The revised taxonomic placement of some arboreal Ornithoctoninae Pocock, 1895 with description of a new species of *Omothymus* Thorell, 1891 (Araneae: Theraphosidae)

Ray Gabriel
Danniella Sherwood
11 Tudor Walk,
Walcot,
Swindon,
Wilts, SN3 3DP
email: danni.sherwood@hotmail.com

Abstract

The chaotic taxonomy of the subfamily Ornithoctoninae Pocock, 1895 is partially addressed, with a focus on redefining the arboreal genera *Lampropelma* Simon, 1892, *Omothymus* Thorell, 1891, and *Phormingochilus* Pocock, 1895. Previous works placing heavy emphasis on unstable taxonomic characters are addressed and stable taxonomic features presented for the clear delineation of males of arboreal ornithoctonine genera. The male of *Phormingochilus everetti* Pocock, 1895 is described for the first time. A new species, *Omothymus rafni* **sp. nov.** is described from historical material collected in Sumatra. *Lampropelma violaceopes* Abraham, 1924 is transferred to *Omothymus* based on comparative leg measurements and geographical location **comb. nov.** *Lampropelma nigerrimum arboricola* Schmidt & Barensteiner, 2015 is transferred to the genus *Phormingochilus* with full species status acknowledged, giving the new combination *Phormingochilus arboricola* **comb. nov.** *Omothymus thorelli* Simon, 1901 is considered a junior synonym of *Omothymus schioedtei* Thorell, 1891 **syn. nov.**, based on similar morphology and geographical locations. *Phormingochilus carpenteri* Smith & Jacobi, 2015 is transferred to the genus *Lampropelma* based on comparative leg measurements and geographical location **comb. nov.** *Phormingochilus kirki* Smith & Jacobi, 2015 is considered a junior synonym of *L. carpenteri* **syn. nov.** *Phormingochilus fuchsi* Strand, 1906 is transferred to the genus *Omothymus* based on comparative leg measurement and geographic distribution **comb. nov.** *Phormingochilus tigrinus* Pocock, 1895 is removed from synonymy with *P. everetti* based on the lack of justification for the synonymy **comb. rest.** *Omothymus dromeus* Chamberlin, 1917 is removed from *Omothymus* and returned to the restored genus *Melognathus* **comb. rest.**

Keywords: *Lampropelma* • morphology • *Phormingochilus* • systematics • tarantula

Introduction

The subfamily Ornithoctoninae Pocock, 1895 currently contains twenty species distributed throughout most of South-East Asia, including Malaysia, Indonesia, and the Philippines (World Spider Catalog 2018). Of these twenty currently known species, seven live an arboreal lifestyle. The arboreal species are currently divided into three genera: *Lampropelma* Simon, 1892, *Omothymus* Thorell, 1891 and *Phormingochilus* Pocock, 1895. Within these three genera the following species are currently listed by the World Spider Catalog (2018): *Lampropelma nigerrimum* Simon, 1891, *Lampropelma violaceopes* Abraham, 1924, *Omothymus schioedtei* Thorell, 1891, *Omothymus thorelli* Simon, 1901, *Phormingochilus carpenteri* Smith & Jacobi, 2015, *Phormingochilus everetti* Pocock, 1895, *Phormingochilus fuchsi* Strand, 1906, *Phormingochilus kirki* Smith & Jacobi, 2015 and *Phormingochilus pennellhewletti* Smith & Jacobi, 2015. A single subspecies, *Lampropelma nigerrimum arboricola* Schmidt & Barensteiner, 2015 is also listed. Another ornithoctonine, *Citharognathus hosei* Pocock, 1895 is potentially semi-arboreal but we do not consider this species in detail in this work.

