 mm.

Diagnosis: *I. hamelae* sp. nov. can be distinguished from *I. peruviana* comb. nov. and *I. sacsayhuaman* comb. nov. by the comparatively less developed PS (comparatively more developed in *I. peruviana* comb. nov. and *I. sacsayhuaman* comb. nov.). Further distinguished from *I. peruviana* comb. nov. by the absence of an opisthosomal pattern (present in *I. peruviana* comb. nov.).

Etymology: The specific epithet is a matronym in honour of one of the collectors, A. Caroli Hamel-Leigue, for her contributions to the knowledge of fauna in Bolivia.

Description of holotype male: Total length including chelicerae 29.2. Carapace length 11.7, width 10.1; caput slightly raised; ocular tubercle raised, length 1.0, width 1.7. Eyes: ALE > PLE, PLE > AME, AME > PME, anterior eye row procurved, posterior row slightly recurved. Clypeus narrow; clypeal fringe long. Fovea deep, procurved. Chelicera length 4.0, width 2.0. Abdomen length 11.8, width 6.2. Maxilla with 150–180 cuspules covering approximately 75% of proximal edge. Labium length 1.1, width 2.4, with 60–80 cuspules mostly separated by 0.5–1.0× width of a cuspule. Labio-sternal mounds joined. Sternum length 5.3, width 4.9, three pairs of sigilla. Tarsus I fully scopulate, II–IV divided by band of setae. Metatarsal scopulae: I 76%; II



Figs. 13–15: *Isiboroa peruviana* comb. nov., holotype male (MCZ IZ–15413). **13** palpal bulb prolateral view; **14** palpal bulb retrolateral view; **15** tibial apophysis ventral view. Scale bars = 1 mm. Photos courtesy of Cristina A. Rheims.

75%; III 42%; IV 26%. Lengths of legs and palpal segments: see Table 2, legs 4,1,2,3. Spination: femur I d 0–2–2, II d 1–2–2, III d 0–2–2, IV d 1–1–2, palp d 0–0–1, patella I d 0–1–0, II d 0–1–0, III d 0–2–0, IV d 2–1–0, tibia I d 0–2–2, v 4–4–4, II d 0–2–2, v 4–4–3 (apical), III d 0–2–2, v 4–3–3 (apical), IV d 0–2–2, v 3–0–4 (3 apical), palp p 1–2–0, metatarsus I d 1–2–0, v 2–1–0, II d 1–2–0, v 1–1–3, III d 2–2–3 (1 apical), v 4–2–4 (3 apical), IV d 2–2–2, v 3–2–4 (3 apical). Tibia I unmodified, tibial apophysis absent. Femur III incrassate. Palpal tibia slightly incrassate, with developed retrolateral apophysis. Palpal cymbium unmodified. Metatarsus I straight, unmodified. Posterior lateral spinnerets with three segments: basal 1.7, median 1.2, digitiform apical 1.8. Posterior median spinnerets with one segment. Palpal bulb with TH; embolus of moderate length, straight and tapering, embolus notably thin at apex; PS and PI developed, PI elongate, A weakly developed, ER, PR and PAR absent, PC present, uniform in width (Figs. 7–10). Urticating setae: Type III present. Stridulation organ absent. Colour in alcohol preserved brown.

Description of allotype female: Total length including chelicerae 35.0. Carapace length 14.0, width 12.4; caput slightly raised; ocular tubercle raised, length 1.5, width 2.1. Eyes: ALE > AME, AME > PLE, PLE > PME, anterior row procurved, posterior row recurved. Clypeus narrow; clypeal fringe long. Fovea deep, procurved. Chelicera length 6.9, width 3.2. Abdomen length 13.5, width 10.0. Maxilla with 150–180 cuspules, covering approximately 65% of proximal edge. Labium length 1.8, width 2.7, with 80–100 labial cuspules, most separated by 0.5–1.0× width of a single cuspule. Labio-sternal mounds joined. Sternum length 6.1, width 5.9, three pairs of sigilla. Tarsi I–IV divided by band of setae. Metatarsal scopulae: I 77%; II 75%; III 52%; IV 36%. Lengths of leg and palpal segments: see Table 3, legs 4,1,2,3. Spination: femur I d 0–0–1, II d 0–0–1, palp d 0–0–1, patella III d 0–0–1, tibia I v 0–1–2, II d 0–0–1, v 0–1–3 (apical), III d 0–2–2, v 0–1–3 (apical), IV d 2–1–0, v 0–1–3 (apical), palp v 2–2–3 (apical), metatarsus I v 2–0–1 (apical), II d 0–1–0, v 1–1–2 (apical), III d 1–2–2, v 2–2–3 (apical), IV d 2–3–3 (apical), v 2–2–4 (3 apical). Posterior lateral spinnerets with three segments: basal 1.9, medial 1.5, digitiform apical 1.8. Posterior median spinnerets with one segment. Spermathecae with two receptacles with large rounded apical lobes, fused at base, dorsally concave (Figs. 11–12). Urticating setae: Type III present. Stridulation organ absent. Colour: overall brown, opisthosoma glossy black with light brown longer hairs, carapace brown with lighter long brown hairs around the caput.

	I	II	III	IV	Palp
Femur	11.2	9.6	8.6	11.3	8.1
Patella	6.1	5.7	5.0	5.8	5.9
Tibia	8.1	6.9	6.3	8.5	5.7
Metatarsus	7.0	6.9	7.6	11.8	–
Tarsus	5.5	5.1	5.0	5.9	5.6
Total	**37.9**	**34.2**	**32.5**	**43.3**	**25.3**

Table 3: *Isiboroa hamelae* gen. et sp. nov., paratype female, podomere lengths.

Distribution: Known only from the type locality, Isiboro-Secure National Park, Department of Cochabamba, Bolivia (Fig. 34)

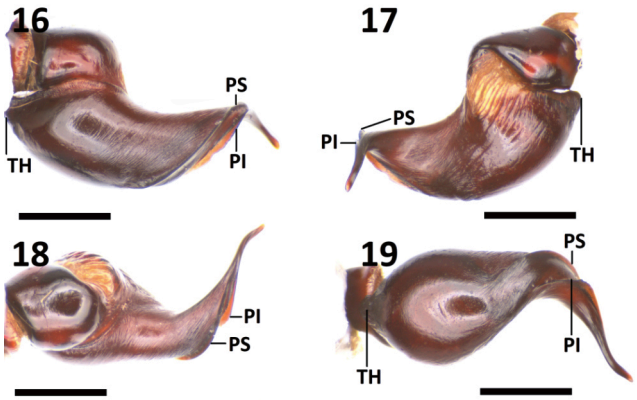
Ecology: Distributed in the Bolivian Yungas ecoregion, at an elevation of between 1350–1400 m. Males were found wandering during September, possibly indicating a mating season that coincides with the end of the dry season.

***Isiboroa peruviana* (Chamberlin, 1916) comb. nov.** (Figs. 13–15)

Hemirrhagus peruvianus Chamberlin, 1916: 196, pl. 6, figs. 4–10, pl. 7, figs. 1–2.
Homoeomma peruvianum: Pérez-Miles & Locht (2003): 366.

Type material: Holotype ♂ (MCZ IZ–15413), PERU: Huadquina, 5000 ft, July 1911, coll. H. W. Foote, Yale Peruvian Expedition, photographs of holotype examined.

Remarks: *Homoeomma peruvianum* (Chamberlin, 1916) was described from specimens from several areas of Peru based on both sexes, and was originally placed in the genus *Hemirrhagus* Simon, 1903. Pérez-Miles & Locht (2003) transferred this species to *Homoeomma* Ausserer, 1871 based on palpal bulb morphology, where it has remained ever since. Our examination of the palpal bulb morphology of the holotype male (based on photographs supplied by Cristina Rheims (Instituto Butantan) and also courtesy of Flávio Yamamoto (São Paulo, Brazil) who used earlier versions of the images in his unpublished master's thesis (Yamamoto 2007)) indicates morphological features that differ (Figs. 13–15) from *Homoeomma* by lacking a tegular apophysis and share a thick and shortened embolus as in *Isiboroa* gen. nov. Therefore, we propose *H. peruvianum* be transferred to the genus *Isiboroa* gen. nov., making the new combination *Isiboroa peruviana* comb. nov.



Figs. 16–19: *Plesiopelma manni* sp. nov., holotype male (OUMNH 2005-063, Arach 183), palpal bulb. **16** prolateral view; **17** retrolateral view; **18** dorsal view; **19** ventral view. Scale bars = 1 mm.

***Isiboroa sacsayhuaman* (Ferretti, Ochoa & Chaparro, 2016) comb. nov.**

Type material: Holotype ♂ (MHNC), PERU: Cusco, Valle de Sacsayhuaman, 0.5 km east of Huayllarcocha, 13°29′52.12″S 71°58′37.42″W, 3690 m, 20 September 2001, coll. J. C. Chaparro, not examined.

Remarks: *Acanthoscurria sacsayhuaman* Ferretti, Ochoa & Chaparro, 2016 was described from Peru and placed in the genus *Acanthoscurria* Ausserer, 1871 despite the lack of stridulatory setae on the coxa and trochanter of leg I, the presence of which has been regarded as a primary feature for the genus *Acanthoscurria* since its first recognition (e.g. Pocock 1901, 1903; Mello-Leitão 1923; Vellard 1924; Timotheo-da-Costa 1960; Schiapelli & Gerschman 1964; Piza 1972; Bertani & Carla-da-Silva 2004; Lucas *et al*. 2010, 2011; Rodríguez-Manzanilla & Bertani 2010; Gonzalez Fihlo *et al*. 2012; Paula *et al*. 2014; Gabriel 2020). The absence of stridulatory setae was used as the primary feature to differentiate it from other *Acanthoscurria* species (see Ferretti, Ochoa & Chaparro 2016). Ferretti *et al*. (2016) also stated that *A. sacsayhuaman* was the first record of the genus *Acanthoscurria* for Peru, but this is erroneous because *A. ferina* Simon, 1892 had previously been recorded (e.g. Lucas 1983). However, in addition to the absence of a stridulation organ, the palpal bulb and tibial apophysis morphology (interpretation here based solely on the images presented in the original description by Ferretti *et al*. 2016) also differ notably from *Acanthoscurria sensu stricto* (pers. obs.). Instead, the palpal bulb morphology is in keeping with the genus *Isiboroa* gen. nov. Therefore, based on palpal bulb morphology and the absence of a stridulation organ, we propose *A. sacsayhuaman* be transferred to *Isiboroa* gen. nov., creating the new combination *Isiboroa sacsayhuaman* comb. nov.

***Plesiopelma manni* sp. nov.** (Figs. 16–25)

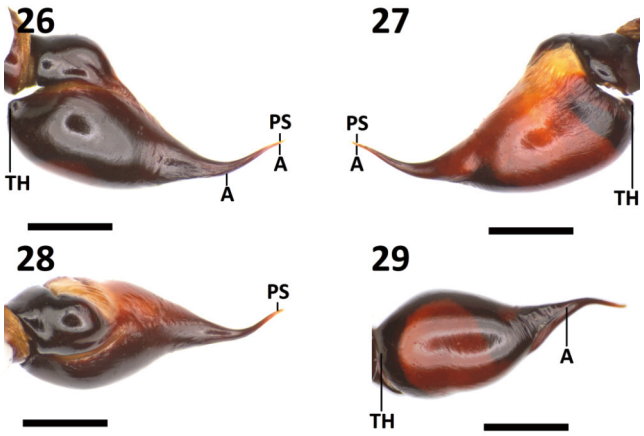
Type material: Holotype ♂ (OUMNH 2005-063, Arach 183), BOLIVIA: Dept. Tarija between Caiza and Creveaux 21°48′53″S 63°26′53″W, 536 m. 05 January 2005, coll. at night by Mann, Hamel and Herzog along dirt track to Creveaux. Transitional forest zone from Chaco Forest to Chaco Serrano shaded habitat, sandy/stone soils.

Diagnosis: *Plesiopelma manni* sp. nov. can be distinguished from all known congeners based on the presence of numerous small spines on the raised proximal ventro-lateral area on metatarsus I.

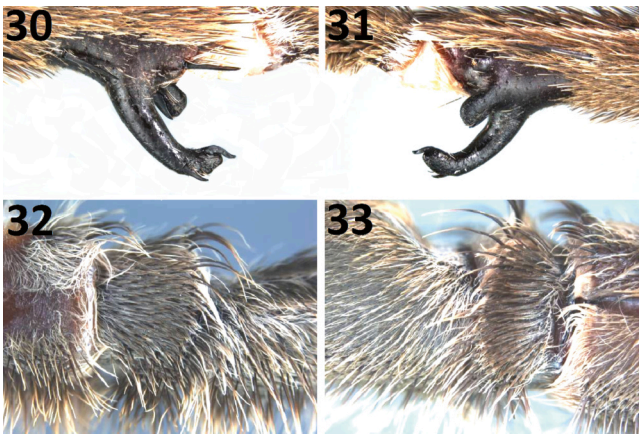
Etymology: The specific epithet is a patronym in honour of Darren J. Mann (Collections Manager, Oxford University Museum of Natural History) one of the collectors of the type specimen. Also, Darren introduced RG to the OUMNH collections in the 1990s.

Description of holotype male: Total length including chelicerae 28.5. Carapace length 11.6, width 10.4; caput slightly raised; ocular tubercle raised, length 1.1, width 1.8. Eyes: ALE > AME, AME > PLE, PLE > PME, anterior eye row procurved, posterior row slightly recurved. Clypeus narrow; clypeal fringe long. Fovea deep, transverse. Chelicera length 5.1, width 2.4. Abdomen length 12.3, width 7.2. Maxilla with 100–150 cuspules covering approximately 75% of proximal edge. Labium length 1.5, width 2.6, with

Figs. 20–25: *Plesiopelma manni* sp. nov., holotype male (OUMNH 2005-063, Arach 183), tibial apophysis and palpal tibia. **20** tibial apophysis prolateral view; **21** same ventral view; **22** same, prolateral closeup; **23** same, retrolateral closeup; **24** metatarsus I showing ventro-lateral area of spines (red circle); **25** palpal tibia, dorsal view. Scale bars = 1 mm.



Figs. 26–29: *Reversopelma herzogi* sp. nov., holotype male (OUMNH 2005-065, Arach 184), palpal bulb. **26** prolateral view; **27** retrolateral view; **28** dorsal view; **29** ventral view. Scale bars = 1 mm.



Figs. 30–33: *Reversopelma herzogi* sp. nov., holotype male (OUMNH 2005-065, Arach 184), tibial apophysis, palpal trochanter and trochanter I. **30** tibial apophysis prolateral view; **31** tibial apophysis ventral view; **32** trochanter I prolateral view; **33** palpal trochanter prolateral view.

60–80 cuspules, mostly separated by 1.0–2.0× width of a cuspule. Labio-sternal mounds joined. Sternum length 6.1, width 5.0, three pairs of sigilla. Tarsi I–III fully scopulate, tarsus IV divided by band of setae. Metatarsal scopulae: I 78%; II 74%; III 45%; IV 32%. Lengths of legs and palpal segments: see Table 4, legs 4,1,2,3. Spination: femur I d 0–0–1, II d 0–0–1, III d 0–0–1, IV d 0–0–1, palp d 0–0–1, tibia I d 0–0–1 v 0–0–1, II d 1–0–1, v 1–1–2 (apical), III d 2–0–2, v 1–2–3 (apical), IV d 1–0–1 (apical), v 1–2–3 (apical), palp p 1–1–1, metatarsus II v 1–1–1 (apical), III d 2–2–2, v 3–1–3 (apical), IV d 1–2–2 (apical), v 2–3–3 (apical). Tibia I with paired tibial apophysis, RB longer than PB; PB with one developed megaspine and six smaller spines on inner face, RB with one developed megaspine and fourteen smaller spines on inner face, RB with flattened apex (Figs. 20–23). Femur III slightly incrassate. Palpal tibia slightly incrassate, with weakly developed retrolateral apophysis (Fig. 24). Palpal cymbium unmodified. Metatarsus I proximal ventro-lateral area raised, possessing 16 small spines (Fig. 25). Posterior lateral spinnerets with three segments: basal 2.4, median 2.0, digitiform apical 2.8. Posterior median spinnerets with one segment. Palpal bulb with TH; embolus long, strongly curved retrolaterally, PS, PI and A developed and elongate, ER, PR and PAR absent, PC present, somewhat widened in posterior third, constricted in anterior third (Figs. 16–19). Urticating setae: Type III and Type IV present. Stridulation organ absent. Colour in alcohol preserved brown.

	I	II	III	IV	Palp
Femur	10.0	10.2	8.7	10.8	6.5
Patella	5.4	5.0	4.5	5.2	4.0
Tibia	7.7	7.2	6.2	8.6	5.7
Metatarsus	7.7	7.3	7.8	11.0	–
Tarsus	6.0	5.9	5.9	6.8	1.9
Total	**36.8**	**35.6**	**33.1**	**42.4**	**18.1**

Table 4: *Plesiopelma manni* sp. nov., holotype male, podomere lengths.

Female unknown.

Distribution: Known only from the type locality, between Caiza and Creveaux, Department of Tarija, Bolivia (Fig. 34)

Ecology: Distributed in the Dry Chaco ecoregion but within a transitional zone between forest and serrano, at an approximate elevation of 1000 m.

***Reversopelma herzogi* sp. nov.** (Figs. 26–33)

Type material: Holotype ♂ (OUMNH 2005-065, Arach 184), BOLIVIA: Dept. Tarija, between Caiza and Creveaux, 21°48′53″S 63°26′53″W, 536 m, 05 January 2005, coll. at night by D. J. Mann, A. C. Hamel and S. Herzog along dirt track to Creveaux. Transitional zone from Chaco Forest to Chaco Serrano, shaded habitat, sandy/stone soils.

Diagnosis: *Reversopelma herzogi* sp. nov. is differentiated from *R. petersi* by the absence of tibial apophysis on leg I (present in *R. petersi*) and by the shorter taper of the embolus of the male bulb (taper more elongated in *R. petersi*). The female is unknown.

Etymology: The species epithet is a patronym in honour of one of the collectors, Sebastian Herzog, for his contributions to the knowledge of Bolivian fauna.

Description of holotype male: Total length including chelicerae 37.0. Carapace length 16.0, width 14.1; caput raised; ocular tubercle raised, length 1.4, width 2.2. Eyes: ALE > AME, AME > PLE, PLE > PME, anterior eye row procurved, posterior row slightly recurved. Clypeus narrow; clypeal fringe short. Fovea deep, procurved. Chelicera length 8.6, width 3.5. Abdomen (damaged) length 13.1, width 8.0. Maxilla with 60–80 cuspules covering approximately 60% of proximal edge. Labium length 1.4, width 3.1, with 40–50 cuspules, mostly separated by 0.5–1.0× width of a cuspule. Labio-sternal mounds joined. Sternum length 8.0, width 7.2, three pairs of sigilla. Tarsi I–III fully scopulate, tarsus IV divided by band of setae. Metatarsal scopulae: I 93%; II 86%; III 50%; IV 19%. Lengths of legs

and palpal segments: see Table 5, legs 4,1,2,3. Spination: femur I d 0–0–1, II d 0–0–1, I d 0–0–2 IV d 0–0–1, palp d 0–0–1, patella I d 0–0–1, II d 0–0–1, III d 0–0–1, IV d 0–0–1, tibia I d 1–3–1, v 1–2–1, II d 0–2–0, v 3–3–3 (apical), III d 3–3–3, v 4–2–3 (apical), IV d 0–3–1 (apical), v 2–4–5 (4 apical), palp d 0–1–2 (apical), v 0–1–2 (apical), metatarsus I d 1–1–0, v 0–0–1 (apical), II d 1–2–1, v 1–1–3 (apical), III d 3–2–2, v 1–2–4 (apical), IV d 1–2–2 (apical), v 3–4–6 (4 apical). Tibia I with paired tibial apophysis, RB longer than PB; PB with one developed megaspine, RB with two developed megaspines (Figs. 30–31). Femur III slightly incrassate. Palpal tibia slightly incrassate. Palpal cymbium unmodified. Metatarsus I straight, unmodified. Posterior lateral spinnerets with three segments: basal 2.2, median 1.2, digitiform apical 2.6. Posterior median spinnerets with one segment. Palpal bulb with TH; embolus of short length, tapering, curved upwards; PS and A [extremely] weakly developed, ER, PR and PAR absent, PC present, widened almost its entire length (Figs. Figs. 26–29). Urticating setae: Type I present. Stridulation organ consisting of plumose stridulatory setae on prolateral trochanter I and retrolateral palpal trochanter (Figs. 32–33). Colour overall light brown with darker caput area on carapace, all legs with same colouration consisting of the femur, and palp with twin pale dorsal stripes, tibia: with twin pale dorsal stripes internally edged with black, proximally with dark band, metatarsus centrally with a single short proximal pale stripe and a dark stripe starting at the proximal retrolateral side of the segment terminating centrally at the pale distal band, all segments distally with narrow pale bands.

Female unknown.

Distribution: Known only from the type locality, between Caiza and Creveaux, Department of Tarija, Bolivia (Fig. 34)

Ecology: Distributed in the Dry Chaco ecoregion but within a transitional zone between forest and serrano, at an approximate elevation of 1000 m.

Remarks: The habitat in which this species was found, the Chaco Serrano, is the most extensive dry forest in this region, dominated by the deciduous tree *Schinopsis* sp.; thus, it is possible *R. hertzogi* sp. nov. could occur in other areas of Bolivia and Northern Argentina supporting this habitat type. It is tentatively placed in *Reversopelma* Schmidt, 2001 due to its affinities, although a modern revision of *Reversopelma* is needed.

	I	II	III	IV	Palp
Femur	15.1	14.0	12.2	14.6	8.7
Patella	7.3	6.8	5.6	6.3	4.8
Tibia	11.7	10.2	8.2	11.4	7.4
Metatarsus	11.7	11.7	12.0	16.1	–
Tarsus	7.3	7.1	7.1	8.2	2.2
Total	**53.1**	**49.8**	**45.1**	**56.6**	**23.1**

Table 5: *Reversopelma herzogi* sp. nov., holotype male, podomere lengths.

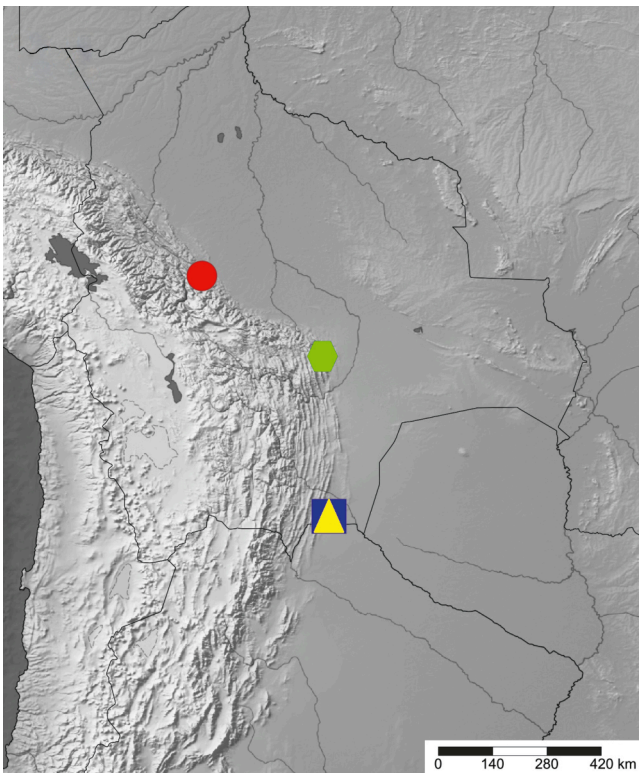


Fig. 34: Map showing the distribution of the new Bolivian species treated in this work. Red circle = *Isiboroa hamelae* gen. et sp. nov., blue square = *Plesiopelma manni* sp. nov., yellow triangle = *Reversopelma herzogi* sp. nov., green hexagon = *Bermejoa zoeae* gen. et sp. nov.

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