

## On some poorly known African Harpactirinae, with notes on *Avicuscodra arabica* Strand, 1908 and *Scodra pachypoda* Strand, 1908 (Araneae, Theraphosidae)

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### Summary

The holotype “female” of *Harpactirella flavipilosa* Lawrence, 1936 was re-examined and found to be an immature male, and a junior synonym of *Pterinochilus lugardi* Pocock, 1900. *Pterinochilus cryptus* sp. n. is described from Angola. *Pterinochilus leetzi* Schmidt, 2002 is considered a junior synonym of *Pterinochilus murinus* Pocock, 1897. *Ceratogyrus bechuanicus* Purcell, 1902 is treated as a junior synonym of *Ceratogyrus darlingi* Pocock, 1897. The genus *Avicuscodra* Strand, 1908 is removed from the synonymy of *Chaetopelma* Ausserer, 1871 and made a junior synonym of *Avicularia* Lamarck, 1818. The Egyptian type locality of *Avicuscodra arabica* Strand, 1908 is considered erroneous. *Heteroscodra pachypoda* (Strand, 1908) is returned to the genus *Stromatopelma* Karsch, 1881.

### Introduction

This paper deals with the taxonomy of five poorly known African theraphosids: *Harpactirella flavipilosa* Lawrence, 1936, *Pterinochilus leetzi* Schmidt, 2002 and *Ceratogyrus darlingi* Pocock, 1897 from southern Africa, *Avicuscodra arabica* Strand, 1908 allegedly from the Sinai, Egypt, and *Scodra pachypoda* Strand, 1908 from Cameroon. A new *Pterinochilus* sp. from coastal Angola is also described.

*Harpactirella flavipilosa* was described from a single “female” collected at Kabulabula, Botswana (Lawrence, 1936). In his brief description Lawrence described the carapace, appendages, and venter of the abdomen as yellow, and the dorsal abdominal surface as light-brown with dark chevron markings. He also noted that the spider was covered in yellow setae. A description of leg spination, cheliceral dentition and labio-maxillary cuspules was provided, along with carapace dimensions and total body length. Lawrence did not justify placement of his species within the genus *Harpactirella* Purcell, 1902, nor illustrate his specimen. No further taxonomic papers have been produced on this species, making its identification problematic. In the course of a revision of the genus *Harpactirella* (Gallon, in prep.), the holotype of *H. flavipilosa* was re-examined.

*Pterinochilus leetzi* was incompletely described from exuviae derived from specimens collected in south-western Zambia. Its description was published too late for inclusion within the revision of the genus *Pterinochilus* Pocock, 1897 (Gallon, 2002). However, André Leetz recently provided an alcohol-preserved female, presenting the opportunity for a detailed investigation of this species.

Pocock’s (1897) paper on African mygalomorphs was an extremely important work with respect to African theraphosid taxonomy. In this paper, Pocock described

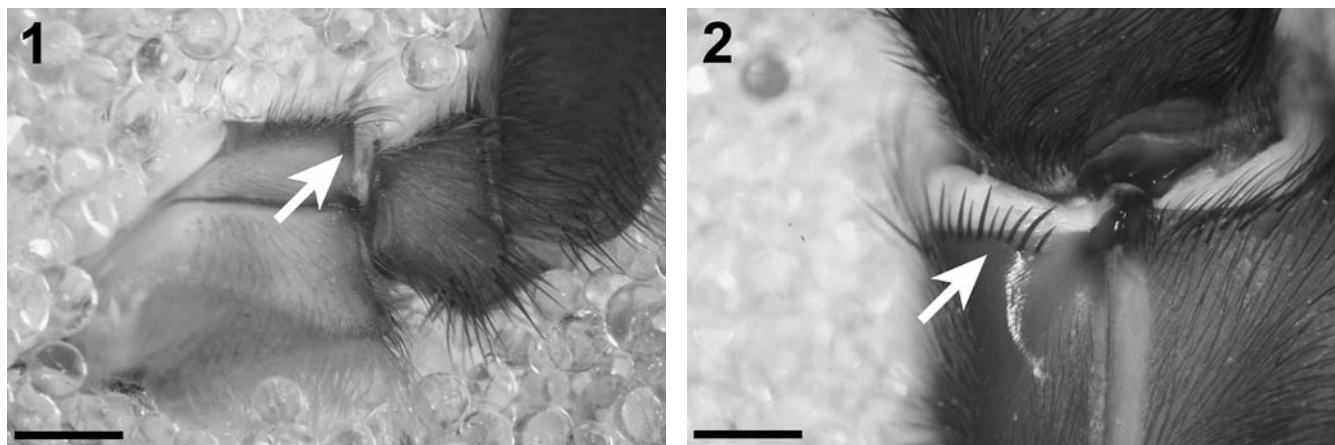
the genus *Ceratogyrus* Pocock, 1897, and its type species *Ceratogyrus darlingi*, based on three females collected from Enkeldoorn (=Chivhu), Zimbabwe. A few years later Purcell described *Ceratogyrus bechuanicus* Purcell, 1902 from two males from Mochuli (=Mochudi), Botswana, and *Ceratogyrus schultzei* Purcell, 1908 from four females from the Kalahari, Botswana. Smith (1988, 1990) described the male of *C. darlingi* and the female of *C. bechuanicus*, but did not specify a means of distinguishing the two species. In their revision of the genus, De Wet & Dippenaar-Schoeman (1991) synonymised *C. schultzei* with *C. bechuanicus*. They were unable to study a male of *C. darlingi* and cautiously retained both *C. bechuanicus* and *C. darlingi*, but hinted at the possibility that the two species might be synonymous.

*Avicuscodra* Strand, 1908, with type species *Avicuscodra arabica*, is based on a single female specimen, supposedly collected from El-Tôr, Egypt. Strand (1908, 1916) noted that this taxon lacked leg spines and stridulatory organs, resembling *Avicularia* Lamarck, 1818 in both ocular and sternal sigilla arrangement, but stated that the labium was like that of *Scodra* Becker, 1879 (= *Stromatopelma* Karsch, 1881), only more cuspulated. *Avicuscodra* remained monotypic and was synonymised with *Chaetopelma* Ausserer, 1871 by Raven (1985). No further examples of this species have been collected or reported in the literature. In the same papers Strand (1908, 1916) described *Scodra pachypoda*, also from a single female. The genus *Scodra* was later found to be preoccupied and was replaced by *Stromatopelma*, its earliest available synonym, by Raven (1985). Charpentier (1996) subsequently transferred *Stromatopelma pachypoda* to the genus *Heteroscodra* Pocock, 1899.

### Methods

Methods follow Gallon (2002), except that ocular measurements were obtained microscopically using an eyepiece graticule ( $\pm 0.01$  mm), as were the somatic measurements ( $\pm 0.1$  mm) of *Harpactirella flavipilosa*, owing to its small size.

**Abbreviations:** Eyes: AME=anterior median, ALE=anterior lateral, PME=posterior median, PLE=posterior lateral. Leg spines: DPV=distal proventral, DRV=distal retroventral, MPV=medial proventral, MRV=medial retroventral, MRL=medial retrolateral, MRD=medial retrodorsal, MPL=medial prolateral, DMV=distal midventral, DPD=distal prodorsal, DRD=distal retrodorsal, PPV=proximal proventral. R=right, L=left. Spinnerets: DS=distal segment, MS=medial segment. Collections: BMNH=Natural History Museum, London, UK; MMU=Manchester Museum, Manchester, UK; MNHN=Museum National d’Histoire Naturelle, Paris, France; MRAC=Musée Royal de l’Afrique Centrale, Tervuren, Belgium; NMWN=National Museum of Namibia, Windhoek, Namibia; PPRI=Plant Protection Research Institute (National Collection of Arachnids), Pretoria, South Africa; SAM=South African Museum, Cape Town,



Plates 1–2: Prolateral views of maxillae. **1** *Pterinochilus cryptus* sp. n., paratype male; **2** *Pterinochilus murinus*, lectotype of *P. leetzi*, distal prolateral spike setae arrowed (corresponding area devoid of spike setae arrowed on 1). Scale line=1 mm.

South Africa; SMF=Senckenberg Forschungsinstitut und Naturmuseum, Frankfurt am Main, Germany; TM=Transvaal Museum, Pretoria, South Africa; ZMB=Museum für Naturkunde der Humbolt-Universität, Berlin, Germany.

***Pterinochilus cryptus* sp. n.** (Plate 1, Figs. 1–8)

*Pterinochilus murinus*: Gallon, 2002: 214 (in part, misidentified, material record only).

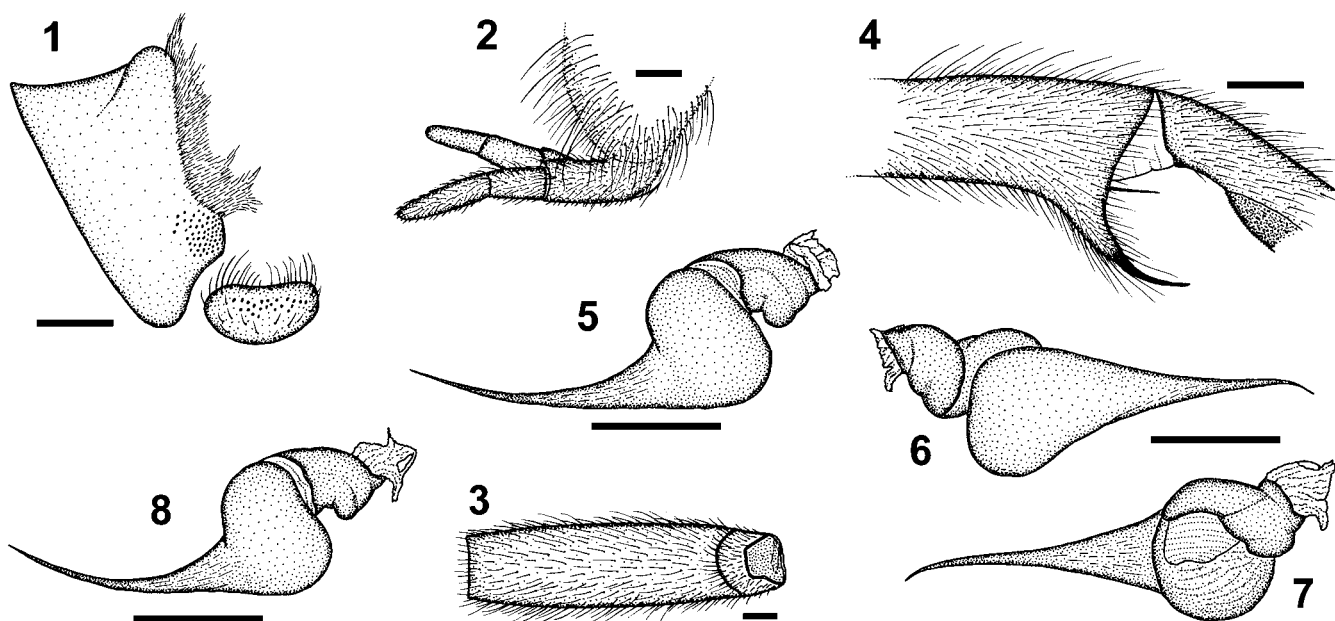
**Type material:** Holotype ♂ (TM 8938a) from Angola, Lucira [13°51'S, 12°31'E], 13 September 1956 (G. Rudebeck). Paratype ♂ (TM 8938b), same data.

**Etymology:** From the Greek for hidden, since the types were initially identified as atypical specimens of *P. murinus*.

**Diagnosis** (for further information see Gallon, 2002): The gently curved, acuminate embolus (Figs. 5–8) readily separates *P. cryptus* sp. n. from *Pterinochilus alluaudi* Berland, 1914 and *P. murinus*. The absence of an in-

flected embolic tip differentiates *P. cryptus* sp. n. from *P. chordatus* (Gerstäcker, 1873). It differs from *P. simoni* Berland, 1917 by the absence of a bisecting row of stiffened setae within the prolateral scopula of the palpal trochanter, and by its proportionally longer tibial spur megaspine. The tibial spur protrudes ventrally in *P. cryptus* sp. n. (Fig. 4), whereas in *P. lugardi* Pocock, 1900 it protrudes laterally. In *P. cryptus* sp. n. femur III is slightly incrassate (Fig. 3), but in male *P. lugardi* and *P. vorax* Pocock, 1897 it is strongly incrassate. *Pterinochilus cryptus* sp. n. closely resembles *P. murinus* in its long body setae and elongated spinnerets (Fig. 2). In *P. murinus* a row of robust spike setae are present on the distal prolateral margin of the maxilla (Plate 2); in *P. cryptus* sp. n. the corresponding setae are fine and not robust (Plate 1). The reduced number of labial cuspules in *P. cryptus* sp. n. (c. 30) provides further distinction from *P. lugardi* (c. 65) and *P. vorax* (c. 70).