Simon (1887) described the genus *Cyriopagopus* Simon, 1887 with its sole species *Cyriopagopus paganus* Simon, 1887 based on a single juvenile specimen collected near Tavoy, Burma (= Dawei, Myanmar), held in the museum of the Bombay Natural History Society. Simon defined the genus as having a notably wide ocular tubercle and with tibia IV longer than I (Simon 1887: 110). He further defined *C. paganus* based on eye morphology and divided metatarsal scopulae (Simon 1887: 111). Four years later, Thorell described the genus *Omothymus* based on a female and male from peninsular Malaya naming the species *O. schioedtei*. Simon (1892) established the genus *Lampropelma* for a female specimen, *L. nigerrimum*, from Sangihe Island, situated north of Sulawesi, which he separated from existing genera based on eye morphology, shape of the fovea, larger labium, and undivided metatarsal scopulae (Simon 1892: 151). The genus *Phormingochilus* was created by Pocock (1895) to house two species, one (the genotype) being a female specimen collected from northwestern Borneo which he named *P. everetti*, and a second specimen, named *Phormingochilus tigrinus* Pocock, 1895 from Kuala Lama, Borneo. He seperated the species based on the width of the carapace, caput shape, and leg measurements. Pocock (1895: 179) separated the genus *Phormingochilus* from *Omothymus* based on the anterior narrowness of the sternum.

Simon (1901: 45) described *O. thorelli* from Malaysia primarily based on eye morphology. Simon (1903: 946) transferred both *O. schioedtei* and *O. thorelli* to the genus *Cyriopagopus*. Strand (1906) described another species of *Phormingochilus*, *P. fuchsi* based on a single female collected from the south of Aceh, Sumatra. A few years later, Chamberlin (1917) described the genus *Melognathus* Chamberlin, 1917 and placed into it a single new species, *Melognathus dromeus* Chamberlin, 1917 although the locality was vague, "East Indies? Philippines?". Later, Abraham (1924) described the species *L. violaceopes* (as *violaceopedes*) from two specimens of opposite sex, a holotype female from mangrove swamps around Singapore and a male from Penang Island, Malaysia.

Raven (1985: 116) distinguished *Phormingochilus* in his key to the Ornithoctoninae based on the width of the ocular tubercle and the low caput. He defined *Lampropelma* as possessing brush setae on the retrolateral palpal femur and separated *Cyriopagopus* based on the absence of this feature. In the same year, Smith (1986) defined *Phormingochilus* in his generic key to the Ornithoctoninae solely on the basis of the anterior narrowness of the sternum, presumably following Pocock (1895).

Smith (1990: 14) redescribed *L. violaceopes* (as *violaceopedes*), then differentiating it from the genus *Haplopelma* Simon, 1892 (Smith, 1990: 15). At the time he intended to describe a *Haplopelma* species with blue colouration (described six years later in Smith (1996) as *Haplopelma lividum* Smith, 1996) that had been claimed by

non-specialists to be *L. violaceopes* (Smith 1996: 14). Four years after redescribing *L. violaceopes*, Smith (1994) redescribed the holotype females of *P. everetti*, *P. tigrinus* and *P. fuchsi*. Additionally, he described what he believed to be the male of *P. everetti* from a specimen housed in the BMNH which he stated came from "Serea" [sic], Borneo (Smith 1994: 15). Previously, Pocock (1895: 182) had speculated this may have been the conspecific male for *P. everetti* but made no formal description; possibly as the specimen had unconfirmed collecting data, with its original label stating its location simply as "Corea". Smith (1994: 19) defined *Phormingochilus* as possessing twin spermathecae, with an absence of tibial apophyses and the absence of brush setae on the retrolateral face of the palpal femur. He also acknowledged the wide tubercle but did not use this explicitly in his generic diagnosis.

Schmidt (2003: 253), though only showing one angle, used the Smith (1994) illustration of the palpal bulb of the male described as *P. everetti*, and also considered this specimen to be *P. everetti*. Additionally, he used Smith's (1994) illustrations of the spermathecae of *P. everetti*, *P. fuchsi*, and *P. tigrinus*, although it is not clear whether Schmidt himself examined any of type material or simply just re-used the illustrations and information from Smith (1994). In the same paper, Schmidt (2003: 252) listed *L. violaceopedes* as *L. violaceopes*, being the first author to do so, thus correcting previous authors, since a binomial name cannot be plural according to Article 11.9 of the ICZN (ICZN 2018). In the same year, Schmidt & Tesmoingt (2003) described what they considered to be the male of *C. thorelli* based on pet hobby material.

Smith & Jacobi (2015) synonymized *P. tigrinus* with *P. everetti* as they could supposedly see no distinct features to separate them, and described three new species: *P. carpenteri* from Sulawesi, *P. kirki* from a location known only as "Corea" (although this is claimed to be a location within Borneo in their work) and *P. pennellhewletti* from Sarawak, Borneo. Smith & Jacobi (2015: 30) defined the genus as having: leg I longer and stouter than leg IV, absence of stout hair on the palpal femora, wide ocular tubercle and low caput; but do not mention aspects (namely reproductive organ morphology and the absence of brush setae on the retrolateral palpal femora) of Smith (1994). They also acknowledged, based on previous observations of pet hobby material, that the male of *P. everetti* possesses tibial apophyses (Smith & Jacobi 2015: 37) and thus the absence of tibial apophyses was not a valid primary taxonomic feature of the genus as was previously considered by Smith (1994: 19). In the same paper, they reestablished the genus *Omothymus* and transfered all species of *Haplopelma* Simon, 1892 to the genus *Cyriopagopus*, although it is not clear if either author had examined the genotype of *Haplopelma* (*Haplopelma doriae* Simon, 1892).

Smith & Jacobi (2015) further transfered two of the species previously housed in the genus *Cyriopagopus*, *C. schioedtei* and *C. thorelli*, back to the restored genus *Omothymus*. They also transferred *C. dromeus* to *Omothymus* despite having not examined the type specimen (which they stated themselves in their work: Smith & Jacobi 2015: 49). The transferal of *L. violaceopes* to *Omothymus* by Smith & Jacobi (2015) was considered "not sufficiently justified" according to the World Spider Catalog (2018). In the same year, Schmidt & Barensteiner (2015) published a paper naming a species from Mainland Borneo as a subspecies of *L. nigerrimum*: *L. n. arboricola*.

This work partially addresses the chaotic taxonomy of the subfamily Ornithoctoninae, reevaluating the stability of various morphological features, with specific focus on the male palpal bulb and tibial apophyses as a stable and congruent means of defining arboreal species and genera. Biogeography and comparative leg measurements of females are also utilized to further define these taxa.

Material and methods

Details of material examined ae given in the Appendix. Abbreviations: BMNH = Natural History Museum, London; CUMZ = Cambridge University Museum of Zoology; HNHM = Hungarian Natural History Museum, Budapest; MNHN = Muséum National d'Histoire Naturelle, Paris; MWNH = Museum Wiesbaden Naturhistorische Landessammlungen, Wiesbaden; OUMNH = Oxford University Museum of Natural History, Oxford; SMF = Senckenberg Museum, Frankfurt; ZMUC = Zoological Museum, University of Copenhagen, Copenhagen; AME = anterior median eyes; ALE = anterior lateral eyes; PME = posterior median eyes; PLE = posterior lateral eyes; PS = prolateral superior keel; Imm = immature; Coll. = collector; coll. = collection. Terminology for the male palpal bulb keels follows Bertani (2000) with the modifications of Gabriel (2016). Leg spine terminology follows Petrunkevitch (1925) with the modifications proposed by Bertani (2001): d = dorsal, v = ventral, r = retrolateral, p = prolateral. All measurements are in mm.

Omothymus Thorell, 1891

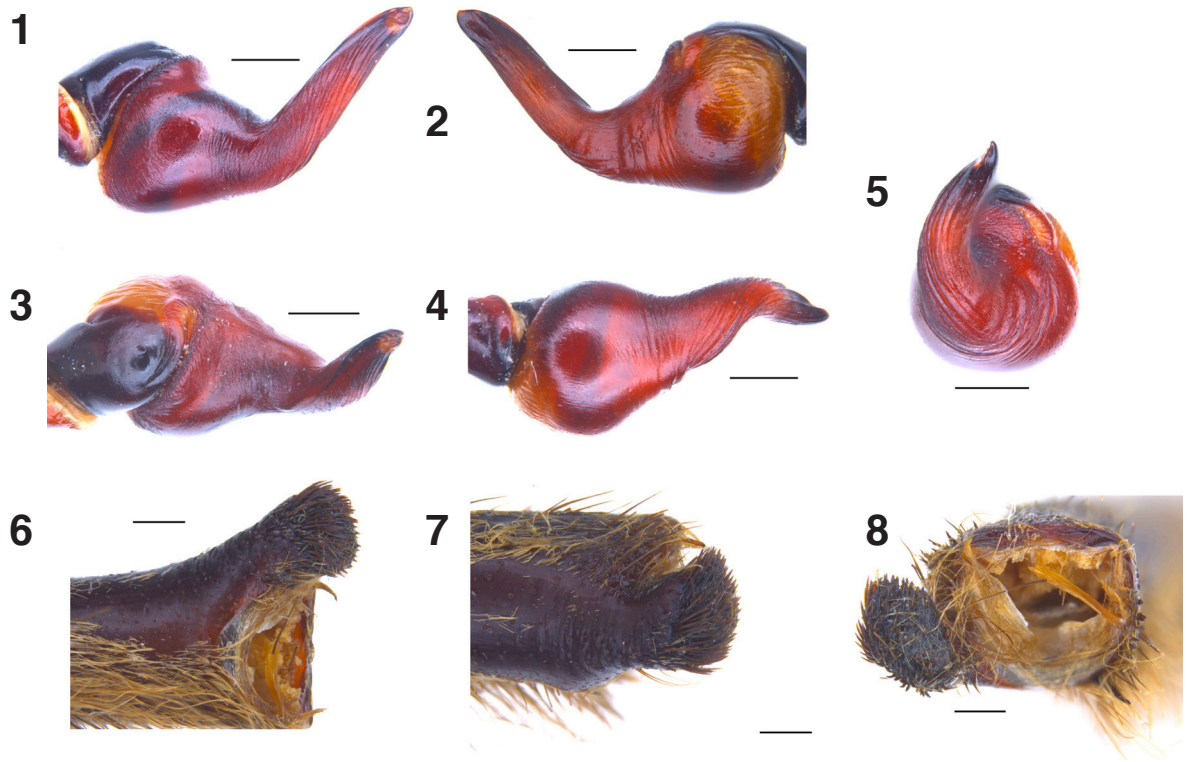
Omothymus Thorell, 1891: 10; Pocock 1895: 180; Simon 1901: 45.
Cyriopagopus Simon, 1887: 110; Simon 1903: 946 (synonymy of *Omothymus* with *Cyriopagopus*); Raven 1985: 116; Smith 1986: 105; Schmidt & Tesmoingt 2002: 3; Schmidt 2003: 249.
Omothymus Smith & Jacobi 2015: 28.

Type species: *Omothymus schioedtei* by original designation (Thorell 1891).

Diagnosis: *Omothymus* is differentiated from *Phormingochilus* by the pointed apex of the embolus in the apical view and from *Lampropelma* by the absence of apical swelling on the embolus. Further distinguished by the comparative difference between the total lengths of leg I and IV in females (+/– 10 mm versus +/– 2–3 mm in *Phormingochilus* and +/– 5 mm in *Lampropelma*) and by biogeography with a distribution limited to Malaysia, Singapore and Sumatra.

Distribution: Malaysia, Singapore, and Sumatra

Remarks: The geographical locations for the species we regard as *Omothymus* are peninsular Malaysia for *O. schioedtei* and *O. thorelli*, Singapore for *O. violaceopes* and Sumatra for *O. rafni* sp. nov. giving a distinct geographical area to match the distinct shaped bulb (Fig. 25).



Figs. 1–8: *Omothymus rafni* sp. nov. HMNH holotype male, left palpal bulb (1–5) and left tibial apophysis (6–8). **1** prolateral view; **2** retrolateral view; **3** dorsal view; **4** ventral view; **5** apical view; **6** ventral view; **7** prolateral view; **8** apical view. Scale bars = 1 mm.

Species included: *O. fuchsi* comb. nov., *O. rafni* sp. nov., *O. schioedtei*, and *O. violaceopedes* comb. nov.

***Omothymus fuchsi* (Strand, 1906) comb. nov.**

Phormingochilus fuchsi Strand, 1906: 6.
Phormingochilus fuchsi Smith 1994: 22, fig. 16.
Phormingochilus fuchsi Schmidt 2003: 253, fig. 836.

Type material: Holotype ♀ *Phormingochilus fuchsi* MWNH 319, south Aceh, Sumatra, Coll. Dr Fuchs, Berlin, photographs examined (courtesy of Volker von Wirth).

Remarks: We examined photographs provided by Volker von Wirth of the holotype of *P. fuchsi*. In our studies of the males of arboreal Ornithoctoninae we have found that members of the genus *Phormingochilus* are only found in Borneo and members of the genus *Omothymus* are found in Sumatra and peninsular Malaysia showing clear and separate geographical distributions. In Smith & Jacobi (2015: 35) the type locality of *P. fuchsi* is incorrectly referred to as "South Alyeh" but the spelling in the original description by Strand (1907) reads South Aceh which we have verified is the correct spelling and location. A supposed second specimen from BMNH mentioned by Smith & Jacobi (2015) is not conspecific and is actually a terrestrial ornithoctonine (pers. obs.). However, given the distribution patterns shown by all other taxa examined during this study, we find it unlikely that this specimen belongs to the genus *Phormingochilus*. Therefore, we propose that, based on comparative leg measurements, following the original description by Strand (1906), and geographical distribution, the Sumatran species *Phormingochilus fuchsi* be transferred to the genus *Omothymus*, giving the new combination *Omothymus fuchsi* **comb. nov.**

***Omothymus rafni* sp. nov.** (Figs. 1–8)

Type material: Holotype ♂ HMNH, Sumatra, 1932, Coll. Bandat Horst, examined.

Diagnosis: *O. rafni* sp. nov. differs from all other species of *Omothymus* by the more elongated embolus which rises at a steep angle (Figs. 1–2), a very short apical projection of the tibial apophyses (Fig. 8) in contrast to the noticeably projected apophyses found in *O. schioedtei* and *O. violaceopes*, and by geographic location.

Etymology: The specific epithet is a patronym in honour of Søren Rafn for his past and ongoing work on Asian theraphosid spiders and in recognition of his friendship and guidance to the authors.

Description: Holotype male (HMNH): Total length including chelicerae 36.8. Carapace length 15.6, width. 14.2 Caput slightly raised, eye tubercle raised, length 1.9 width 3.6, Anterior eye row procurved, posterior row slightly recurved, eyes ALE < AME, AME > PLE, PLE > PME. Clypeus 0.3, clypeal fringe long. Fovea transverse. Abdomen: length 15.1, width 8.2. Chelicera length 6.1, width 2.6. Maxilla with 110–130 cuspules covering approximately 35% of the proximal edge. Labium length 1.3, width 1.6, with 90–110 cuspules mostly separated by 0.5–1.5× width of a cuspule. Labio-sternum mounds separate. Sternum length 7.0, width 6.3, with three pairs of sigilla. Tarsi I–IV fully scopulate. Metatarsal scopulae: I 72%; II 63%, III, 44% IV 28% of the length of the segment. Lengths of legs and palpal segments see Table 1, leg formula 1423. Spination: tibia II v 0–0–2 (apical), IV v 0–0–2, palp v

0–0–1 (apical), metatarsus II v 0–0–1 (apical), III d 0–0–1, v 0–0–3 (apical), IV d 0–0–1 (apical), v 0–0–3 (apical). Palpal bulb with steeply curved embolus, apex with sharp point, numerous ridges across the entirety of the embolus (Figs. 1–5). Tibia I: single retrolateral apophysis capped with spines, rounded and less pronounced in apical view (Figs. 6–8). Posterior lateral spinnerets with three segments, basal 3.1, median 2.4, digitiform apical 3.0; lateral median spinnerets with one segment. Stridulation organ consisting of stout thorn setae on the prolateral maxillae and a pad of plumose setae on the retrolateral chelicerae. A small number of these setae are longer and stouter than the main pad and are situated towards the posterior half of scopulate pad.

Colour in alcohol brown.

Distribution: Sumatra

Remarks: The only location data with the holotype specimen is Sumatra. However, the collector of the specimen, Horst van Bandat, was a Hungarian geologist who worked in south Sumatra for a number of years (Czakó 1983). Kruseman's Cyclopaedia of Collections, *Flora Malesiana* (published online), lists "Palembang", "upper Batangharilero", "Sg. Merauti", "dessa Poeroen" and "Moesi Lematang" as collection sites where van Bandat collected botanical specimens. Any of these could be a plausible collection site for *O. rafni* sp. nov. but, without any specific location information on the data label, no single site or area can be seen as the definitive locality. Consideration was given to whether the specimen constituted the male of *O. fuchsi* comb. nov., however, Strand (1906) described this species from the south of Aceh, the northernmost state in Sumatra, the distance between Aceh and the above areas of south Sumatra span several hundred kilometres with different habitat. Therefore, we do not consider them to be conspecific. Sumatra is a large island with a total size of 473,481 km² so considerable distances between locations strongly suggest independent populations and lineages.

The holotype male has some fragmented leg segments, including detachment of the metatarsi and tibiae on leg I. However, by holding the metatarsus against the tibia in the position it would be if still intact we were able to ascertain the extent and angle that the tibial apophyses presented in relation to the metatarsus (as noted in the diagnosis). Given the fragility, it was not possible to hold the metatarsus in place as described when image stacking the tibia.

Omothymus schioedtei Thorell, 1891

Omothymus schioedtei Thorell, 1891: 11.
Omothymus schioedtei Pocock 1895: 180.
Omothymus thorelli Simon 1901: 45; **new synonymy**.
Cyriopagopus schioedtei Simon 1903: 946.
Cyriopagopus thorelli Simon 1903: 946.
Lampropelma violaceopedes Abraham 1924: 1108, pl. 5, figs. 19–24. (misidentification—male only)
Cyriopagopus thorelli Schmidt & Tesmoingt 2003: 3, figs. 1–10.
Cyriopagopus thorelli Schmidt 2003: 249, figs. 807–808.
Omothymus schioedtei Smith & Jacobi 2015: 28, figs. 1–2.
Omothymus thorelli Smith & Jacobi 2015: 28.

Type material: Holotype ♂ *Omothymus schioedtei* ZMUC, Pulo Penang, S. Western, photographs examined (courtesy of Søren Rafn); holotype ♂ *Omothymus thorelli* CUMZ Reg. Nov 30 1899, Ulu Selama, State of Perak, Malay Peninsular, 1899, Skeat Expedition, examined.

Remarks: Our examination of the holotype of *O. thorelli*, along with comparative photographs of the holotype of *O. schioedtei* sent to us by Søren Rafn, revealed that this specimen is conspecific with *O. schioedtei*. