

## A new species and two new genera of theraphosine from Peru (Araneae: Theraphosidae)

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### Abstract

Two new theraphosine genera and one new species are described from Peru, based on material from the collections in the Natural History Museum, London. *Anqasha* **gen. n.** is described to house *Anqasha picta* (Pocock, 1903) **gen. et comb. n.**, ex. *Hapalopus*. The holotype male of *A. picta* is redescribed, with the female described for the first time. Two new localities for *A. picta* are recorded, extending the distribution of this species. Another monotypic genus, *Murphyarachne* **gen. n.**, is described to house a new species *Murphyarachne ymasumacae* **gen. et sp. n.** based on a holotype female.

**Keywords:** description • diagnosis • morphology • museums • tarantula • taxonomy.

### Introduction

In the last five years, the knowledge of theraphosines in Peru has advanced, with descriptions of many new species and a handful of new genera (Ferretti *et al.* 2018; Kaderka 2019, 2020; Quispe-Colca & Kaderka 2020; Nicoletta *et al.* 2020; Kaderka *et al.* 2021; Quispe-Colca & Ferretti 2021; Sherwood & Gabriel 2021; Sherwood *et al.* 2021a,b) and one work clarifying the taxonomic placement of an existing taxon at the generic level (Pérez-Miles, Gabriel & Sherwood 2019). At present, the World Spider Catalog (2022) recognises 14 genera and 58 valid species in Peru; and one genus and two species which may possibly be distributed in Peru, i.e. the data in the original descriptions do not unequivocally confirm this, simply being ‘Ecuador or Peru’ which, in one case, *Cymbiapophysa yimana* Gabriel & Sherwood, 2020, is likely due to contemporaneous territorial disputes during the early 20th century (see Gabriel & Sherwood 2020).

Pocock (1903) described many novel New World theraphosid spiders including *Hapalopus pictus* Pocock, 1903 from Caras, Peru, based on a single male in the British Museum of Natural History (now Natural History Museum, London). *Hapalopus pictus* was presumably housed in *Hapalopus* Ausserer, 1875 based on its opisthosomal patterning (although this is not stated specifically) and was differentiated from its contemporarily known congeners *H. formosus* Ausserer, 1875 (the generotype) and *H. pentoralis* Simon, 1888 based on palpal bulb morphology, specifically: “by having the keel on the palpal spine not rising into a large compressed tooth.” (Pocock 1903: 111).

Gerschman & Schiapelli (1973: 49) transferred *Hapalopus pictus* to the genus *Homoeomma* Ausserer, 1871 and stated: “En el género *Hapalopus* Ausserer 1875 hemos hecho también algunos cambios: nuevas combinaciones y sinonimias que figuran en nuestros trabajos ele revisión del

género *Ceropelma* Mello-Leitão, 1923 (Physis 1970) y del género *Homoeomma* Ausserer, 1871 (Physis 1972). Establecemos aquí que *Hapalopus pictus* Pocock 1903 = *Homoeomma pictus* (Pocock 1903) comb. n.” However, later in their work, Gerschman & Schiapelli (1973: 54) confusingly still listed this species as “*Hapalopus pictus* Pocock 1903” (Fig. 1), apparently placing it into synonymy with *H. pentoralis*; now *Davus pentoralis* (Gabriel 2016). Furthermore, they did not list *H. pictus* under its new combination in their list of *Homoeomma* taxa on the following two pages (Gerschman & Schiapelli 1973: 55–56). No mention was made of the synonymy or transfer later in the text for the pages concerning *Hapalopus* or *Homoeomma* either (see Gerschman & Schiapelli, 1973: 71–75). It is possible the continued listing of *H. pictus* under *Hapalopus*, and under that gendered ending of the species epithet, in Gerschman & Schiapelli (1973), was made as the opisthosomal pattern of *H. pictus* is similar to that of *D. pentoralis* (then *Hapalopus pentoralis*) and to *Neoholothele incei* (F. O. Pickard-Cambridge, 1899) (then *Hapalopus incei*). However, further evidence for their conviction that it belonged in *Homoeomma* is the handwritten determination label they placed in the jar containing the holotype, which unambiguously refers to it as “*Homoeomma pictus*” (pers. obs.).

Considering this confusion, it is slightly puzzling why the change in genera has not been questioned by later workers, especially as *Homoeomma* is the genus dealt with directly after the description of *H. pictus* in Pocock (1903). This indicates that Pocock certainly did not regard *H. pictus* as belonging to *Homoeomma*. Furthermore, under the heading *Homoeomma* Pocock (1903: 112) discussed *Homoeomma villosum* (Keyserling, 1891)—originally described as *Hapalopus v.*—a species lacking an opisthosomal pattern. Therefore, it appears that Pocock (1903) had a very clear idea as to which species belonged in which genus, considering *Hapalopus* species to have patterned opisthosomas and *Homoeomma* to have plain ones. The transfer of *H. pictum* to *Homoeomma* by Gerschman & Schiapelli (1973) makes *H. pictus* the only species in *Homoeomma* with an opisthosomal pattern. The World Spider Catalog (2022) currently regards *H. pictus* to be housed in *Homoeomma* (as *H. pictum*, correcting the grammatical gender of the species epithet), following Gerschman & Schiapelli (1973).

In this work, based on examination of the holotype male and further non-type material housed in the collections of the Natural History Museum, London and the Museum of Comparative Zoology, Harvard University, we determined that *H. pictum* belongs to neither *Hapalopus* nor *Homoeomma* and, instead, represents a taxon in its own genus. Therefore, we describe and diagnose a new genus herein to resolve its taxonomical placement. We also describe a new genus and species from Contamama, Peru, with particular spermathecal morphology, carapace and leg patterning, a stridulatory organ on the retrolateral palpal trochanter, and subtype Id urticating setae. Thus, the total number of theraphosine species and genera known definitively from Peru raises to 59 and 16, respectively.

*20. <i>Hapalopus</i> Ausserer 1875 (8)		
* 75. <i>H. formosus</i> Ausserer 1875	.....	Colombia
<i>Verh. zool. bot. Ges. Wien</i> 25: T. vi: 17-18 D ♂		
76. <i>H. incei</i> F. O. Pickard-Cambridge 1898	.....	I. Trinidad
<i>Proc. Zool. Soc. Lond.</i> 894 T. liv: 8-10-12 D ♂ y ♀		
77. <i>H. nondescriptus</i> Mello-Leitão 1926	.....	Brasil
<i>Rev. Mus. Paulista</i> 14: 319 fig. 7-8 D ♂		
* 78. <i>H. pentaloris</i> (Simon 1888)	.....	América Central
<i>Crypsidromus pentaloris</i> Simon 1888		
<i>Ann. Soc. ent. Fr.</i> 8 (6): 216 D ♀		
* <i>Hapalopus pictus</i> Pocock 1903 (8)		
79. <i>H. rectimanus</i> Mello-Leitão 1923	.....	Brasil
<i>Rev. Mus. Paulista</i> 13:		

Fig. 1: Gerschman & Schiapelli (1973: 54) list of species of the genus *Hapalopus* Ausserer, 1875, showing *Hapalopus pictus* Pocock, 1903 as a junior synonym of *Hapalopus pentaloris* (Simon, 1888) despite their earlier textual transfer (Gerschman & Schiapelli, 1973: 49) of *H. pictus* to *Homoeomma* Ausserer, 1871 as a newly combined species.

both systems being stacked using Helicon Focus software. Ink illustrations were made by RG. Description style follows Sherwood *et al.* (2020). Abbreviations, Institutes: BMNH = Natural History Museum, London (curator: Jan Beccaloni); MCZ = Museum of Comparative Zoology, Harvard University, Cambridge, Massachusetts, United States (curator: Laura Leibensperger); SMF = Senckenberg Forschungsinstitut und Naturmuseum, Frankfurt am Main, Germany (curator: Peter Jäger). Structures: ALE = anterior lateral eyes, AME = anterior median eyes, PLE = posterior lateral eyes, PME = posterior median eyes; PB = prolateral branch (of tibial apophysis), RB = retrolateral branch (of tibial apophysis). Other: coll. = collector; colln. = collection; det. = determined by; m = metres above sea level. Abbreviations for museum collections follow Evenhuis (2007). Leg spine terminology follows Petrunkevitch (1925) with the modifications proposed by Bertani (2001): d = dorsal, v = ventral, r = retrolateral, p = prolateral. Palpal bulb terminology follows Bertani (2000) and Gabriel (2016): A = apical keel, PA = paraembolic apophysis, PI = prolateral inferior keel, PS = prolateral superior keel, RI = retrolateral inferior keel, RS = retrolateral superior keel, SA = subapical keel, TH = tegular heel; with the additions proposed by Gabriel & Sherwood (2020): ER = embolic ridge, PR = prolateral ridge, PAR = prolateral apical ridge, PC = prolateral crease. 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) and Kaderka *et al.* (2019). Stridulatory setae terminology follows Galletti-Lima & Guadanucci (2019). All measurements are in mm. The map was made using SimpleMappr (Shorthouse 2010). Museum accession numbers are given where known.

### *Anqasha* gen. n.

*Type species:* *Hapalopus pictus* Pocock, 1903, designation herein.

*Etymology:* The generic epithet is a noun in apposition, derived from the Ancash Quechuan word *anqash* (meaning blue) in reference to the region in which the genotype inhabits, which is, according to one interpretation, said to have been named due to its blue skies. The present-day

departmental toponym Ancash is derived from the Quechuan phrase (sometimes spelt as Anqash or Anqhas in some other Quechuan dialects). The gender is feminine.

*Diagnosis:* *Anqasha* gen. n. can be differentiated from other Peruvian theraphosine genera with an opisthosomal pattern as follows: from *Neischnocolus* Petrunkevitch, 1925 by the absence of subconical process(es) on the retrolateral palpal tibia of the male, the absence of a sclerotized, semi-circular, back plate on the female spermathecae, and the absence of Type I urticating setae in both sexes; from males of *Euathlus* Ausserer, 1875 (some taxa of which possess an opisthosomal pattern, but not across the entire dorsal and lateral opisthosoma as in *A. picta*) by the comparatively shorter and stouter embolus, and additionally from females of *Euathlus* by the absence of lateral spheroid chambers on the spermathecal receptacles; from *Cyriocosmus* Simon, 1903 by the presence of a pattern of alternating black bands on the dorsal and lateral faces of the opisthosoma (opisthosomal pattern not so, where applicable, in *Cyriocosmus*) and further by the absence of a PA on the male palpal bulb and the non-spiralled or S-shaped spermathecal receptacles in the female. *Anqasha* gen. n. can be distinguished from males of *Hapalotremus* Simon, 1903 based on the absence of a SA and non-elongate PS of the palpal bulb, and further differentiated from both sexes of all known *Hapalotremus* species by the presence of a conspicuous opisthosomal pattern consisting of alternating black bands on the dorsal and lateral opisthosoma (opisthosomal pattern not so, or absent entirely, in *Hapalotremus*). Females are additionally distinguished from those of *Hapalotremus* based on spermathecal morphology, with two receptacles, each with a single rounded lobe at the respective apexes, and with sclerotized basal areas notably wider than medial area of receptacle (only a single receptacle present, with apical-lateral lobes and basal projections, in *Hapalotremus*).

*Distribution:* Peru (Fig. 22).

*Species included:* *A. picta* (Pocock, 1903), comb. n.

### *Anqasha picta* (Pocock, 1903), gen. et comb. n. (Figs. 2–22)

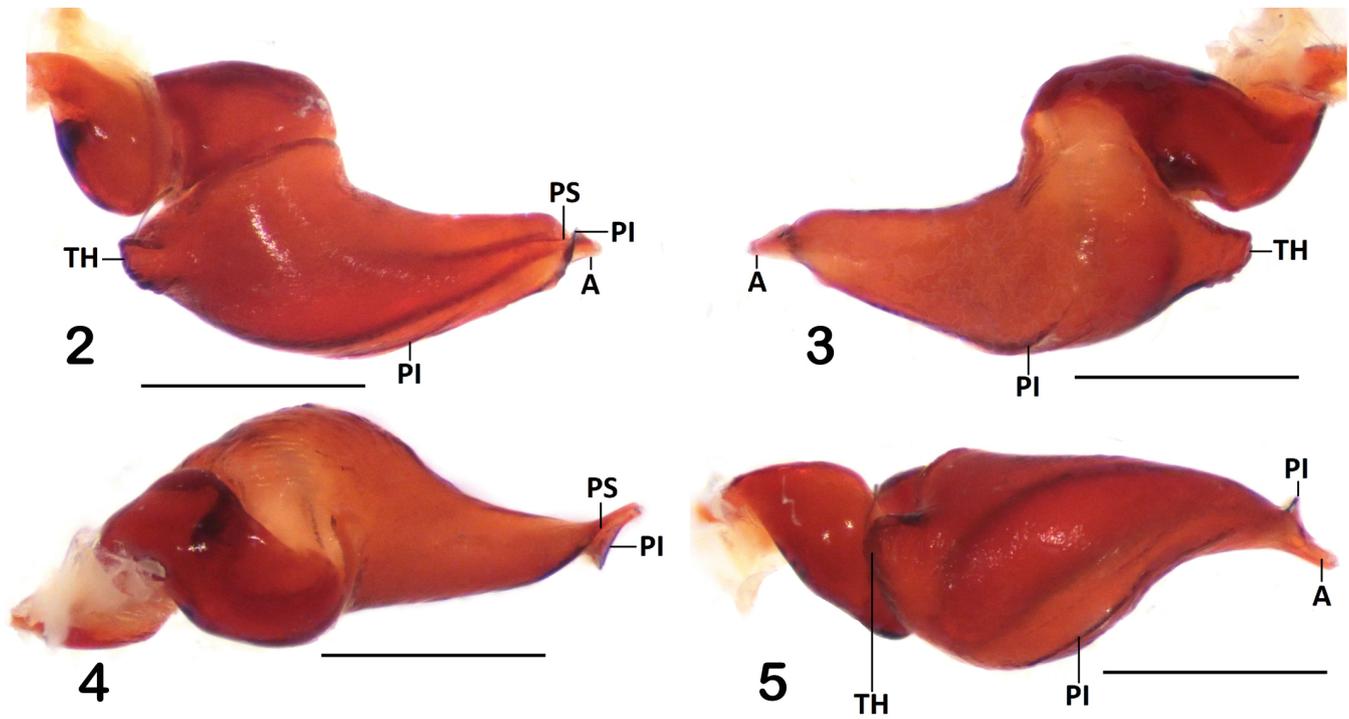
*Hapalopus pictus* Pocock, 1903: 110.

*Homoeomma pictus:* Gerschman & Schiapelli (1973): 49.

*Type:* Holotype ♂ (BMNH), PERU: Caras, 2200 m, 12 December 1899, The Andes, P. O. Simons.

*Diagnosis:* As per the generic diagnosis, *Anqasha picta* can be distinguished from other similar sympatric theraphosines based on genital organ morphology and the presence of prominent black banding on the dorsal and lateral opisthosoma.

*Redescription of holotype male* (BMNH; Figs. 2–11): Total length including chelicerae 15.2. Carapace length 6.4, width 5.2. Caput slightly raised. Ocular tubercle raised, length 0.7, width 1.0. Eyes: ALE > AME, AME > PLE, PLE > PME, anterior eye row procurved, posterior row slightly recurved. Clypeus narrow; clypeal fringe medium. Fovea deep, slightly recurved. Chelicera length 2.3, width 1.8.



Figs. 2–5: *Anqasha picta* (Pocock, 1903), holotype male (BMNH), palpal bulb (left hand side). 2 prolateral view; 3 retrolateral view; 4 dorsal view; 5 ventral view. Scale bars = 1 mm.