**Male holotype:** Total length 26.2. Carapace profile low, length 11.8, width 9.8. Abdomen length 10.2, width



Figs. 1–8: *Pterinochilus cryptus* sp. n. **1–7** Holotype male. **1** Labium and maxilla, ventral view; **2** Posterior spinnerets, lateral view; **3** Femur and trochanter III, dorsal view; **4** Tibial spur, prolateral view; **5** Palpal bulb, retrolateral view; **6** Ditto, ventral view; **7** Ditto, dorsal view. **8** Paratype male, palpal bulb, retrolateral view. Scale lines=1 mm.

	Fe	Pa	Ti	Mt	Ta
<b>I</b>	10.1	6.1	7.1	7.5	4.8
<b>II</b>	9.6	5.5	6.6	7.5	4.9
<b>III</b>	8.1	5.0	6.0	7.9	5.3
<b>IV</b>	10.0	5.0	7.8	10.0	5.4
<b>Palp</b>	5.7	3.8	4.6	—	1.3

Table 1: *Pterinochilus cryptus* sp. n. Lengths of leg and palp segments of male holotype (TM 8938a).

6.4. Fovea deep oval pit. Ocular tubercle length 1.42, width 1.89. Clypeus 0.36. Eye sizes: AME 0.41, ALE 0.57, PME 0.36, PLE 0.48. Sternum with three pairs of oval submarginal sigilla, posterior pair more remote from sternal margin. Labium with 32 cuspules (Fig. 1). Maxilla with *c.* 80 cuspules. DS of posterior spinneret digitiform and very elongated (Fig. 2). Chelicerae with 7R, 7L teeth on promargin. Stridulatory scopula of plumose setae on retrolateral cheliceral face, corresponding with scopula of similar plumose setae on prolateral trochanteral face of palp. Leg and palp segment lengths in Table 1. Metatarsus I straight. Femur III slightly incrassate (Fig. 3). Tarsal scopulae: I–III integral, IV divided in proximal half by fine setae. Metatarsal scopulae: I 85%, II 83%, III–IV 60% (I–III integral, IV bisected longitudinally by band of stiff setae). Paired claws smooth, third claw absent. All tarsi with paired claw tufts. Clavate trichobothria: restricted to U-shaped region on apical half of all tarsi (tarsus I, 24R, 23L). Spination: palp tibia 1DPV spine-seta (0R); leg I tibia 1DRV; leg II tibia 2DRV, 1DPV; leg III tibia 3DRV, 1DPV, metatarsus 1MPV, 1DRV (0R), 1DMV (0R), 1DPV, 1MPL, 1DPD, 1DRD (0R); leg IV tibia 2DRV, 1DPV, metatarsus 1MPV, 1DRV (0R), 1DMV, 1DPV, 1MPL, 1MRD (0L), 1DPD, 1DRD. Remaining leg segments aspinose. Tibial spur (Fig. 4): DPV apophysis long, sub-cylindrical; surmounted megaspine long, curved, protruding ventrally. Coloration: chelicerae, legs, palps and abdomen yellow-brown. Carapace brown with ill-defined yellow-brown woolly radial striae. Dorsal abdominal pattern not obvious. Sternum and ventral coxal surfaces dark brown. Palpal bulb (Figs. 5–7): tegulum pyriform; embolus elongated, gently curved, acuminate, without keels, sub-circular in cross-section.

*Male paratype*: As holotype except: Total length 21.6. Carapace profile low, length 9.2, width 7.5. Abdomen length 9.3, width 5.5. Ocular tubercle length 1.13, width 1.51. Clypeus 0.26. Eye sizes: AME 0.38, ALE 0.46, PME 0.29, PLE 0.44. Labium with *c.* 30 cuspules. Maxilla with *c.* 95 cuspules. Chelicerae with 7R, 8L teeth on

	Fe	Pa	Ti	Mt	Ta
<b>I</b>	7.7	4.8	6.6	6.2	4.4
<b>II</b>	7.9	4.4	6.2	6.1	4.6
<b>III</b>	7.2	3.9	5.3	6.8	4.6
<b>IV</b>	9.0	4.4	7.2	8.8	4.8
<b>Palp</b>	4.9	3.5	4.1	—	1.4

Table 2: *Pterinochilus cryptus* sp. n. Lengths of leg and palp segments of male paratype (TM 8938b).

promargin. Leg and palp segment lengths in Table 2. Metatarsal scopulae: I 85%, II–IV 66% (I–III integral, IV bisected longitudinally by band of stiff setae). Clavate trichobothria: (tarsus I, 10R, 25L). Spination: palp tibia 1DPV; leg I tibia 1DRV; leg II tibia 1DRV, 1DPV; leg III tibia 1DRV, 1DPV, metatarsus 1MPV, 1DRV, 1DMV, 1DPV, 1DPD, 1DRD; leg IV tibia 2DRV (1L), 1DPV, metatarsus 1PPV (0R), 1MPV, 1DRV, 1DMV, 1DPV, 1MRD (0L), 1DPD, 1DRD. Remaining leg segments aspinose. Palpal bulb (Fig. 8).

*Female*: Unknown.

*Distribution*: Known only from the type locality, Lucira, Angola (Map 1).

*Material examined*: Only the types.

*Ecology*: Unknown. Males are mature in September.

*Remarks*: Gallon (2002: 214) listed both specimens as atypical examples of *P. murinus*, supposedly exhibiting palp re-growth (note their physical data were not tabulated within those of *P. murinus*). Although the right palp of the holotype is clearly re-grown, indicated by palpal bulb abnormality, the left bulb and those of the paratype are normal and consistent with each other. Autotomy of theraphosid limbs occurs at the coxal–trochanteral joint, so re-growth would not ordinarily involve the maxilla. If these specimens were *P. murinus* exhibiting palpal re-growth, they would still have the robust row of spike setae on the prolateral margin of the maxilla, which they do not have. The specimens initially lacked locality data, but these have since been located within the museum's database.

***Pterinochilus lugardi* Pocock, 1900** (Plates 3–4, Figs. 9–13, 15)

*Pterinochilus Lugardi* Pocock, 1900: 318 (D♂).

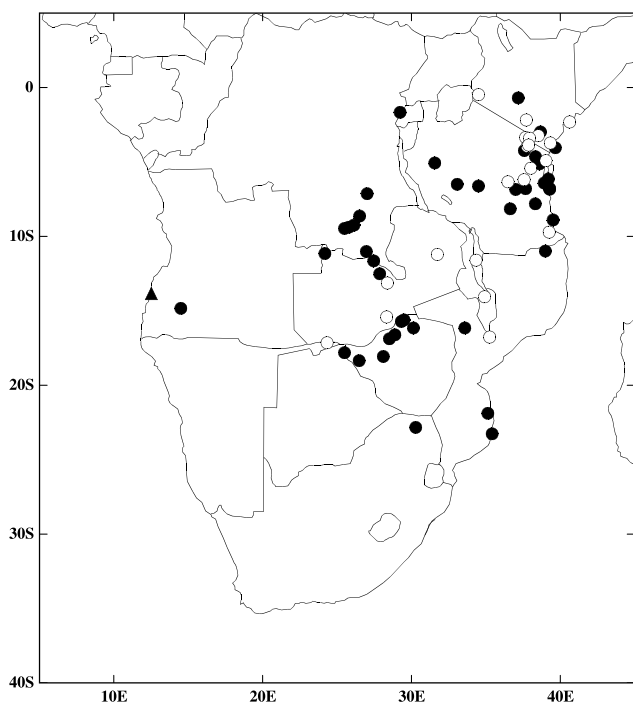
*Harpactirella flavipilosa* Lawrence, 1936: 145 (D imm. ♂). **New synonymy.**

*Pterinochilus lugardi*: Gallon, 2002: 209, figs. 14–25 (♂♀).

*Type material*: Holotype imm. ♂ (TM 5952) of *Harpactirella flavipilosa* from Botswana, Kabulabula [17°49'S, 24°58'E], 13 July 1930 (Fitzsimons). See Gallon (2002) for full synonymy/type listings and diagnosis. All types examined apart from those of *Eucratoscelus tenuitibialis* Schmidt & Gelling, 2000.

*Immature male* (holotype of *Harpactirella flavipilosa* TM 5952) (Plate 3): Total length, including chelicerae, but excluding spinnerets 15.0. Carapace profile low, length 5.3, width 4.0. Abdomen length 6.3, width 3.6. Fovea transverse, deep slit. Ocular tubercle length 0.81, width 1.09. Clypeus 0.10. Eye sizes: AME 0.32, ALE 0.32, PME 0.19, PLE 0.23. Sternum with three pairs of oval sigilla; anterior two pairs submarginal, posterior pair more remote from sternal margin. Labium with 53 cuspules. Maxilla with *c.* 110 cuspules. Paired glabrous labiosternal areas present on labiosternal suture (Fig. 11). DS of posterior spinneret digitiform (Fig. 12). Chelicerae with 8R, 8L teeth on promargin. Rudimentary stridulatory scopula of fine isolated setae on retrolateral cheliceral face (Figs. 9–10), corresponding with similar setae on prolateral trochanteral face of palp (both scopulae more obvious when viewed dorsally).





Map 1: Distribution of *Pterinochilus murinus* Pocock, ● previous records, ○ records since Gallon (2002), including records from Gallon (2005); *Pterinochilus cryptus* sp. n. ▲.

Leg and palp segment lengths in Table 3. Tarsal scopulae: palp–tarsus III integral, tarsus IV divided by band of setae. Metatarsal scopulae: I–II 83%, III 75%, IV 66% (I–III integral, IV bisected longitudinally by band of stiff setae). Paired claws smooth, third claw absent. All tarsi with paired claw tufts. Clavate trichobothria: restricted to V-shaped region on apical half of all tarsi (tarsus I, 10R, 9L). Spination: palp tibia 1DRV, 2DPV; leg I tibia 1DPV (0L), metatarsus 1DMV; leg II metatarsus 1DMV; leg III tibia 1DRV, 1DPV, metatarsus 1MRV, 1MPV, 1DRV, 1DMV, 1DPV, 1MPL, 1DPD, 1DRD; leg IV tibia 1DRV, 1DPV, metatarsus 1MRV (2L), 1MPV, 1DRV, 1DMV, 1DPV, 1MPL, 1MRD, 1DPD, 1DRD. Remaining leg segments aspinose. Coloration: carapace, chelicerae, legs, palps and venter of abdomen yellow-brown. Dorsum of abdomen light brown with reticulations and darker pattern of bars and spots.

	Fe	Pa	Ti	Mt	Ta
I	4.1	2.5	2.6	2.2	2.2
II	3.6	2.3	2.1	2.0	2.3
III	3.1	1.8	1.7	2.3	2.3
IV	4.1	2.3	2.9	3.6	2.4
Palp	3.0	1.8	1.7	—	2.3

Table 3: *Pterinochilus lugardi* Pocock, 1900. Lengths of leg and palp segments of immature male holotype (TM 5952) of *Harpactirella flavipilosa* Lawrence, 1936.

*Additional material examined:* NAMIBIA: NMWN 39898, 1♂, Katima Mulilo, East Caprivi [17°30'S, 24°16'E], 20 October 1984 (C. H. G. Schlettwein). Also refer to Gallon (2002).

*Remarks:* Examination of the chelicerae from the holotype of *Harpactirella flavipilosa* revealed the presence of a small rudimentary retrolateral scopula (Figs. 9–10), corresponding with a similar weak scopula on the prolateral face of the palpal trochanters. Lawrence (1936) presumably overlooked these rudimentary scopulae when he allocated his species to the genus *Harpactirella*. *Harpactirella* (holotype and conspecifics of type species, *Harpactirella treleveni* Purcell, 1902, examined) lacks retrolateral cheliceral scopulae, and instead exhibits a corresponding area with a few isolated setae (Fig. 14) (Purcell, 1902; Raven, 1985; Gallon, 2004). The possession of these scopulae by *H. flavipilosa* precludes its placement within *Harpactirella*. Seven Harpactirinae genera autapomorphically possess retrolateral cheliceral scopulae: *Augacephalus* Gallon, 2002, *Ceratogyrus* Pocock, 1897, *Eucratoscelus* Pocock, 1898, *Harpactira* Ausserer, 1871, *Idiothele* Hewitt, 1919, *Pterinochilus* Pocock, 1897 and *Trichognathella* Gallon, 2004. Placement within most of these genera is discounted for the following reasons: *Eucratoscelus*, by the presence of DPD spines on metatarsi III–IV; *Harpactira*, by the absence of prolateral maxillary strikers; *Idiothele*, by the digitiform distal segment on the posterior spinnerets and numerous maxillary cuspules; *Trichognathella*, by the absence of prolateral cheliceral scopulae; *Augacephalus* and *Ceratogyrus*, by the absence of ventral leg-darkening on the anterior appendages. Placement of *H. flavipilosa* within *Pterinochilus* is most parsimonious,



Plates 3–4: *Pterinochilus lugardi*. **3** Holotype immature male of *Harpactirella flavipilosa*, total body length 15 mm; **4** Immature male, total body length 26 mm.

since its character-states are consistent only with this genus.

The type locality of *H. flavipilosa* corresponds with the known distributions of only two *Pterinochilus* species: *Pterinochilus lugardi* Pocock, 1900 and *Pterinochilus murinus* Pocock, 1897 (Gallon, 2002). Since the holotype of *H. flavipilosa* is an immature male, it is not possible to use spermathecal shape, which readily separates these two *Pterinochilus* species from an early instar. Likewise, the autapomorphic possession of spike setae on the distal prolateral maxillary margin in *P. murinus* cannot be used, since this feature is not apparent in specimens of this size.

Posterior spinneret shape separates these two *Pterinochilus* species from an early instar onwards. The distal segment of *P. lugardi* is relatively shorter (Fig. 15) than that of *P. murinus* (Fig. 16). In the holotype of *H. flavipilosa* the distal segment is not strongly elongated (Fig. 12), unlike that of *P. murinus*, and in this respect corresponds more closely with *P. lugardi*. The yellow coloration of *H. flavipilosa*, described by Lawrence, corresponds well with the pale coloration of *P. lugardi*. Even early instar spiderlings of *P. lugardi* are pale, unlike those of *P. murinus* which are dark (pers. obs.). The type locality of *P. lugardi* (Kwebe Hills, Lake Ngami, Botswana [20°28'S, 22°43'E]) is c. 350 km from the type locality of *H. flavipilosa*. Three mature male *P.*

*lugardi* were also collected at the Kazuma forestry camp, Zimbabwe [18°10'S, 25°36'E] (Gallon, 2002) — a site in close proximity to the type locality of *H. flavipilosa*.

For these reasons *Harpactirella flavipilosa* is considered a junior synonym of *Pterinochilus lugardi*.

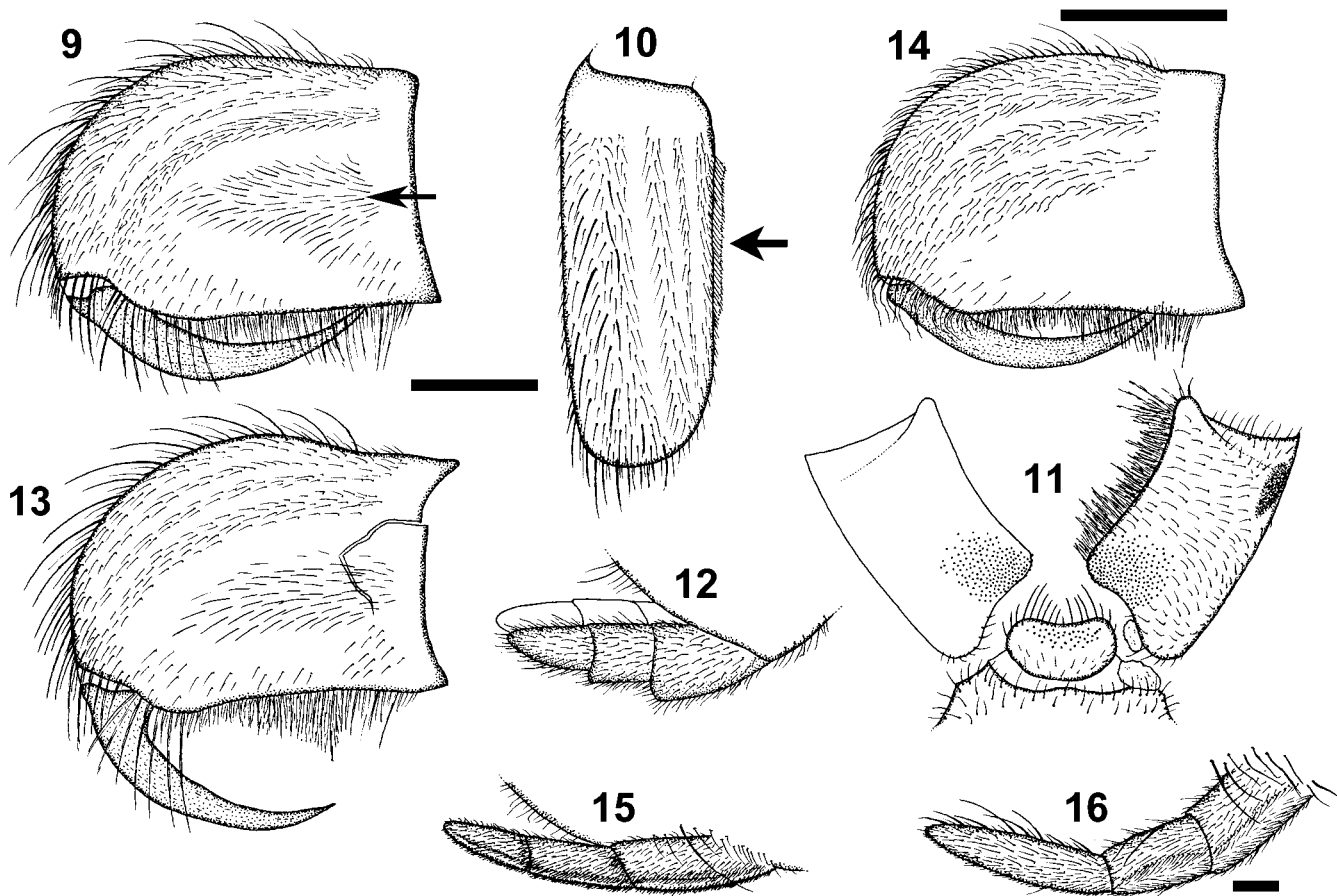
***Pterinochilus murinus* Pocock, 1897** (Plate 2, Figs. 16–18)

*Pterinochilus murinus* Pocock, 1897: 753, pl. 43, fig. 4 (D imm. ♂);  
Gallon, 2002: 211, figs. 26–34 (♂♀).

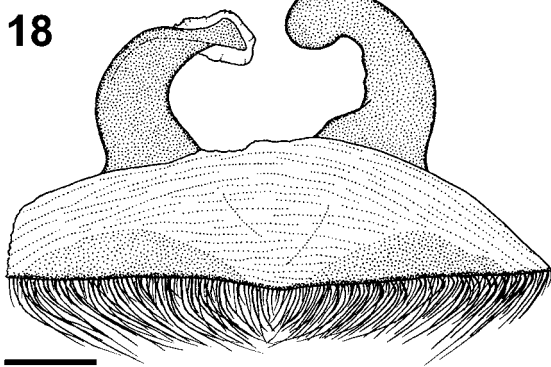
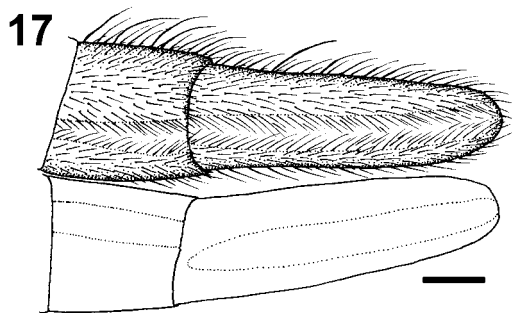
*Pterinochilus leetzi* Schmidt, 2002a: 3, figs. 1–2 (D♀); 2002b: 1, figs. 1–2 (D♀); 2003: 227, fig. 720 (♀). **New synonymy.**

**Type material:** Lectotype ♀ (MNHM) here designated of *Pterinochilus leetzi* from southwest Zambia, near Zambezi river and Angola border [c. 17°28'S, 24°20'E], 1998 (Italian entomologist). See Gallon (2002) for full synonymy/type listings and diagnosis. All types examined apart from that of *Pterinochilus mamillatus* Strand, 1906 (destroyed in WWII).

**Remarks:** André Leetz provided Günter Schmidt with several exuviae, from the two living types, which he used to describe *P. leetzi*. However, the actual types were never subsequently deposited at MNHN (C. Rollard, pers. comm.). Leetz provided me with a preserved female (described below), which was one of the two specimens from which moults were originally sent to Schmidt (A. Leetz, pers. comm.). It is impossible to



Figs. 9–16: 9–12 Holotype immature male of *Harpactirella flavipilosa*. 9 Left chelicera, showing rudimentary scopula (arrowed), retrolateral view; 10 Ditto, dorsal view; 11 Labium and maxillae, ventral view; 12 Posterior spinnerets, lateral view. 13 *Pterinochilus lugardi*, immature female exuvia, left chelicera showing rudimentary scopula, retrolateral view. 14 *Harpactirella treleaveni* female (SAM-ENW-X012188), left chelicera, retrolateral view. 15–16 Posterior spinneret, prolateral view. 15 *P. lugardi*, adult female (BMNH); 16 *P. murinus*, adult female (BMNH). Scale lines = 1 mm (Figs. 9–13 to same scale).



Figs. 17–18: *Pterinochilus murinus* (lectotype female of *Pterinochilus leetzi*). **17** Posterior spinnerets, ventral view; **18** Spermathecae, dorsal view. Scale lines = 1 mm.

ascertain whether the moult described in Schmidt's papers came from the preserved specimen described below, or from the second specimen. For this reason I have designated this preserved specimen as the lectotype of *Pterinochilus leetzi*.

**Female** (lectotype of *Pterinochilus leetzi*, MNHN): Total length, including chelicerae, but excluding spinnerets 55.0. Carapace profile low, length 21.7, width 18.3. Abdomen length 24.7, width 17.1. Fovea transverse, deep pit. Ocular tubercle length 2.47, width 2.91. Clypeus 0.81. Eye sizes: AME 0.77, ALE 0.86, PME 0.48, PLE 0.57. Sternum with three pairs of oval submarginal sigilla. Labium with 32 cuspules. Maxilla with c. 140 cuspules. Paired glabrous labiosternal areas present on labiosternal suture. DS of posterior spinneret digitiform (Fig. 17). Chelicerae with 12R, 10L teeth on promargin. Stridulatory scopula of well-developed plumose setae on retrolateral cheliceral face, corresponding with scopula of similar plumose setae on proteral trochanteral face of palp. Row of spike setae present on distal proteral margin of maxilla (Plate 2). Leg and palp segment lengths in Table 4. Tarsal scopulae integral. Metatarsal scopulae: I–II 85%, III–IV 66% (I–III integral, IV bisected longitudinally by band of stiff setae). Paired claws smooth, third claw absent. All tarsi with paired claw tufts. Clavate trichobothria: restricted to V-shaped region on apical half of all tarsi (tarsus I, 43R, 47L). Spination: palp tibia 1DPV; legs I–II tibiae 1DRV, 1DPV; leg III tibia 1DRV, 1DPV (0R), metatarsus 1MPV (0R), 1DRV, 1DMV, 1DPV, 1DPD, 1DRD; leg IV tibia 1DRV, 1DPV (0R), metatarsus 1MPV (0R), 1DRV, 1DMV, 1DPV, 1DRD (0R). Remaining leg segments aspinose. Coloration: carapace uniformly pale golden-grey, with small black mask in front of ocular

	Fe	Pa	Ti	Mt	Ta
<b>I</b>	16.6	10.7	12.8	10.9	7.3
<b>II</b>	14.8	9.5	10.9	10.4	7.0
<b>III</b>	13.0	8.0	9.2	11.0	6.9
<b>IV</b>	15.2	8.9	11.6	13.3	7.4
<b>Palp</b>	11.3	7.5	8.0	—	8.9

Table 4: *Pterinochilus murinus* Pocock, 1897. Lengths of leg and palp segments of female lectotype (MNHN) of *Pterinochilus leetzi* Schmidt, 2002.

tubercle. Dorsum of chelicerae, coxae and trochanters pale golden-grey. Legs dark grey-brown with distinct white bands at joints. Dorsum of abdomen golden brown with dark pattern of bars, spots and reticulations. Venter of abdomen dark brown with orange-brown booklung covers and grizzled genital sclerite. Spermathecae: paired and unlobed with terminal sections curved inwards. Setal fringe on posterior margin of epigastric scutum composed of strongly curved setae (Fig. 18).

**Additional material examined:** KENYA: BMNH, 1♂, lavatory, Hunter's Lodge Hotel, Kiboko [02°12'S, 37°43'E], 29 November 1967 (W. E. Grainger); BMNH, 1♀, Maziwa Matatu [02°20'S, 40°39'E], 16 March 1897 (Stewart Betton); BMNH (dry), 1♀, Mamboya, Mpapua [06°21'S, 36°29'E], (Mr E. J. Baxter); BMNH, 1♀, Taveta forest, banana axil [03°23'S, 37°40'E], May 1970 (J. Hudson); BMNH 90-3-15-8-9, 1♀, Mombasa [04°04'S, 39°40'E], (Grose Smith); BMNH 96-5-27-3, 1 imm. ♂, N. G. of Lake Victoria, Nyanza [c. 00°30'S, 34°30'E], (Dr Ansorge); BMNH 97-11-20-48-49, 1 imm. ♂, Ndi [03°15'S, 38°31'E], 4–25 August 1897 (Stewart Betton); BMNH 97-11-20-50-51, 1♀ 1 imm., Mbuyuni [03°25'S, 37°56'], 118 m, 24 August & 10 September, no year (Stewart Betton); BMNH 97-11-20-52, 1♀, Manjewa [03°45'S, 39°20'E], 14 September 1896 (Stewart Betton); BMNH (dry), 1♂, Mombasa [04°04'S, 39°40'E], (R. Crawshaw). MALAWI: BMNH 14-7-4-3-4, 1♂ 1♀, Port Herald (=Nsanje) [16°47'S, 35°15'E], (Dr J. E. S. Old). MOZAMBIQUE: BMNH 97-8-21-1 (dry), 1♀, Portuguese East Africa. TANZANIA: BMNH 1958-2-18-1, 1♀, Chazi, 60 mi N of Morogoro [06°13'S, 37°34'E], 2 January 1958 (D. S. Bertram); BMNH 97-11-20-48-49, 1♀, Machuma, farm land [04°56'S, 39°03'E], 21 February 1897 (Stewart Betton); BMNH, 1♀, Handeni, Tanganika [05°26'S, 38°01'E], 1 March 1955 (G. Hunter); BMNH 1926-6-19-33-36, 1♂ 1♀ (second ♀ not conspecific), Tendaguru [09°44'S, 39°15'E], (W. E. Cutler). ZAMBIA: BMNH, 1♂, Lusaka [15°26'S, 28°20'E], 4 July 1956 (A. E. King); BMNH, 1♀, Luanshya School, Luanshya [13°09'S, 28°24'E], 7 May 1952 (Mrs J. H. Sinclair); BMNH 1946-12-31-68, 1♀, rest house veranda, Shiwa Ngandu (=Ishiba Ngandu) [11°14'S, 31°44'E], December 1944 (P. D. L. Guilbride); BMNH 14-12-14-7 (dry), 1♂, N. Rhodesia, (F. V. Bruce Miller). NOT SPECIFIED: BMNH 1968-2-2-3-18, 1♀, East Africa (Mrs Wise). Also refer to Gallon (2002, 2005).

**Distribution:** See Map 1.

**Ecology:** The types of *P. leetzi* were collected from hollow tree trunks and under rocks (Schmidt, 2002a, b; A. Leetz, pers. comm.).

**Remarks:** In his description of *Pterinochilus leetzi*, Schmidt (2002a, b) illustrated the spermathecae of one of the types from exuviae. His illustration (reproduced in Schmidt, 2003) clearly shows the spermathecae to be paired, unlobed and with their termini inwardly curved, just as in the *P. leetzi* lectotype described here (Fig. 18). This spermathecal shape is autapomorphic for *Pterinochilus murinus* Pocock, 1897 (Gallon, 2002). Schmidt also diagnosed *P. leetzi* on the reduced number of labial cuspules (<30), which although low, is also consistent with *P. murinus* (c. 40–50); adult *P. lugardi* have c. 65–70



(Gallon, 2002). Furthermore, the lectotype of *P. leetzi* possesses a row of spike setae on the distal prolateral maxillary margin (Plate 2)—an autapomorphic character of *P. murinus*.

Schmidt (2002a, b) provided a colour plate of a live *P. leetzi* specimen exhibiting dark grey legs (with pale annulations at the joints), pale golden carapace and chelicerae, and a beige abdomen marked with a dark pattern of bars, spots and reticulations. This coloration falls within the known geographical colour variation of *P. murinus*, and is consistent with specimens examined from adjacent regions of north-western Zimbabwe (Gallon, 2002). The microhabitats where the *P. leetzi* specimens were collected are also consistent with the known ecology of *P. murinus*.

For these reasons *Pterinochilus leetzi* Schmidt, 2002 is considered a junior synonym of *Pterinochilus murinus* Pocock, 1897.

***Ceratogyrus darlingi* Pocock, 1897** (Plates 5–6, 9, Figs. 19–37)

*Ceratogyrus darlingii* Pocock, 1897: 754, pl. 42, fig. 5 & pl. 43, figs. 1–1a (D♀); Smith, 1988: 128, pl. 3 & figs. 53b, d, h (♂); De Wet & Dippenaar-Schoeman, 1991: 54, figs. 4g, 11a–d (♂♀).

*Ceratogyrus bechuanicus* Purcell, 1902: 339 (D♂); Lawrence, 1936: 145 (♂, D♀); Smith, 1988: 128, pl. 3 (♂); 1990: 70, figs. 317–330a, unnumbered photo (♂♀); De Wet & Dippenaar-Schoeman, 1991: 45, figs. 4e & f, 5a–c, 7a–j (♂♀), syn.; Schmidt, 1993: 116, fig. 356, pl. 353 (♂♀); 2003: 221, figs. 675–677, Sp. 17 (♂♀). **New synonymy.**

*Ceratogyrus Darlingi*: Simon, 1903: 948, fig. 1098 (♀).

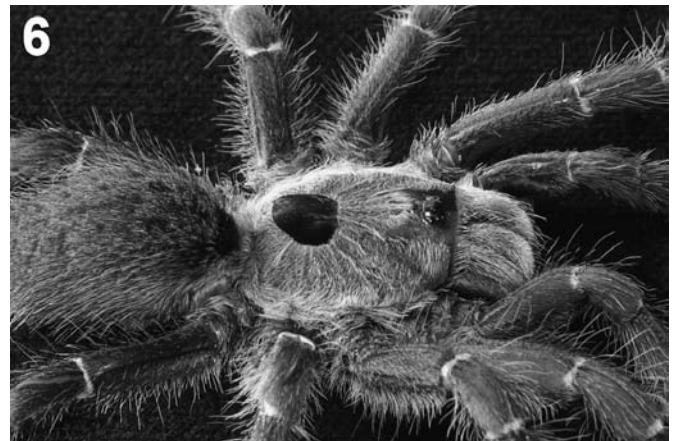
*Ceratogyrus schultzei* Purcell, 1908: 213 (D♀); Smith, 1990: 75 (♀).

*Ceratogyrus darlingi*: Smith, 1990: 71, figs. 331–342, unnumbered photo (♂♀); Schmidt, 1993: 116, figs. 358–360 (♂♀); 2003: 222, figs. 679–681, photo 62 (♂♀).

*Ceratogyrus dolichocephalus*: Smith, 1990: 73, figs. 351–355 (mis-identified ♂ only).

**Type material:** Lectotype ♀ and 2♀ paralectotypes (BMNH 1897-4-6-3-5) of *Ceratogyrus darlingi* from Zimbabwe, Enkeldoorn (=Chivhu) [19°01'S, 30°54'E], (J. ffolliott Darling); examined. Syntypes 2♂ (SAM 4539) of *Ceratogyrus bechuanicus* from Bechuanaland (=Botswana), Mochuli (=Mochudi) [24°28'S, 26°05'E], (Miss Neethling); not examined, destroyed (De Wet & Dippenaar-Schoeman, 1991). Syntypes 2♀ (ZMB 29829) of *Ceratogyrus schultzei* from Bechuanaland (=Botswana), Kgokong (=Kokong) to Kang, Kalahari [23°45'S, 22°49'E], December 1904 (Schultze); Purcell (1908) cites 4♀, but only 2♀ present in museum jar (J. Dunlop, pers. comm.); 1♀ examined.

**Diagnosis:** Readily distinguished from most other protuberate *Ceratogyrus* species by the form of the foveal protuberance. In both sexes this forms a discrete, sub-conical, posteriorly inclined process. However, some female specimens of *C. marshalli* have posteriorly inclined foveal protuberances (Plate 7). *Ceratogyrus darlingi* is further separated from *C. marshalli* by the extent of the pale sub-abdominal band. In *C. darlingi* this band occurs only over and between the anterior booklung covers (Plate 9, Fig. 37), whereas in *C. marshalli* it also



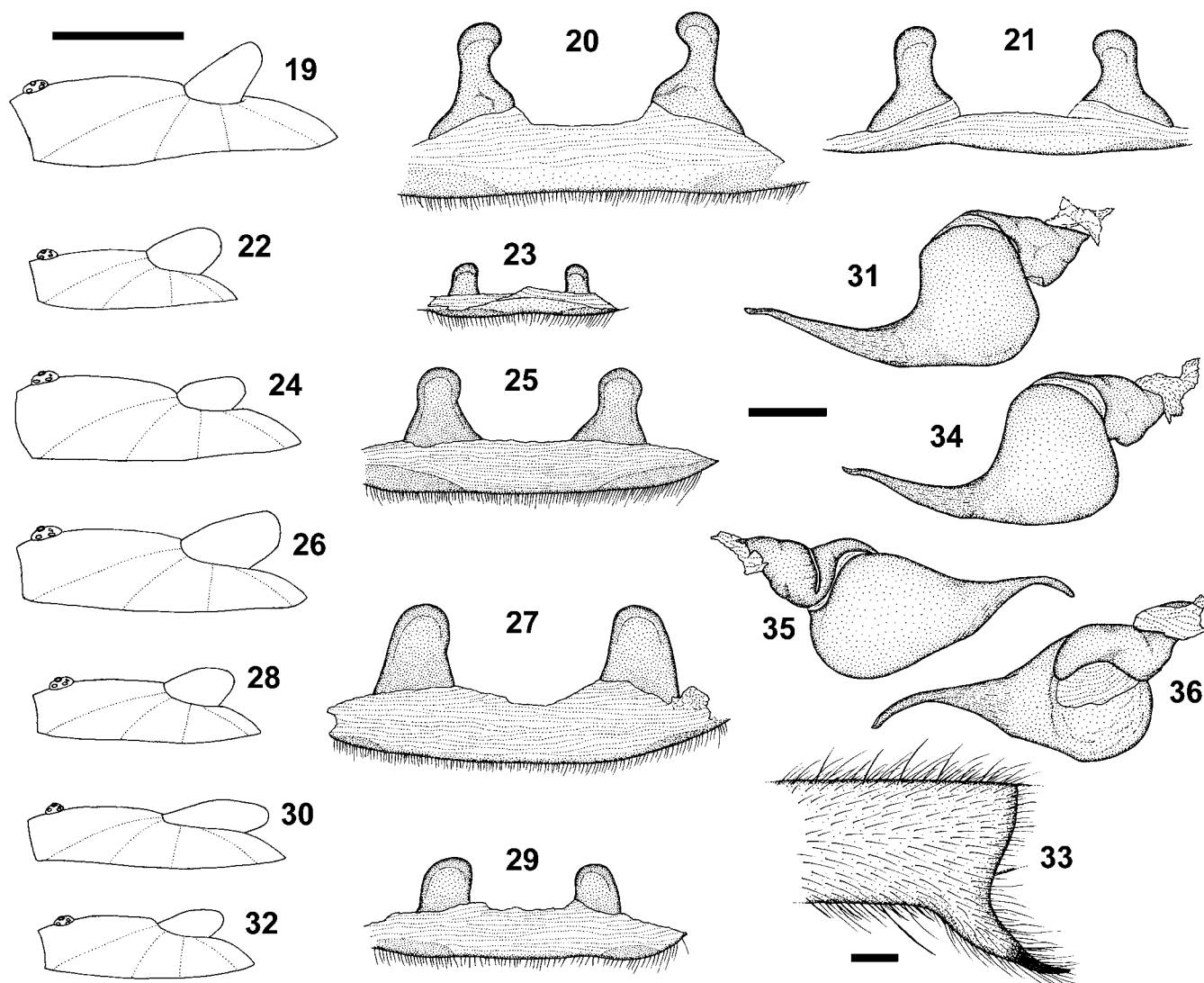
Plates 5–8: *Ceratogyrus* spp., female foveal protuberances (carapace length in mm). **5** *C. darlingi*, Mozambique (21.9); **6** *C. darlingi*, Swadini, South Africa (16.3); **7** *C. marshalli* (22.7); **8** *C. marshalli*, Mozambique (24.2).

extends over and between the posterior booklung covers (Fig. 38). The female carapace of *C. marshalli* is typically well marked with distinct pale radial striae (Plates 7–8); these striae are usually less distinct in *C. darlingi* (Plates 5–6).

The female of *C. darlingi* is separated from that of *C. dolichocephalus* by the fact that the foveal protuberance is discrete. In female *C. dolichocephalus* the foveal protuberance is formed from a simple posterior extension of the caput. Care must be exercised when identifying immature female *C. darlingi* with a carapace length of less than 9 mm, since these specimens resemble *C. dolichocephalus* in foveal morphology. This is particularly important within the distribution range of *C. dolichocephalus* (see Gallon, 2001).

*Female lectotype* (BMNH 1897-4-6-3-5, Zimbabwe): Total length 53.3. Carapace profile domed at caput, length 24.6, width 20.2. Abdomen length 20.9, width 15.8 (detached and partially squashed). Foveal protu-

berance robust, sub-conical and inclined posteriorly (Fig. 19). Ocular tubercle length 2.32, width 2.87. Clypeus 1.31. Eye sizes: AME 0.73, ALE 0.62, PME 0.41, PLE 0.45. Sternum with three pairs of oval sub-marginal sigilla. Labium with *c.* 75 cuspules. Maxilla with *c.* 195 cuspules. DS of posterior spinneret digitiform. Chelicerae with 11R, 11L teeth on promargin. Stridulatory scopula of well-developed plumose setae on retrolateral cheliceral face, corresponding with scopula of similar plumose setae on prolateral trochanteral face of palp. Leg and palp segment lengths in Table 5. All tarsi with integral scopulae. Metatarsal scopulae: I 80%, II 75%, III–IV 66% (I–III integral, IV bisected longitudinally by band of stiffened setae). Paired claws smooth, third claw absent. All tarsi with paired claw tufts. Clavate trichobothria: restricted to U-shaped region on apical half of all tarsi (tarsus I, 17R, 26L, rubbed). Spination: palp tibia 3DRV (1R), 2DPV; leg I tibia 1DRV, 1DPV; leg II tibia 1DRV, 1DPV; leg III tibia



Figs. 19–36: *Ceratogyrus darlingi*. 19–20 Lectotype female: 19 Carapace; 20 Spermathecae. 21 Paralectotype female, spermathecae. 22–23 Syntype female of *Ceratogyrus schultzei*: 22 Carapace; 23 Spermathecae. 24–25 Female (TM 6018): 24 Carapace; 25 Spermathecae. 26–27 Female, Mozambique (BMNH): 26 Carapace; 27 Spermathecae. 28–29 Female, Swadini (BMNH): 28 Carapace; 29 Spermathecae. 30–31 Male, Mozambique (BMNH): 30 Carapace; 31 Palpal bulb, retrolateral view. 32–36 Male, Swadini (BMNH): 32 Carapace; 33 Tibial spur, prolateral view; 34 Palpal bulb, retrolateral view; 35 Ditto, ventral view; 36 Ditto, dorsal view. All carapaces in profile, all spermathecae in dorsal view. Scale lines=10 mm (carapaces), 1 mm (rest). Spermathecae and palpal bulbs to same scale.



	Fe	Pa	Ti	Mt	Ta
<b>I</b>	17.6	11.0	11.7	10.0	7.1
<b>II</b>	15.0	9.4	9.0	8.8	6.1
<b>III</b>	12.4	7.8	7.0	9.1	6.1
<b>IV</b>	15.8	8.6	10.3	12.8	6.9
<b>Palp</b>	11.5	7.5	7.0	—	8.0

Table 5: *Ceratogyrus darlingi* Pocock, 1897. Lengths of leg and palp segments of female lectotype (BMNH 1897-4-6-3-5).

2DRV, 1DPV, metatarsus 1MPV, 1DRV, 1DMV, 1DPV, 1MPL, 1DPD, 1DRD; leg IV tibia 3DRV (2R), 1DPV, metatarsus 1MPV, 1DRV, 1DMV, 1DPV, 1MRD, 1MPL, 1DPD, 1DRD. Remaining leg segments aspinose. Coloration (faded): carapace rubbed, Pocock (1897) noted a radial pattern of white striae. Foveal protuberance dark, with two lateral pale striae. Chelicerae pale grey. Dorsum of legs and palps greyish-brown. Prolateral and proventral surfaces of palp and legs I–II dark brown. Ventral surfaces of legs III–IV pale grey. Sternum and venter of coxae and trochanters very dark brown. Dorsum of abdomen brownish-yellow with reticulations and ill-defined, faded pattern of bars and spots. Venter of abdomen very dark brown, except for pale yellow anterior booklung covers and genital sclerite; posterior booklung covers faded mustard brown. Spermathecae: paired and flattened with medial constrictions (Fig. 20).

*Notes:* The lectotype female of *C. darlingi* (designated by De Wet & Dippenaar-Schoeman, 1991) is accompanied by two paralectotype females. The foveal protuberances of both paralectotypes are damaged, but their remnants are consistent with the shape displayed by the lectotype. One of the paralectotypes is newly moulted and its spermathecae were previously dissected (Fig. 21), the other paralectotype remains undissected. Both paralectotypes have the same sub-abdominal pattern displayed by the lectotype.

*Female* (syntype of *Ceratogyrus schultzei* ZMB 29829, Botswana): Total length 39.3. Carapace profile domed at caput, length 15.8, width 12.6. Abdomen length 18.5, width 13.3. Foveal protuberance robust, obtuse and inclined posteriorly (Fig. 22). Ocular tubercle length

	Fe	Pa	Ti	Mt	Ta
<b>I</b>	9.6	6.7	7.2	6.5	4.8
<b>II</b>	9.2	6.2	6.1	6.0	5.0
<b>III</b>	8.7	5.2	5.2	6.7	4.8
<b>IV</b>	10.4	5.8	7.8	9.2	5.3
<b>Palp</b>	6.8	4.7	4.8	—	5.8

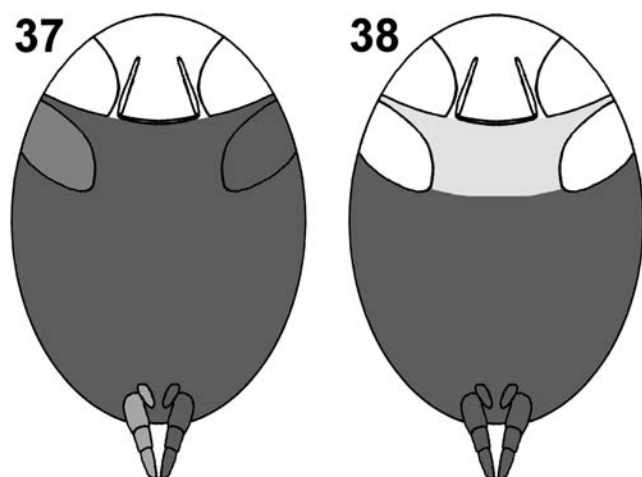
Table 6: *Ceratogyrus darlingi* Pocock, 1897. Lengths of leg and palp segments of female syntype (ZMB 29829) of *Ceratogyrus schultzei* Purcell, 1908.

1.80, width 2.20. Clypeus 0.75. Eye sizes: AME 0.51, ALE 0.60, PME 0.41, PLE 0.49. Sternum with three pairs of oval submarginal sigilla. Labium with *c.* 85 cuspules. Maxilla with *c.* 110 cuspules. DS of posterior spinneret digitiform. Chelicerae with 11L teeth on promargin. Stridulatory scopula of well-developed plumose setae on retrolateral cheliceral face, corresponding with scopula of similar plumose setae on prolateral trochanteral face of palp. Leg and palp segment lengths in Table 6. All tarsi with integral scopulae. Metatarsal scopulae: I–II 75%, III–IV 66% (I–III integral, IV bisected longitudinally by band of stiffened setae). Claws not examined. All tarsi with paired claw tufts. Clavate trichobothria: restricted to U-shaped region on apical half of all tarsi (tarsus I, 20R, 30L). Spination: palp tibia 2DRV, 2DPV; leg I tibia 1DRV, 1DPV; leg II tibia 1DRV, 1DPV; leg III tibia 1DRV, 1DPV, metatarsus 1MPV, 1DRV, 1DMV, 1DPV, 1MPL, 1DPD, 1DRD; leg IV tibia 2DRV, 1DPV, metatarsus 1MPV, 1DRV, 1DMV, 1DPV, 1MPL, 1DPD, 1DRD. Remaining leg segments aspinose. Coloration (faded, data after Purcell, 1908): carapace pale greyish yellow with darker mask around ocular tubercle. Foveal protuberance dark. Chelicerae pale grey. Dorsum of legs greyish with pale-foxy long setae. Prolateral surfaces of palp and legs I–II black. Sternum and venter of coxae black. Dorsum of abdomen grey or pale brownish-yellow, with reticulations. Venter of abdomen black, except for pale anterior booklung covers and genital sclerite (still apparent despite specimen being faded). Spermathecae: paired and flattened with slight medial constrictions (Fig. 23).

*Female* (TM 6018, Botswana): As ZMB 29829 except: Total length 47.1. Carapace length 20.9, width 17.6. Abdomen length 20.6, width 14.1. Foveal protuberance small, obtuse and inclined posteriorly (Fig. 24). Ocular tubercle length 2.23, width 2.65. Clypeus 1.07. Eye sizes: AME 0.65, ALE 0.64, PME 0.44, PLE 0.61. Labium with *c.* 80 cuspules. Maxilla with *c.* 250 cuspules. Chelicerae with 10R, 10L teeth on promargin. Leg and palp segment lengths in Table 7. Metatarsal scopulae: I 80%, II 75%, III–IV 66%. Paired claws smooth, third claw

	Fe	Pa	Ti	Mt	Ta
<b>I</b>	14.6	9.5	10.3	8.8	6.6
<b>II</b>	13.2	8.7	8.5	8.2	6.2
<b>III</b>	11.3	6.7	6.8	8.7	6.0
<b>IV</b>	14.1	7.9	10.0	12.4	6.8
<b>Palp</b>	10.3	6.6	6.7	—	7.4

Table 7: *Ceratogyrus darlingi* Pocock, 1897. Lengths of leg and palp segments of female (TM 6018, Botswana).



Figs. 37–38: Ventral abdominal patterns. **37** *Ceratogyrus darlingi*; **38** *C. marshalli*.

	Fe	Pa	Ti	Mt	Ta
<b>I</b>	14.9	9.1	10.3	9.0	6.9
<b>II</b>	13.2	8.5	8.4	8.9	6.6
<b>III</b>	11.2	6.8	6.8	9.0	6.1
<b>IV</b>	14.6	7.7	10.2	13.3	7.4
<b>Palp</b>	10.0	6.6	6.8	—	7.6

Table 8: *Ceratogyrus darlingi* Pocock, 1897. Lengths of leg and palp segments of female (Mozambique).

absent. Clavate trichobothria on tarsus I, 26R, 24L. Spination: palp tibia 2DRV, 2DPV; leg I tibia 1DRV, 1DPV; leg II tibia 1DRV, 1DPV; leg III tibia 1DRV, 1DPV, metatarsus 2MPV (0L), 1DRV, 1DMV, 1DPV, 1MPL, 1DPD, 1DRD; leg IV tibia 1DRV, 1DPV, metatarsus 1MRL, 1MPV, 1DRV, 1DMV, 1DPV, 1MRD, 1DPD, 1DRD. Remaining leg segments aspinose. Coloration: carapace setae rubbed, with indication of darker mask around ocular tubercle. Foveal protuberance dark. Chelicerae pale grey. Dorsum of legs and palp grey-brown. Ventral and prolateral surfaces of palp and legs I–II black, with some long orange setae on palpal tibia. Ventral surfaces of legs III–IV pale grey-brown. Sternum and venter of coxae black. Ventral trochanteral surfaces of palp and legs I–II black. Dorsum of abdomen grey-brown with dark pattern of bars, spots and reticulations. Venter of abdomen very dark brown, except for pale yellow anterior booklung covers and genital sclerite. Spinnerets pale yellow brown. Spermathecae (Fig. 25).

*Female* (BMNH, Mozambique): As ZMB 29829 except: Total length 51.0. Carapace length 21.9, width 18.3. Abdomen length 23.5, width 14.9. Foveal protuberance robust, obtuse and inclined posteriorly (Plate 5, Fig. 26). Ocular tubercle length 2.32, width 2.67. Clypeus 1.10. Eye sizes: AME 0.61, ALE 0.78, PME 0.51, PLE 0.57. Labium with *c.* 65 cuspules. Maxilla with *c.* 130 cuspules. Chelicerae with 9R, 11L teeth on promargin. Leg and palp segment lengths in Table 8. Metatarsal scopulae: I–II 70%, III 66%, IV 60%. Clavate trichobothria on tarsus I, 40R, 36L. Spination: palp tibia 2DRV, 2DPV; leg I tibia 1DRV, 1DPV; leg II tibia 1DRV, 1DPV; leg III tibia 2DRV (1R), 1DPV, metatarsus 1MPV, 1DRV, 1DMV, 1DPV, 1MPL, 1DPD, 1DRD; leg IV tibia 2DRV, 1DPV, metatarsus 1MPV, 1MRV (0R), 1DRV, 1DMV, 1DPV, 1MRD, 1MPL, 1DPD, 1DRD. Remaining leg segments aspinose. Coloration as previous specimen except: carapace silvery grey with dark mask around ocular tubercle. Foveal protuberance silvery-grey dorsally, darker laterally. Dorsum of legs and palp pale grey. Dorsum of abdomen pale grey with dark pattern of bars, spots and reticulations. Venter of abdomen black, except for pale orange-yellow anterior booklung covers and genital sclerite (Plate 9). Spinnerets black. Spermathecae: paired and flattened without medial constrictions (Fig. 27).

*Female* (BMNH, Swadini, South Africa): As ZMB 29829 except: Total length 39.1. Carapace length 16.3, width 13.1. Abdomen length 17.9, width 11.0. Foveal protuberance obtuse and inclined posteriorly (Plate 6, Fig. 28). Ocular tubercle length 1.78, width 2.35.



Plate 9: *Ceratogyrus darlingi*, Mozambique (BMNH), ventral view showing extent of leg darkening and sub-abdominal band.

Clypeus 0.90. Eye sizes: AME 0.58, ALE 0.70, PME 0.45, PLE 0.55. Labium with *c.* 75 cuspules. Maxilla with *c.* 120 cuspules. Chelicerae with 11R, 12L teeth on promargin. Leg and palp segment lengths in Table 9. Metatarsal scopulae: I 75%, II 80%, III 66%, IV 60%. Clavate trichobothria on tarsus I, 30R, 32L. Spination: palp tibia 2DRV, 2DPV (4L); leg I tibia 1DRV, 1DPV; leg II tibia 1DRV, 1DPV; leg III tibia 2DRV, 1DPV, metatarsus 1MPV, 1DRV, 1DMV, 1DPV, 1MPL, 1DPD, 1DRD; leg IV tibia 3DRV, 1DPV, metatarsus 1MRV, 1MPV, 1DRV, 1DMV, 1DPV, 1MRD, 1MPL, 1DPD, 1DRD. Remaining leg segments aspinose. Coloration as previous specimen except: carapace metallic golden brown with dark mask around ocular tubercle. Foveal protuberance black. Dorsum of legs and palp very dark grey with distinct white annulations at joints. Dorsum of abdomen grey-brown with obscure dark pattern of bars, spots and reticulations. Spinnerets dark brown. Spermathecae: paired and flattened without medial constrictions (Fig. 29).

*Male* (BMNH, Mozambique): Total length 42.9. Carapace profile low, length 19.1, width 15.5. Abdomen length 18.9, width 11.5. Foveal protuberance an elongated curved cone inclined posteriorly (Fig. 30). Ocular tubercle length 1.89, width 2.29. Clypeus 0.99. Eye sizes: AME 0.62, ALE 0.52, PME 0.41, PLE 0.49. Sternum with three pairs of oval submarginal sigilla. Labium with *c.* 80 cuspules. Maxilla with *c.* 140 cuspules. DS of posterior spinneret digitiform. Chelicerae with 10R, 10L teeth on promargin. Stridulatory scopula of well-developed plumose setae on retrolateral cheliceral face, corresponding with scopula of similar plumose setae on prolateral trochanteral face of palp. Leg and palp

	Fe	Pa	Ti	Mt	Ta
<b>I</b>	10.6	7.0	7.5	7.2	5.3
<b>II</b>	9.5	6.4	6.4	6.5	5.4
<b>III</b>	8.3	5.5	5.2	7.0	5.0
<b>IV</b>	10.9	6.4	7.7	10.0	6.1
<b>Palp</b>	8.0	5.2	4.9	—	6.4

Table 9: *Ceratogyrus darlingi* Pocock, 1897. Lengths of leg and palp segments of female (Swadini).

	Fe	Pa	Ti	Mt	Ta
<b>I</b>	15.2	8.6	11.3	10.7	7.4
<b>II</b>	13.9	7.6	9.5	10.2	6.7
<b>III</b>	12.2	6.2	7.7	11.0	7.0
<b>IV</b>	15.0	6.9	11.1	14.7	8.1
<b>Palp</b>	9.5	6.1	7.1	—	3.9

Table 10: *Ceratogyrus darlingi* Pocock, 1897. Lengths of leg and palp segments of male (Mozambique).

segment lengths in Table 10. Metatarsus I laterally flexed. Femur III slightly dilated. All tarsi with integral scopulae. Metatarsal scopulae: I–II 75%, III–IV 66% (I–III integral, IV bisected longitudinally by band of stiffened setae). Paired claws smooth, third claw absent. All tarsi with paired claw tufts. Clavate trichobothria: restricted to U-shaped region on apical half of all tarsi (tarsus I, 37R, 37L). Spination: leg I tibia 1DRV; leg II tibia 1DRV, 1DPV; leg III tibia 2DRV, 1DPV, metatarsus 1MPV, 1DRV, 1DMV, 1MPL, 1DPD, 1DRD; leg IV tibia 2DRV, 1DPV, metatarsus 1MRV, 1MPV, 1DRV, 1DMV, 1DPV, 1MRD (0R), 1MPL, 1DPD, 1DRD. Remaining leg segments aspinose. Tibial spur: DPV apophysis robust; surmounted megaspine strong, curved, protruding ventro-laterally. Coloration as Mozambique female except: carapace setae more woolly, abdominal reticulations absent and dark pattern of bars and spots barely visible. Long orange setae on ventral surface of palpal tibia. Abdominal setae more shaggy. Spinnerets yellow-brown. Palpal bulb (Fig. 31): tegulum pyriform. Embolus short, thick and without keels. Embolic tip inflexed, with oval cross-section.

**Male** (BMNH, Swadini, South Africa): As previous specimen except: Total length 36.0. Carapace length 16.1, width 13.6. Abdomen length 14.6, width 8.6. Foveal protuberance a short curved cone inclined posteriorly (Fig. 32). Ocular tubercle length 1.96, width 2.23. Clypeus 0.93. Eye sizes: AME 0.58, ALE 0.67, PME 0.57, PLE 0.41. Labium with *c.* 75 cuspules. Maxilla with *c.* 140 cuspules. Chelicerae with 13R, 12L teeth on promargin. Leg and palp segment lengths in Table 11. Metatarsal scopulae: I 80%, II 75%, III 66%, IV 60%. Clavate trichobothria on tarsus I, 40R, 36L. Spination: palp tibia 1DPV (spine-seta); leg I tibia 1DRV; leg II tibia 1DRV, 1DPV; leg III tibia 2DRV (1R), 1DPV, metatarsus 1MPV, 1DRV, 1DMV, 1DPV, 1MPL, 1DPD, 1DRD; leg IV tibia 2DRV, 1DPV, metatarsus 1MRV (0L), 1MPV, 1DRV, 1DMV, 1DPV, 1MRD, 1MPL, 1DPD, 1DRD. Remaining leg segments aspinose. Tibial spur (Fig. 33). Coloration as Swadini female except: carapace setae more woolly, black protu-

	Fe	Pa	Ti	Mt	Ta
<b>I</b>	13.6	7.7	10.3	9.7	6.5
<b>II</b>	12.6	6.8	8.7	9.1	6.1
<b>III</b>	11.0	5.8	7.2	9.8	6.5
<b>IV</b>	13.7	6.5	10.7	13.3	7.3
<b>Palp</b>	8.9	5.3	7.1	—	3.5

Table 11: *Ceratogyrus darlingi* Pocock, 1897. Lengths of leg and palp segments of male (Swadini).

berance with few pale dorsal striae, abdominal reticulations absent and dark pattern of bars and spots more obscure. Long orange setae on ventral surface of palpal tibia. Abdominal setae more shaggy. Spinnerets yellow-brown. Palpal bulb (Fig. 34–36).

**Material examined:** BOTSWANA: BMNH 1912-4-10-1, 1♂, Lake Ngami [20°28'S, 22°43'E], (R. B. Woosnam); BMNH (dry tray AR511), 1♀ with egg-sac, Moryulatsela, Ghanzi Province, Ngamiland, 8 September 1924 (J. Maurice); TM 6018, 1♀, Gabane, nr Gaborone, East district, 2425Db, 11 March 1930 (V. Fitzsimons); TM 6022, 1♀, Kuke Pan, S. E. Kalahari, 26 March 1930 (V. Fitzsimons); ZMB 29829, 1♀ syntype of *Ceratogyrus schultzei*, Kgokong (=Kokong) to Kang, Kalahari [23°45'S, 22°49'E], December 1904 (Schultze). MOZAMBIQUE (wild caught pet-trade specimens believed to be from Mozambique): BMNH, 1♀, died 3 March 2005; BMNH, 1♂, preserved 27 March 2004. SOUTH AFRICA: BMNH, 1♀, Swadini, 24°31'S, 30°49'E, 600 m, silk-lined retreat under boulder, collected 2 August 2003, died 4 March 2005 (R. Gallon, T. Ezendam & S. van Overdijk); BMNH, 1♂, Swadini, 24°31'S, 30°49'E, 600 m, silk-lined retreat under boulder, collected 2 August 2003, matured 2 April 2004, preserved 17 May 2004 (R. Gallon, T. Ezendam & S. van Overdijk); PPRI AcAt 2005/2193, 1♀, 40 km W of Messina, 16 June 1979 (B. Fourie); PPRI, 1♂, Swadini, 24°31'S, 30°49'E, 600 m, silk-lined retreat under boulder, collected 2 August 2003, reared to maturity, preserved 17 May 2004 (R. Gallon, T. Ezendam & S. van Overdijk); PPRI, 1 sub-adult ♂, Ndumo Game Reserve, 26°54.276'S, 32°19.547'E, broadleaf woodland, under rock, 22 January 2006 (Charles Haddad); TM 16337, 1 sub-adult ♂, Ndumo Game Reserve, Ingwavuma district, 2632Cd, 13 December 1960 (G. van Son); TM 16338, 1 sub-adult ♂, Ndumo Game Reserve, Ingwavuma district, 2632Cd, 13 December 1960 (G. van Son). ZIMBABWE: BMNH 1897-4-6-3-5, lectotype ♀ and 2♀ paralectotypes of *Ceratogyrus darlingi*, Enkeldoorn (=Chivhu) [19°01'S, 30°54'E], J. ffolliott Darling; BMNH 1899-5-4-12, 1♀, Salisbury (=Harare) [17°50'S, 31°03'E], 22 April 1899 (G. A. K. Marshall); BMNH 1907-6-9-6, 1♂, Umtali (=Mutare) [18°58'S, 32°40'E], (C. F. M. Swynnerton); BMNH 1908-12-23-6-7, 3♀, Housefield Estate, Salisbury (=Harare) [17°50'S, 31°03'E], (J. F. Darling). Also refer to Gallon (2005).

**Distribution:** Northern areas of southern Africa, occurring in Botswana, Mozambique, Namibia, South Africa and Zimbabwe (De Wet & Dippenaar-Schoeman, 1991; Lawrence, 1928a, b, 1936) (Map 2).

**Ecology:** Found in lightly wooded grassveld and open clearings. A fossorial species constructing sub-vertical burrows 30–70 cm deep in open ground. Adults and juveniles also construct burrows/excavations beneath rocks, boulders and logs. *Ceratogyrus darlingi* can occur sympatrically alongside *Augacephalus junodi* (Simon, 1904), *Ceratogyrus paulseni* Gallon, 2005 and *Harpactira* sp. (Gallon, 2005; pers. obs.). Male maturity occurs between February and May, with a single record for November. Wild egg-sacs have been observed during October (De Wet & Dippenaar-Schoeman, 1991). In captivity the fixed hammock egg-sac is incorporated within the silk lining of the female's retreat (Gallon & Gabriel, 2006). Between 30 and *c.* 300 eggs are laid (mean 147, *n*=9 for primary sacs; mean 100, *n*=2 for secondary sacs), with the young vacating the sac at the first instar. The young remain with the female to complete their second moult into spiderlings, but do not appear to group-feed actively on maternal prey, unlike *Harpactira* sp. (pers. obs.). Captive females are capable of producing up to three separate egg-sacs within a single intermoult period. Secondary and tertiary egg-sacs are produced only following the dispersal or



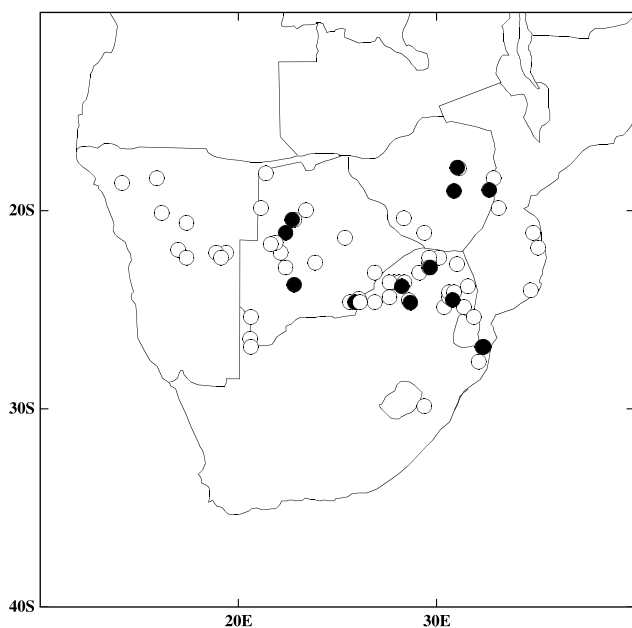
removal of the previous batch of spiderlings (Smith, 1990; Kirk, 1990; De Wet & Dippenaar-Schoeman, 1991; Ezendam, 1997; P. Carpenter, A. Fisher, P. Messenger & B. Whyte, pers. comm.).

**Remarks:** The lectotype female of *C. darlingi* possesses a broad, posteriorly inclined sub-conical protuberance (Fig. 19) on its carapace (damaged in both paralectotypes). All three *C. darlingi* types also display a single pale sub-abdominal band over and between the anterior booklungs. The area between the posterior booklungs is dark brown like the rest of the ventral abdominal surface. These two characteristics are also apparent in the syntype of *C. schultzei* and near-topotypic specimens of *C. bechuanicus*.

The shape of the foveal protuberance has previously been used to distinguish *C. darlingi* from *C. bechuanicus*, narrow protuberances with a straight anterior slope indicating *C. darlingi*, and broad protuberances with a curved slope belonging to *C. bechuanicus* (Purcell, 1902; De Wet & Dippenaar-Schoeman, 1991). Distinction using these characteristics is not always clear-cut; examples with narrow, curved-slope protuberances are known from areas close to the type locality of *C. bechuanicus* (Fig. 24). Examination of a range of specimens has revealed considerable variation in size, curvature, width, angle and shape of the foveal protuberance (Plates 5–6, Figs. 19, 22, 24, 26, 28, 30, 32).

De Wet and Dippenaar-Schoeman (1991) mentioned a further distinction in that the posterior booklung covers of *C. bechuanicus* are darker brown than those of *C. darlingi*. However, booklung covers always appear paler in old alcohol-preserved specimens, such as the types of *C. darlingi*, so this difference is considered an artefact of preservation.

*Ceratogyrus bechuanicus* is treated here as a junior synonym of *C. darlingi* because their pale sub-abdominal bands are restricted to the anterior booklung



Map 2: Distribution of *Ceratogyrus darlingi* Pocock, ● examined specimens, ○ published and TM database specimens (not examined).



Plate 10: *Avicularia arabica* (Strand, 1908), comb. n., holotype female (SMF 2660), ocular tubercle, dorsal view. Scale line = 1 mm.

covers and area between them. Their foveal protuberance morphology is also similar, with published differences being relatively trivial when viewed against the variability displayed between other specimens.

### Genus *Avicularia* Lamarck, 1818

*Avicularia* Lamarck, 1818: 107.

*Eurypelma* C. L. Koch, 1850: 73 (in part); Raven, 1985: 146, 153 (syn.).

*Avicuscodra* Strand, 1908: 771. **New synonymy.**

*Ancylochiros* Mello-Leitão, 1920: 141; Raven, 1985: 149 (syn.).

**Type species:** *Avicularia avicularia* (Linnaeus, 1758).

**Diagnosis** (after Pocock, 1901; Raven, 1985; Smith, 1993): Differs from all other theraphosids, except *Pachistopelma* and *Iridopelma*, by the presence of type II urticating setae on the dorsal abdominal surface. *Avicularia* males are distinguished from those of *Iridopelma* by the absence of a spur on tibia II. In *Avicularia* leg IV is longer than leg I; in *Iridopelma* leg I is longer than leg IV. The anterior row of eyes (ALE-AME-AME-ALE) is strongly procurved in *Avicularia*, but weakly procurved in *Pachistopelma*. The paired spermathecae of *Iridopelma* have single-lobed termini, whereas those of *Avicularia* are typically unlobed and curve divergently.

***Avicularia arabica* (Strand, 1908), new combination** (Plate 10, Figs. 39–41)

*Avicuscodra arabica* Strand, 1908: 771 (D♀); 1916: 20 (♀).

**Type material:** Holotype female (SMF 2660), allegedly from Tor (=El-Tôr), Egypt (Rüppell).

**Diagnosis:** *Avicularia* is a highly complex, speciose genus which requires revision before meaningful species diagnoses can be produced.

**Female holotype** (SMF 2660) (Fig. 39): Total length, including chelicerae, but excluding spinnerets 34.0. Carapace profile low, length 10.6, width 9.8. Abdomen length 18.6, width 12.0. Fovea deep, slightly recurved. Ocular tubercle length 1.68, width 2.32 (Plate 10). Clypeus 0.12. Eye sizes: AME 0.59, ALE 0.57, PME 0.32, PLE 0.54. Sternum with three pairs of oval sub-marginal sigilla; anterior pair small and obscure (Fig. 40). Labium with *c.* 100 cuspules. Maxilla with *c.* 140 cuspules. Paired glabrous labiosternal areas present on

	Fe	Pa	Ti	Mt	Ta
I	8.5	5.0	6.3	5.3	5.7
II	7.8	4.8	5.7	5.1	5.2
III	6.8	4.2	5.1	5.4	5.2
IV	8.9	4.7	7.8	7.8	5.5
Palp	6.2	4.0	4.2	—	5.8

Table 12: *Avicularia arabica* (Strand, 1908), comb. n. Lengths of leg and palp segments of female holotype (SMF 2660).

labiosternal suture. DS of posterior spinneret digitiform. Chelicerae with 9R, 10L teeth on promargin. Stridulatory setae absent from chelicerae, palps and legs. Leg and palp segment lengths in Table 12. Tarsal scopulae: palp, I–III integral, IV divided by setae. Metatarsal scopulae: I 80%, II 75%, III 50%, IV 33% (I–III integral, IV bisected longitudinally by stiff setae). Scopulae (including claw tufts) of palps and legs I–II well developed and laterally expanded. Paired claws smooth, third claw absent. Clavate trichobothria severely rubbed. Spination: legs and palps aspinose. Coloration (specimen now faded, data after Strand, 1908): carapace, chelicerae and abdomen light reddish brown. Legs and palps paler, yellowish. Ocular tubercle with dark transverse band. Sternum and venter of coxae dark brown. Emergent setae pale ochre, golden in parts. Spermathecae (Fig. 41): paired, unlobed, weakly sclerotised, curving divergently. Terminus of left spermatheca missing. Urticating setae: a few type II urticating setae remaining on dorso-lateral abdominal surface. Dorsal abdominal setae almost entirely rubbed off.

*Male*: Unknown.

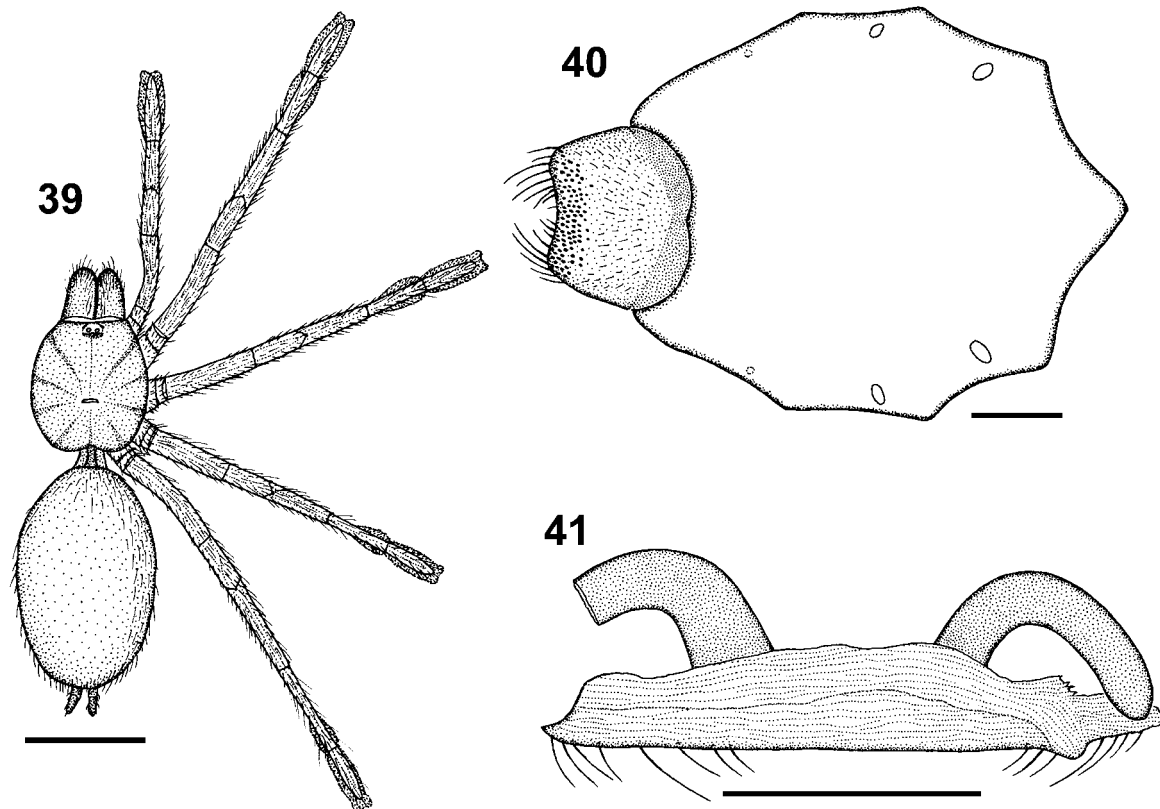
*Material examined*: Only the holotype.

*Distribution*: Allegedly from Egypt, Tor (=El-Tôr), but more likely from South America.

*Remarks*: The presence of type II urticating setae in *Avicuscodra* precludes its placement in all theraphosid subfamilies apart from the Aviculariinae.

*Avicuscodra* was previously considered synonymous with *Chaetopelma* owing to similarities in foveal morphology and the divided scopula of tarsus IV (Raven, 1985). However, *Chaetopelma*, as an ischnocoline, lacks urticating setae, possesses heavily spined legs and does not have laterally expanded tarsal and metatarsal scopulae. Since *Avicuscodra* possesses type II urticating setae, lacks leg spines and has laterally expanded tarsal and metatarsal scopulae, the synonymy of *Avicuscodra* with *Chaetopelma* is rejected.

The Aviculariinae comprise three genera, *Avicularia*, *Iridopelma* and *Pachistopelma*, which are restricted to Central and South America. In *Iridopelma* leg I is longer than leg IV, whereas in *Avicularia* and *Avicuscodra* the reverse is true. The anterior row of eyes is only weakly procurved in *Pachistopelma*, but strongly procurved in *Avicularia* and *Avicuscodra*. In *Iridopelma* the paired spermathecae have single-lobed termini (Smith, 1993) and in *Pachistopelma*, they curve medially (R. Bertani, pers. comm.). These contrast with the typically unlobed, divergently curved spermathecae found in *Avicularia* and *Avicuscodra*. The spermathecae of *Avicularia* and *Avicuscodra* are therefore strikingly similar, even down to their weakly sclerotised nature. For these reasons I consider *Avicuscodra* to be a junior synonym of *Avicularia*.



Figs. 39–41: *Avicularia arabica* (Strand, 1908), comb. n., holotype female (SMF 2660). 39 Dorsal view; 40 Labium and sternum, ventral view; 41 Spermathecae, dorsal view. Scale lines=10 mm (39), 1 mm (40–41).

Where *Avicularia* and *Avicuscodra* apparently differ is by the divided scopula of tarsus IV in *Avicuscodra* and its Old World type locality. However, tarsal scopula division is often associated with immaturity in theraphosids which typically have integral tarsal scopulae as adults (Pocock, 1895, 1897; Pérez-Miles, 1994). The relatively small size and weakly sclerotised spermathecae in *Avicuscodra* may suggest immaturity.

The Old World type location of *Avicuscodra* (El-Tôr, Egypt) is more difficult to account for. Strand discovered the single specimen of *Avicuscodra* within a jar labelled with the temporary name “*Mygale arabica*”, collected by Rüppell. According to Strand (1916) this jar also contained a male and two female *Chaetopelma olivaceum* (C. L. Koch, 1842), a genus characteristic of the Arabian region. Unfortunately the accessions books do not clarify how many specimens were originally in the jar (P. Jäger, pers. comm.). I suspect that the *Avicuscodra* specimen was added to Rüppell’s specimen jar before Strand examined the material. *Avicularia* were often imported within shipping cargo from tropical America, so it is plausible that such an individual was simply added to a pre-existing specimen jar by a non-specialist.

### Misplaced species

#### *Stromatopelma pachypoda* (Strand, 1908), restored combination

*Scodra pachypoda* Strand, 1908: 770 (D♀); 1916: 53 (♀).

*Stromatopelma pachypoda*: Smith, 1990: 62.

*Heteroscodra pachypoda*: Charpentier, 1996: 6.

*Type material*: Holotype female (SMF 2684a), from Cameroon (Dr G. Kraatz); examined.

*Remarks*: *Scodra pachypoda* Strand, 1908 was described from a single female specimen collected from an unspecified locality in Cameroon (Strand, 1908, 1916). Raven (1985) replaced the genus *Scodra* Becker, 1879 with *Stromatopelma* Karsch, 1881, its earliest synonym, because *Scodra* was preoccupied.

Charpentier (1996) transferred *Stromatopelma pachypoda* (Strand, 1908) to the genus *Heteroscodra*, stating that he had come to this conclusion after examining material in the BMNH, MRAC and his own private collection. Charpentier gave no explanation for his transfer, nor did he examine the holotype of this species kept at the SMF.

Strand (1908, 1916) clearly stated that leg I was thicker than leg IV in *Stromatopelma pachypoda* and this is in fact the case, but apparently Charpentier believed the reverse to be true, since a robust leg IV is autapomorphic for female *Heteroscodra* (Pocock, 1899; Smith, 1990). This reason alone precludes its placement within *Heteroscodra*. It also lacks thickened prodorsal setae on the coxae and trochanters which Gallon (2003) noted as autapomorphic for female *Heteroscodra*.

The holotype female of *Scodra pachypoda* lacks stridulatory organs and leg spines, has a reduced number of labial cuspules (34), a deep sub-circular fovea, laterally well-developed tarsal and metatarsal

scopulae on legs I–II, unmodified leg IV, black dorsal markings on the tarsi and metatarsi, dorsal abdominal markings and paired spermathecae. For these reasons it belongs within the genus *Stromatopelma* (see cladogram in Gallon, 2003). A more detailed treatment of this species will be provided within a revision of the genera *Heteroscodra* and *Stromatopelma* (Gallon, in prep.).

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### References

- CHARPENTIER, P. 1996: The palm tree spiders of the genus *Stromatopelma*. *Exothermae Mag.* **1**: 3–20.
- DE WET, J. I. & DIPPENAAR-SCHOEMAN, A. S. 1991: A revision of the genus *Ceratogyrus* Pocock (Araneae: Theraphosidae). *Koedoe* **34**(2): 39–68.
- EZENDAM, T. 1997: Successful breeding with *Ceratogyrus darlingi*. *J. Br. Tarantula Soc.* **13**(2): 57–59.
- GALLON, R. C. 2001: Revision of the *Ceratogyrus* spp. formerly included in *Coelogenium* (Araneae: Theraphosidae, Harpactirinae). *Mygalomorph* **2**(1): 1–20.
- GALLON, R. C. 2002: Revision of the African genera *Pterinochilus* and *Eucratoscelus* (Araneae, Theraphosidae, Harpactirinae) with description of two new genera. *Bull. Br. arachnol. Soc.* **12**(5): 201–232.
- GALLON, R. C. 2003: A new African arboreal genus and species of the theraphosid spider (Araneae, Theraphosidae, Stromatopelminae) which lacks spermathecae. *Bull. Br. arachnol. Soc.* **12**(9): 405–411.
- GALLON, R. C. 2004: *Harpactirella leleupi* Benoit, 1965 is a junior synonym of *Idiothele nigrofulva* (Pocock, 1898) (Araneae, Theraphosidae, Harpactirinae). *Bull. Br. arachnol. Soc.* **13**(3): 95–96.
- GALLON, R. C. 2005: A new species of theraphosid spider from Southern Africa (Araneae, Theraphosidae, Harpactirinae) with distributional notes on other harpactirines. *Bull. Br. arachnol. Soc.* **13**(5): 179–184.
- GALLON, R. C. & GABRIEL, R. 2006: Theraphosidae egg-sac types. *Newsl. Br. Arachnol. Soc.* **106**: 5–10.



- KIRK, P. 1990: Notes on breeding *Ceratogyrus bechuanicus* (Purcell, 1902). *J. Br. Tarantula Soc.* **6**(2): 7–9.
- KOCH, C. L. 1850: *Übersicht des Arachnidensystems*. Heft 5: 1–104. Nürnberg.
- LAMARCK, J. B. de 1818: *Histoire naturelle des animaux sans vertèbres* **5**: 1–612 (Araneae: 88–108). Paris.
- LAWRENCE, R. F. 1928a: Contributions to a knowledge of the fauna of south-west Africa. *Ann. S. Afr. Mus.* **25**: 1–75.
- LAWRENCE, R. F. 1928b: Contributions to a knowledge of the fauna of south-west Africa, part 2. *Ann. S. Afr. Mus.* **25**: 217–312.
- LAWRENCE, R. F. 1936: Scientific results of the Vernay–Lang Kalahari expedition, March to September, 1930: Spiders (Ctenizidae excepted). *Ann. Transv. Mus.* **17**(2): 145–158.
- MELLO-LEITÃO, C. F. de 1920: An interesting new genus of Aviculariidae. *Ann. Mag. nat. Hist.* (9)**6**: 141–143.
- PÉREZ-MILES, F. 1994: Tarsal scopula division in Theraphosinae (Araneae, Theraphosidae): its systematic significance. *J. Arachnol.* **22**: 46–53.
- POCOCK, R. I. 1895: Notes on the identity of some of the types of Mygalomorphae in the collection of the British Museum. *Ann. Mag. nat. Hist.* (6)**16**: 223–230.
- POCOCK, R. I. 1897: On the spiders of the suborder Mygalomorphae from the Ethiopian region, contained in the collection of the British Museum. *Proc. zool. Soc. Lond.* **1897**: 724–774.
- POCOCK, R. I. 1899: On the scorpions, pedipalps, and spiders from tropical West Africa represented in the collection of the British Museum. *Proc. zool. Soc. Lond.* **1899**: 833–885.
- POCOCK, R. I. 1900: Some new Arachnida from Cape Colony. *Ann. Mag. nat. Hist.* (7)**6**: 316–333.
- POCOCK, R. I. 1901: Some new and old genera of S.-American Aviculariidae. *Ann. Mag. nat. Hist.* (7)**8**: 540–555.
- PURCELL, W. F. 1902: On the South African Theraphosidae, or “Baviaan” spiders, in the collection of the South African Museum. *Trans. S. Afr. phil. Soc.* **11**(4): 319–347.
- PURCELL, W. F. 1908: Araneae: In: L. Schultze, Forschungsreise in Südafrika, 1(2). *Denkschr. med.-naturw. Ges. Jena* **13**: 203–246.
- RAVEN, R. J. 1985: The spider infraorder Mygalomorphae (Araneae): cladistics and systematics. *Bull. Am. Mus. nat. Hist.* **182**: 1–180.
- SCHMIDT, G. E. W. 1993: *Vogelspinnen: Vorkommen, Lebensweise, Haltung und Zucht, mit Bestimmungsschlüsseln für alle Gattungen* (4th ed.). Hannover, Landbuch Verlag.
- SCHMIDT, G. E. W. 2002a: Eine neue *Pterinochilus*-Art aus Sambia (Theraphosidae: Harpactirinae). *Tarantulas of the World* **71**: 3–7.
- SCHMIDT, G. E. W. 2002b: Eine neue *Pterinochilus*-Art aus Sambia (Theraphosidae: Harpactirinae). *Arachnol. Mag.* **10**(4): 1–6.
- SCHMIDT, G. E. W. 2003: *Die Vogelspinnen*. Hohenwarsleben, Westarp Wissenschaften.
- SIMON, E. 1903: *Histoire naturelle des araignées* **2**(4): 669–1080. Paris.
- SMITH, A. M. 1988: *The tarantula classification and identification guide* (2nd ed.). London, Fitzgerald.
- SMITH, A. M. 1990: *Baboon spiders, tarantulas of Africa and the Middle East*. London, Fitzgerald.
- SMITH, A. M. 1993: Taxonomy focus. *J. Br. Tarantula Soc.* **9**(1): 13–18.
- STRAND, E. 1908: Diagnosen neuer aussereuropäischer Spinnen. *Zool. Anz.* **32**: 769–773.
- STRAND, E. 1916: Systematische-faunistische Studien über paläarktische, afrikanische und amerikanische Spinnen des Senckenbergischen Museums. *Arch. Naturgesch.* **81**(A9): 1–153.