	I	II	III	IV	Palp
<b>Femur</b>	5.1	5.0	4.0	5.4	3.4
<b>Patella</b>	2.9	2.5	2.4	2.6	2.1
<b>Tibia</b>	4.3	3.3	2.7	4.3	3.1
<b>Metatarsus</b>	3.8	3.3	3.8	5.6	–
<b>Tarsus</b>	2.6	2.7	2.5	3.4	1.0
<b>Total</b>	<b>18.7</b>	<b>16.8</b>	<b>15.4</b>	<b>21.3</b>	<b>9.6</b>

Table 1: *Anqasha picta* (Pocock, 1903), holotype male (BMNH), podomere lengths.

Abdomen (damaged) length 5.9, width 3.7. Maxilla with 60–80 cuspules covering approximately 70% of the proximal edge. Labium length 0.8, width 1.0, with 35 cuspules mostly separated by 0.5–1.0× the width of a cuspule. Labio-sternal mounds separate. Sternum length 2.5, width 2.2, with three pairs of sigilla.

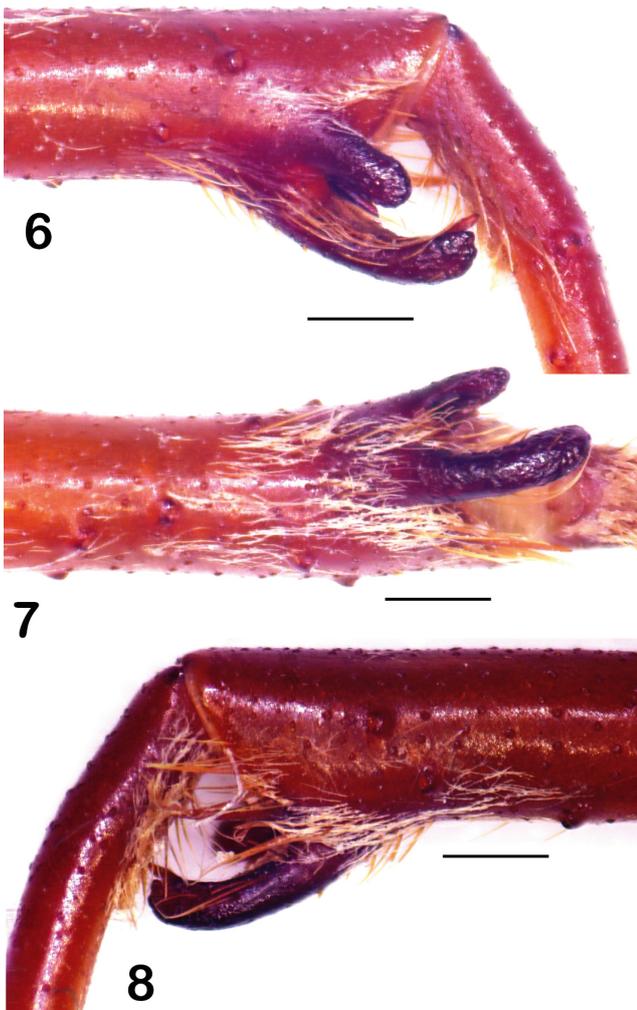
Tarsi I–II fully scopulate, tarsi III–IV divided by band of setae. Metatarsal scopulae I 40%; II 30%; III 30%; IV 15%. Lengths of legs and palpal segments see Table 1, legs 4,1,2,3. Spination: femur I d 0–0–1, II d 0–0–1, III d 0–0–2, IV d 0–0–1, patella I d 0–0–1, II d 0–0–1, III d 0–0–1, palp p 0–0–1, tibia I d 0–2–1, v 2–2–2 (1 apical), II d 0–2–1, v 2–3–2 (apical), III d 2–0–2, v 2–2–2 (apical), IV d 2–2–0, v 2–2–2 (apical), palp p 0–4–0, metatarsus I d 0–0–1, v 0–1–0, II d 1–1–0, v 1–1–3 (apical), III d 1–2–1, v 2–2–5 (apical), IV d 0–3–2, v 1–2–3 (2 apical). Tibia I with paired

tibial apophysis, RB longer than PB; PB with one short and developed megaspine with pointed apex, RB with one short and developed megaspine with a pointed apex (Figs. 6–8). Femur III incrassate. Palpal tibia slightly incrassate. Palpal cymbium with weakly developed retrolateral apophysis. Metatarsus I slightly curved. Posterior lateral spinnerets with three segments, basal 0.8, median 0.5, digitiform apical 0.7. Lateral median spinnerets with one segment. Palpal bulb with TH; embolus thick, tapering only towards apex, tip of embolus snapped off; PS and A weakly developed, PI well developed and elongate, bipartite, TA developed and rugulose, ER, PR and PAR absent, PC present, uniform in width (Figs. 2–5, see also Table 2). Urticating setae Type III present dorsally. Colour alcohol preserved brown, very faded opisthosomal patterning present, consisting of black striping on the dorsal and lateral aspects of opisthosoma (faded appearance possibly the result of its long-term immersion in alcohol and due to abrasion damage) (Figs. 9–11).

*Description of non-type female 1* (BMNH 1905.12.33–34): Total length including chelicerae 34.0. Carapace length 15.2, width 12.9. Caput slightly raised. Ocular tubercle raised, length 1.9, width 1.6. Eyes: ALE > AME, AME > PLE, PLE > PME, anterior row procurved, posterior row recurved. Clypeus narrow; clypeal fringe

Species	PS	PI	A	SA	RS	RI	Additional comments
<i>Anqasha picta</i> gen. et comb. n.	+	+++	+	–	–	–	TA developed, PI elongate, bipartite, ER, PR and PAR absent, PC present, uniform in width

Table 2: Bulb keel morphology of *Anqasha picta* (Pocock, 1903). Table format follows Bertani (2000) and Gabriel (2016) with modifications based on the new palpal bulb features detailed by Gabriel & Sherwood (2020). Homologous keels present: weakly developed (+), developed (++) , well-developed (+++), or absent (–).



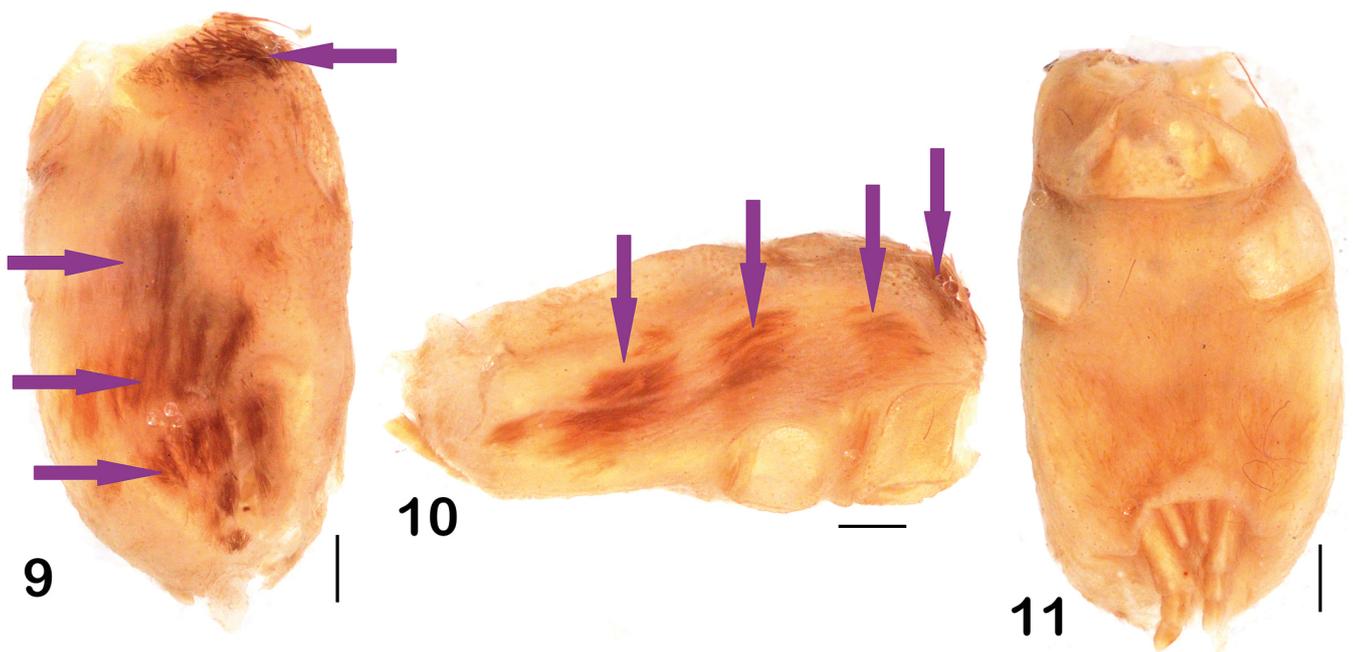
Figs. 6–8: *Anqasha picta* (Pocock, 1903), holotype male (BMNH), tibial apophysis (left hand side). **6** prolatateral view; **7** ventral view; **8** retrolateral view. Scale bars = 1 mm.

	I	II	III	IV	Palp
<b>Femur</b>	10.9	9.4	8.6	9.5	7.2
<b>Patella</b>	6.9	5.8	4.7	6.1	4.7
<b>Tibia</b>	7.5	6.6	5.6	7.6	5.1
<b>Metatarsus</b>	5.7	5.9	7.0	9.6	–
<b>Tarsus</b>	5.8	3.7	3.3	4.5	5.2
<b>Total</b>	<b>36.8</b>	<b>31.4</b>	<b>29.2</b>	<b>37.3</b>	<b>22.2</b>

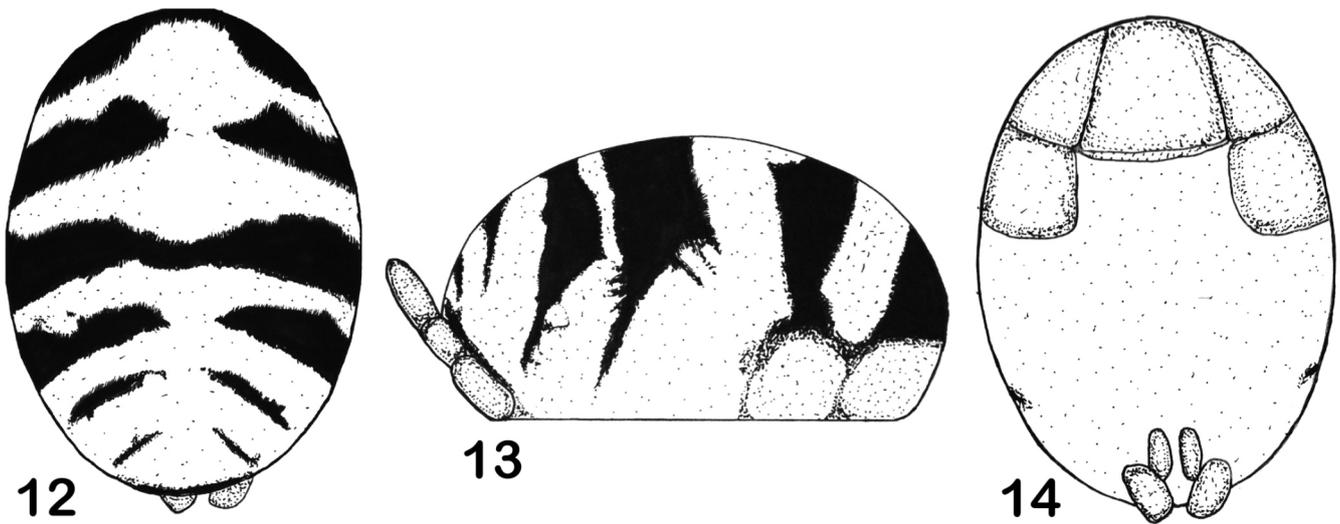
Table 3: *Anqasha picta* (Pocock, 1903), non-type female 1 (BMNH 1905.12.33–34), podomere lengths.

medium. Fovea deep, slightly recurved. Chelicera length 7.8, width 3.7. Abdomen length 11.0, width 8.5. Maxilla with 130–150 cuspules, covering approximately 45% of proximal edge. Labium length 1.7, width 2.0, with 23 labial cuspules most separated by 0.5–1.0× width of a single cuspule. Labio-sternal mounds joined. Sternum length 6.7, width 5.4, with three pairs of sigilla. Tarsi I–II fully scopulate, tarsi III–IV divided by band of setae. Metatarsal scopulae: I 100%; II 61%; III 28%; IV 16%. Lengths of leg and palpal segments: see Table 3, legs 4,1,2,3.

Spination: femur I d 0–0–1, palp d 0–0–1, tibia I v 0–0–1, II v 0–0–2, III v 1–1–3 (apical), IV v 1–0–3 (apical), palp v 0–0–2, p 0–0–2, metatarsus I v 0–0–1 (apical), II v 0–0–1 (apical), III d 2–1–1, v 0–2–3 (apical), IV d 2–3–2, v 2–3–5 (3 apical). Posterior lateral spinnerets with three segments: basal 1.6, medial 0.9, digitiform apical 1.8. Lateral median spinnerets with one segment. Spermathecae with two receptacles, each with a single rounded lobe at the respective apexes, and with sclerotized basal areas notably wider than medial area of receptacle (Fig. 12). Urticating setae Type III present dorsally. Colour alcohol preserved brown, with prominent opisthosomal patterning present, consisting of black striping on the dorsal and lateral aspects of opisthosoma.



Figs. 9–11: *Anqasha picta* (Pocock, 1903), holotype male (BMNH), opisthosoma. **9** dorsal view; **10** lateral view (right hand side); **11** ventral view. Scale bars = 1 mm. Purple arrows indicate areas where opisthosomal patterning is discernable.



Figs. 12–14: *Anqasha picta* (Pocock, 1903), non-type female (MCZ IZ-124542), opisthosoma. **12** dorsal view; **13** lateral view (right hand side); **14** ventral view.

**Variation:** non-type female 2 (BMNH 1905.12.33–34): Total length including chelicerae 34.4. Carapace length 14.2, width 12.2. Ocular tubercle length 1.9, width 2.1. Eyes: ALE > AME, AME > PLE, PLE > PME. Chelicera length 4.8, width 3.5. Abdomen length 15.5, width 10.9. Maxilla with 120–150 cuspules, covering approximately 39% of proximal edge. Labium length 1.9, width 2.4, with 10 labial cuspules. Sternum length 5.5, width 5.4. Metatarsal scopulae I 100%; II 65%; III 33%; IV 19%. Lengths of leg 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 0–0–2, IV 0–0–1, palp d 0–0–1, tibia I v 0–0–1 (apical), II v 0–0–1 (apical), III d 1–1–0, v 1–1–2 (apical), IV v 1–1–3 (apical), palp v 0–0–1, p 0–0–1, metatarsus I v 0–0–1 (apical), II v 1–1–2 (apical), III d 1–2–1, v 1–1–4 (apical), IV d 0–2–3, v 2–2–3 (apical). Posterior lateral spinnerets with three segments: basal 1.7, median 0.7, digitiform apical 1.6. Spermathecae as in non-type female 1 (Fig. 13).

**Other material:** 2♀ (BMNH 1905.12.33–34), Paramo, Recuay, 4000 m, The Andes, Peru, P. O. Simons; 3♀, 2 imm. ♀ (BMNH), Puerro Vieclo, N. of Recuay in the Callejon de Huaylas, Central Peru, bottom Santa river and a high scarp about 4200 metres, collected from beneath stones at the base of dry stone walls, vegetation: thorny shrubs and cacti, around on ancient Inca site, 1980, precise data and more of collection can be obtained from J. R. Parker (address follows, but not transcribed here, in respect to the family), *Hapalopus formosus* det. P. Hillyard, *Homoeomma*

	I	II	III	IV	Palp
<b>Femur</b>	10.2	9.0	8.0	10.3	7.9
<b>Patella</b>	6.0	6.2	5.1	6.3	4.2
<b>Tibia</b>	6.9	6.3	5.4	7.3	5.1
<b>Metatarsus</b>	6.3	6.2	7.0	9.5	–
<b>Tarsus</b>	4.0	4.0	3.5	4.5	4.2
<b>Total</b>	<b>33.4</b>	<b>31.7</b>	<b>29.0</b>	<b>37.9</b>	<b>21.4</b>

Table 4: *Anqasha picta* (Pocock, 1903), non-type female 2 (BMNH 1905.12.33–34), podomere lengths.

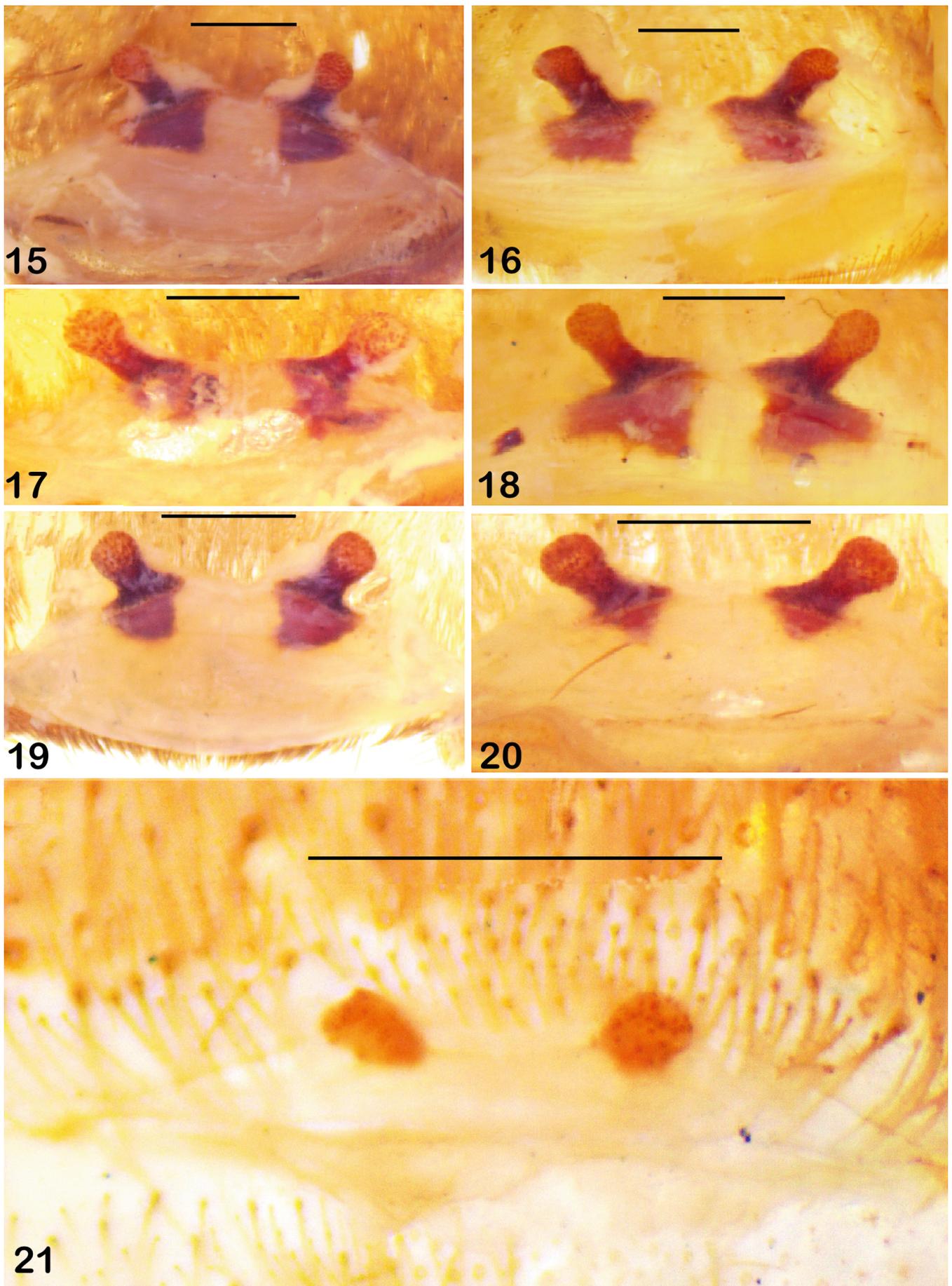
*pictus* det. Gabriel and Sherwood 14 April 2017; 1♀ (MCZ IZ-124542; Figs. 12–14), Peru Ancash: Huarez, 16 January 1973, Ann Moreton.

**Distribution:** Cordillera Blanca, Peru (Fig. 22).

**Remarks:** The holotype male is fragmented with most appendages, and the abdomen, detached. The left-hand side palpal bulb is present and has been dissected by a previous worker, but the embolus tip is snapped at the apex. The right-hand side palpal bulb has also been dissected but is not present in the tube and is thus lost. The opisthosomal markings are very faint, possibly due to abrasion and other disturbance during historical handling of the specimen. Nonetheless, some aspects of the opisthosomal pattern can still be discerned (Figs. 9–11). The non-type females located and studied for this work in the BMNH have some abrasion to the dorso-medial area of the opisthosoma (pers. obs.). The non-type female examined from the MCZ collections has its opisthosomal pattern complete and setae undisturbed (Figs. 12–14).

In an unpublished thesis, Yamamoto (2007) proposed tentatively that *H. pictum* be transferred to *Thrixopelma* Schmidt, 1994 based predominately on palpal bulb and tibial apophysis morphology (compared most closely to the supposed male of *Thrixopelma pruriens* Schmidt, 1998, but see Sherwood *et al.*, 2021a for discussion about potential non-conspicuity of this male to the holotype), in addition to its geographic distribution. However, the presence of an opisthosomal pattern in *A. picta* (absent in *Thrixopelma*), and the non-elongate PS of the palpal bulb (PS elongate in *Thrixopelma*, see Figs. 28–31) indicate that this proposed generic transfer would have been erroneous.

All seven of the females deposited in the Natural History Museum, London have been dissected to assess intraspecific spermathecae variation. Four of the females were adult and show some variation in the length of the receptacles, size of the sclerotized basal areas, and the width of the lobes of the receptacles (Figs. 15–19). Two of the females were immature, one a subadult, probably one ecdysis from matu-



Figs. 15–21: *Anqasha picta* (Pocock, 1903), non-type females and non-type immature females, spermathecae, dorsal view. **15** female 1 (BMNH 1905.12.33–34); **16** female 2 (BMNH 1905.12.33–34); **17** female 3 (BMNH); **18** female 4 (BMNH); **19** female 5 (BMNH); **20** immature female 1 (BMNH); **21** immature female 2 (BMNH). Scale bars = 1 mm.

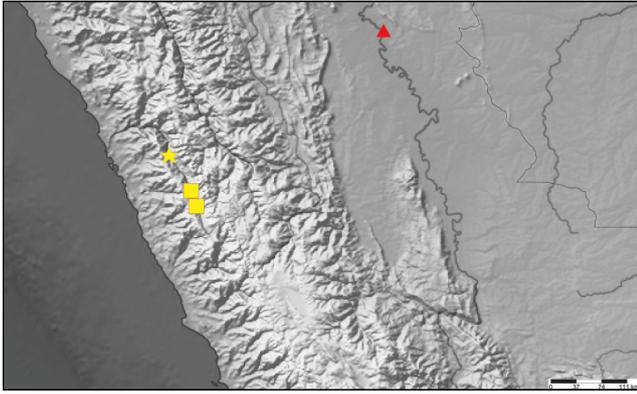


Fig. 22: Distribution of *Anqasha picta* (Pocock, 1903) and *Murphyarachne ymasumacae* gen. et sp. n. in Peru. Yellow star = type locality of *A. picta*; yellow squares = new localities for *A. picta* reported in this work; red triangle = type locality of *M. ymasumacae* sp. n.

develop first, with fully developed sclerotized basal areas being achieved at sexual maturity, as seen in the adult females.

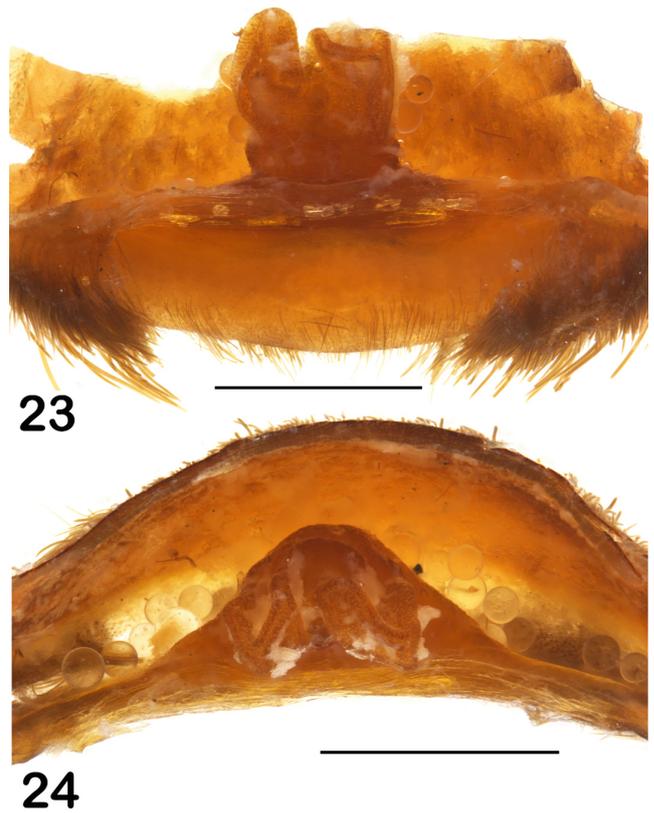
Prior to this study, *A. picta* was known only from the type locality, Caras, Peru. Here we report two novel and southernmost records from Recuay (BMNH 1905.12.33–34) and Huaraz (written as ‘Huaraz’ on original data label) (MCZ IZ–124542). These additional distribution records demonstrate that *A. picta* is distributed at least 25% of the length of the Cordillera Blanca (Fig. 22), with all three records being from within the limits of the Parque Nacional Huascarán. Further material (BMNH), collected by John Rowland Parker (1912–2007) from ‘Puerro Vieclo’ [sic] cannot be precisely located based on that locality name, which we cannot locate on a map (and it is therefore not pinpointed on our map Fig. 22). However, the detailed original data label indicates the material was collected North of Recuay, confirming again that *A. picta* occurs around the general surroundings of Recuay. We suspect that *A. picta* may be further distributed north of the type locality (Caras) and perhaps south of the novel records presented herein, especially since that general area of the Cordillera Blanca represents one continuous ecoregion (Olson *et al.* 2001).

### *Murphyarachne* gen. n.

*Type species:* *Murphyarachne ymasumacae* gen. n. et sp. n., designated herein.

*Etymology:* The generic epithet is formed from the surname Murphy, in honour of Frances Mary Murphy (1926–1995) and John Alan Murphy (1922–2021) and their extensive contributions to arachnology, and the Greek term arachne (meaning spider). The gender is feminine.

*Diagnosis:* *Murphyarachne* gen. n. can be distinguished from all other known theraphosine genera based on a combination of the following features: the presence of liriform stridulating setae on the retrolateral palpal trochanter, spermathecal morphology with two elongate receptacles fused basally giving a Y-shape in general profile, the sole presence of Type I (subtype Id) urticating setae, and the absence of an opisthosomal pattern.



Figs. 23–24: *Murphyarachne ymasumacae* gen. et sp. n. holotype female (BMNH 1912.11.3.16–18), spermathecae. **23** dorsal view; **24** apical view. Scale bars = 1 mm.

*Distribution:* Peru (Fig. 22).

*Remarks:* It is interesting to note that *Murphyarachne* gen. n. has two rare character states, and the combined presence of both of these character states has never before been reported for any taxa of the family Theraphosidae Thorell, 1869 before the present work. *Murphyarachne* gen. n. is one of only two known theraphosine genera to possess liriform stridulating setae, the other known genus for which this character state is reported is *Longilyra* Gabriel, 2014. *Murphyarachne* gen. n. is clearly differentiated from *Longilyra* based on divergent spermathecal morphology and furthermore as *Longilyra* possesses much more elongate liriform stridulating setae, which is present on both the retrolateral palpal trochanter and pro-lateral trochanter I (v. much shorter liriform stridulating setae, and only present on the retrolateral palpal trochanter in *Murphyarachne* gen. n.). Similarly, *Murphyarachne* gen. n. shares the presence of subtype Id urticating setae with only *Citharacanthus* Pocock, 1901 and *Neischnocolus*. *Murphyarachne* gen. n. is readily distinguished from *Citharacanthus* and *Neischnocolus* by the presence of liriform stridulating setae (absent in *Citharacanthus* and *Neischnocolus*) and divergent spermathecal morphology.

*Species included:* *M. ymasumacae* gen. n. et sp. n.



Figs. 25–26: *Murphyarachne ymasumacae* gen. et sp. n. holotype female (BMNH 1912.11.3.16–18). **25** palpal trochanter, retrolateral view; **26** carapace, dorsal view. Scale bar = 1 mm (25).

***Murphyarachne ymasumacae* gen. et sp. n.** (Figs. 22–26)

*Type*: Holotype ♀ (BMNH 1912.11.3.16–18), Contamama [= Contamana], River Ucayali, 1912, examined.

*Etymology*: The specific epithet is a matronym in honour of Yma Sumac (1922–2008), the famous Peruvian opera singer whose voice spanned an incredible five octaves.

*Diagnosis*: As per the generic diagnosis, *M. ymasumacae* gen. n. et sp. n. can be distinguished from all other known Peruvian theraphosines based on a combination of: the presence of solely Type I (subtype Id) urticating setae, spermathecal morphology consisting of two elongate receptacles basally fused giving a Y-shape to its general profile, the absence of an opisthosomal pattern and the presence of liriform stridulating setae on the retrolateral palpal trochanter.

*Description of holotype female* (BMNH 1912.11.3.16–18): Total length including chelicerae 27.7. Carapace length 9.7, width 8.6. Caput slightly raised. Ocular tubercle: raised, length 1.1, width 1.8. Eyes: ALE > AME, AME > PLE, PLE > PME, anterior row procurved, posterior row recurved. Clypeus narrow; clypeal fringe long. Fovea deep, slightly recurved. Chelicera length 6.7, width 2.8. Abdomen length 11.3, width 8.0. Maxilla with 160–180 cuspules, covering approximately 39% of proximal edge. Labium length 1.1, width 1.5, with 120–150 labial cuspules most separated by 0.5–1.0× width of single cuspule. Labio-sternal mounds joined. Sternum length 4.5, width 4.0, with three pairs of sigilla. Tarsi I–III fully scopulate, tarsus IV divided by band of setae. Metatarsal scopulae I 74%; II 57%; III 33%; IV ascopulate. Lengths of leg and palpal segments: see Table 5, legs 4,1,2,3.

Spination: tibia III v 0–0–2 (apical), IV v 0–0–1 (apical), palp p 0–0–2, metatarsus I v 0–0–2 (apical), II v 1–0–2 (apical), III d 0–2–2, v 0–1–2 (apical), IV d 0–3–2, v 2–3–6 (4 apical). Posterior lateral spinnerets with three segments:

basal 1.7, medial 1.0, digitiform apical 1.8. Lateral median spinnerets with one segment. Spermathecae with two elongate receptacles, basally fused giving a Y-shape to its general profile, with a cerebriform-like texture to the receptacles (Figs. 23–24). Urticating setae Type I (subtype Id) present, distributed in single patch dorsally. Stridulation organ consisting of liriform stridulating setae on the retrolateral face of the palpal trochanter (Fig. 25). Colour alcohol preserved brown, carapace with pattern of stripes radiating from fovea (Fig. 26), dorsal femora, patellae, and tibiae of legs I–IV and the palp with striping, no opisthosomal patterning discernable.

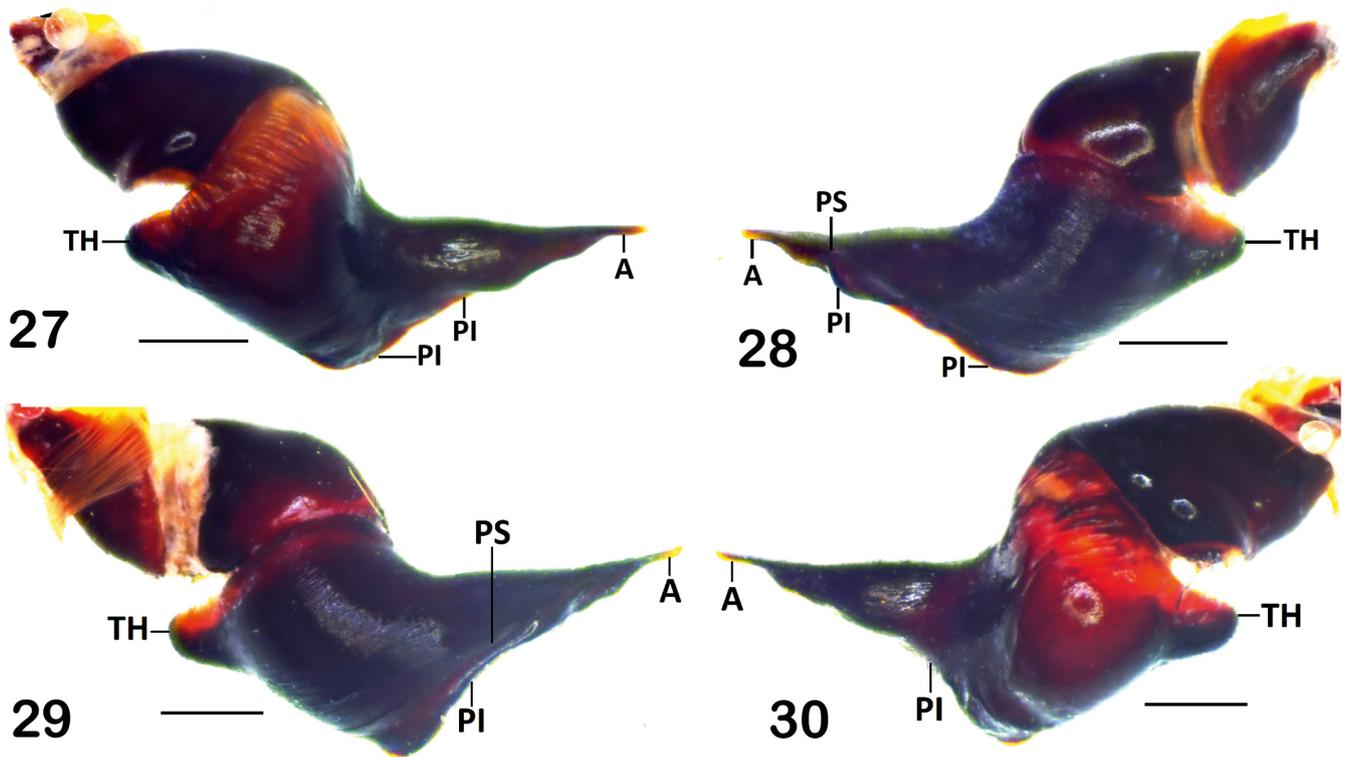
*Distribution*: Known only from the type locality, Contamana, Peru (Fig. 22).

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	I	II	III	IV	Palp
<b>Femur</b>	7.5	6.3	5.7	7.4	5.3
<b>Patella</b>	3.8	3.6	3.5	4.0	3.3
<b>Tibia</b>	5.5	4.3	3.6	5.5	3.8
<b>Metatarsus</b>	4.5	3.8	5.3	7.5	–
<b>Tarsus</b>	2.7	2.8	2.6	2.9	3.7
<b>Total</b>	<b>24.0</b>	<b>20.8</b>	<b>20.7</b>	<b>27.3</b>	<b>16.1</b>

Table 5: *Murphyarachne ymasumacae* gen. et sp. n. holotype female (BMNH 1912.11.3.16–18), podomere lengths.



Figs. 27–30: Comparative plate showing palpal bulbs of *Thrixopelma* spp. (adapted from Sherwood *et al.*, 2021a). **27** *T. lagunas* Schmidt & Rudloff, 2010, holotype male (SMF 66757-84); palpal bulb, retrolateral view; **28** same, prolateral view; **29** *T. longicollis* (Schmidt, 2003), holotype male (SMF 40565-84); **30** same, palpal bulb, prolateral view; 30 same, palpal bulb, retrolateral view. Scale bars = 1 mm.

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## References

- AUSSERER, A. 1871: Beiträge zur Kenntniss der Arachniden-Familie der Territelariae Thorell (Mygalidae Autor). *Verhandlungen der Kaiserlich-Königlichen Zoologisch-Botanischen Gesellschaft in Wien* **21**: 117–224.
- AUSSERER, A. 1875: Zweiter Beitrag zur Kenntniss der Arachniden-Familie der Territelariae Thorell (Mygalidae Autor). *Verhandlungen der Kaiserlich-Königlichen Zoologisch-Botanischen Gesellschaft in Wien* **25**: 125–206.
- BERTANI, R. 2000: Male palpal bulbs and homologous features in Theraphosinae (Araneae, Theraphosidae). *Journal of Arachnology* **28**: 29–42.
- BERTANI, R. 2001: Revision, cladistic analysis, and zoogeography of *Vitalius*, *Nhandu*, and *Proshapalopus*; with notes on other theraphosine genera (Araneae, Theraphosidae). *Arquivos de Zoologia* **36**: 265–356.
- COOKE, J. A. L., ROTH, V. D. & MILLER, F. H. 1972: The urticating hairs of theraphosid spiders. *American Museum Novitates* **2498**: 1–43.
- EVENHUIS, N. L. 2007: *The insect and spider collections of the world*, online at: <http://hbs.bishopmuseum.org/codens>
- FERRETTI, N., CAVALLO, P., CHAPARRO, J. C., RÍOS-TAMAYO, D., SEIMON, T. A. & WEST, R. 2018: The Neotropical genus *Hapalotremus* Simon, 1903 (Araneae: Theraphosidae), with the description of seven new species and the highest altitude record for the family. *Journal of Natural History* **52**: 1927–1984.
- FERRETTI, N., OCHOA, J. A. & CHAPARRO, J. C. 2016: Una nueva especie de *Acanthoscurria* (Araneae: Theraphosidae: Theraphosinae) sin órgano estridulador, del sur de Perú. *Revista Peruana de Biología* **23**: 89–94.
- GABRIEL, R. 2014: A new genus and species of theraphosid spider from El Salvador (Araneae: Theraphosidae). *Journal of the British Tarantula Society* **29**: 146–153.
- GABRIEL, R. 2016: Revised taxonomic placement of the species in the Central American genera *Davus* O. Pickard-Cambridge, 1892, *Metriopelma* Becker, 1878, and *Schizopelma* F. O. Pickard-Cambridge, 1897, with comments on species in related genera (Araneae: Theraphosidae). *Arachnology* **17**: 61–92.
- GABRIEL, R. & SHERWOOD, D. 2020: Revised taxonomic placement of *Pseudhapalopus* Strand, 1907, with notes on some related taxa (Araneae: Theraphosidae). *Arachnology* **18**: 301–316.
- GABRIEL, R., SHERWOOD, D. & LONGHORN, S. J. 2020: The revised taxonomic placement of the genus *Acentropelma* Pocock, 1901 and restoration of the genus *Pseudoschizopelma* Smith, 1995 (Araneae: Theraphosidae). *Arthropoda Selecta* **29**: 453–466.
- GALLETI-LIMA, A. & GUADANUCCI, J. P. L. 2019: Comparative morphology of stridulating setae of Theraphosinae (Araneae: Theraphosidae). *Zoologischer Anzeiger* **283**: 58–68.
- GERSCHMAN DE P., B. S. & SCHIAPELLI, R. D. 1972: El género *Homoeomma* Ausserer 1871 (Araneae: Theraphosidae). *Physis, Revista de la Sociedad Argentina de Ciencias Naturales (C)* **31**: 237–258.
- GERSCHMAN DE P., B. S. & SCHIAPELLI, R. D. 1973: La subfamilia Ischnocolinae (Araneae: Theraphosidae). *Revista del Museo Argentino de Ciencias Naturales "Bernardino Rivadavia" (Ent.)* **4**: 43–77.
- KADERKA, R. 2019: The genus *Cyriocosmus* Simon 1903 and two new species from Peru (Araneae: Theraphosidae: Theraphosinae). *Revista Peruana de Biología* **26**: 543–550.
- KADERKA, R. 2020: *Neischnocolus iquitos*, a new species from Peru (Araneae: Theraphosidae: Theraphosinae). *Revista Peruana de Biología* **27**: 441–450.
- KADERKA, R., BULANTOVÁ, J., HENEGER, P. & ŘEZÁČ, M. 2019: Urticating setae of tarantulas (Araneae: Theraphosidae): morphol-

- ogy, revision of typology and terminology and implications for taxonomy. *PLoS One* **14**: 1–43.
- KADERKA, R., FERRETTI, N., HÜSSER, M., LÜDDECKE, T. & WEST, R. 2021: *Antikuna*, a new genus with seven new species from Peru (Araneae: Theraphosidae: Theraphosinae) and the highest altitude record for the family. *Journal of Natural History* **55**: 1335–1402.
- KEYSERLING, E. 1891: *Die Spinnen Amerikas. Brasilianische Spinnen* 3. Nürnberg: Bauer & Raspe.
- NICOLETTA, M., CHAPARRO, J. C., MAMANI, L., OCHOA, J. A., WEST, R. C. & FERRETTI, N. E. 2020: Two new endemic species of *Bistriopelma* (Araneae: Theraphosidae) from Peru, including a new remarkable horned tarantula. *European Journal of Taxonomy* **644**: 1–20.
- OLSON, D. M., DINERSTEIN, E., WIKRAMANAYAKE, E. D., BURGESS, N. D., POWELL, G. V. N., UNDERWOOD, E. C., D'AMICO, J. A., ITOUA, I., STRAND, H. E., MORRISON, J. C., LOUCKS, C. J., ALLNUTT, T. F., RICKETTS, T. H., KURA, Y., LAMOREUX, J. F., WETTENGEL, W. W., HEDAO, P. & KASSEM, K. R. 2001: Terrestrial ecoregions of the world: a new map of life on Earth. *Bioscience* **51**: 933–938.
- PÉREZ-MILES, F., GABRIEL, R. & SHERWOOD, D. 2019: *Neischmocolus* Petrunkevitch, 1925, senior synonym of *Ami* Pérez-Miles, 2008 and *Barropelma* Chamberlin, 1940 (Araneae: Theraphosidae). *Arachnology* **18**: 150–155.
- PETRUNKEVITCH, A. 1925: Arachnida from Panama. *Transactions of the Connecticut Academy of Arts and Sciences* **27**: 51–248.
- PICKARD-CAMBRIDGE, F. O. 1899: On new species of spiders from Trinidad, West Indies. *Proceedings of the Zoological Society of London* **66**: 890–900, Pl. LIV.
- POCOCK, R. I. 1901: Some new and old genera of S.-American Aviculariidae. *Annals and Magazine of Natural History, decade 7* **8**: 540–555.
- POCOCK, R. I. 1903: On some genera and species of South-American Aviculariidae. *Annals and Magazine of Natural History, decade 7* **11**: 81–115.
- QUISPE-COLCA, O. M. & FERRETTI, N. E. 2021: First record of the tarantula genus *Euathlus* (Araneae: Theraphosidae: Theraphosinae) in Peru, with the description of a threatened new species. *Iheringia, Série Zoologia* **111**: 1–10.
- QUISPE-COLCA, O. M. & KADERKA, R. 2020: *Bistriopelma fabianae*, a new species of tarantula (Araneae: Theraphosidae: Theraphosinae) in a queñua forest from southern Peru. *Revista Peruana de Biología* **27**: 273–282.
- SCHIAPPELLI, R. D. & GERSCHMAN DE P., B. S. 1970: El género *Ceropelma* Mello-Leitão, 1923 (Araneae, Theraphosidae). *Physis, Revista de la Sociedad Argentina de Ciencias Naturales (C)* **30**: 225–239.
- SCHMIDT, G. 1994: Eine neue Vogelspinnenart aus Peru, *Thrixopelma ockerti* gen. et sp. n. (Araneida: Theraphosidae: Theraphosinae). *Arachnologisches Magazin* **2**: 3–8.
- SCHMIDT, G. 1998: Die chilenischen Vogelspinnen der Gattungen *Grammostola* Simon, 1892, *Paraphysa* Simon, 1892, *Euathlus* Ausserer, 1875 und *Thrixopelma* Schmidt, 1994 (Araneae: Mygalomorphae: Theraphosidae: Theraphosinae) mit Beschreibung einer neuen *Thrixopelma*-Spezies. *Arthropoda* **6**: 3–10.
- SHERWOOD, D., FABIANO-DA-SILVA, W., GABRIEL, R. & LUCAS, S. M. 2020: Redescription of *Nesipelma insulare* Schmidt & Kovařík, 1996 with a revised generic diagnosis for *Nesipelma* Schmidt & Kovařík, 1996 and a transfer from *Cyrtopholis* Simon, 1892 (Araneae: Theraphosidae). *Arachnology* **18**: 462–467.
- SHERWOOD, D. & GABRIEL, R. 2021: A new species of *Spinosatibiapalpus* Gabriel & Sherwood, 2020 from Peru (Araneae: Theraphosidae). *Revista Ibérica de Aracnología* **38**: 87–91.
- SHERWOOD, D., GABRIEL, R., KADERKA, R., LUCAS, S. M. & BRESCOVIT, A. D. 2021a: Stabilizing a chaotic taxonomy: re-description and redefinition of the genera *Lasiodorides* Schmidt & Bischoff, 1997 and *Thrixopelma* Schmidt, 1994 (Araneae: Theraphosidae). *Arachnology* **18**: 893–917.
- SHERWOOD, D., FERRETTI, N. E., GABRIEL, R. & WEST, R. C. 2021b: Redescription of the theraphosine *Hapalotremus albipes* Simon, 1903 and description of four new species of *Hapalotremus* Simon, 1903 from Peru and Bolivia (Araneae: Theraphosidae). *Arachnology* **18**: 965–989.
- SHORTHOUSE, D. P. 2010: *SimpleMappr*, an online tool to produce publication-quality point maps, online at: <https://www.simplemappr.net>
- SIMON, E. 1888: Études arachnologiques. 21e Mémoire. XXIX. Descriptions d'espèces et de genres nouveaux de l'Amérique centrale et des Antilles. *Annales de la Société Entomologique de France, serie 6* **8**: 203–216.
- SIMON, E. 1903: *Histoire naturelle des araignées. Deuxième édition, tome second*. Paris: Roret: 669–1080.
- THORELL, T. 1869: On European spiders, preceded by some observations on zoological nomenclature. *Nova Acta Regiae Societatis Scientiarum Upsalien-sis (series 3)* **7**: 1–108.
- WORLD SPIDER CATALOG 2022: *World spider catalog, version 22.5*. Bern: Natural History Museum, online at <http://wsc.nmbe.ch>
- YAMAMOTO, F. U. 2007: *Revisão taxonômica e análise filogenética do gênero Homoeomma Ausserer 1871 (Araneae, Theraphosidae)*. Unpublished Masters thesis, Instituto de Biociências, Universidade de São Paulo.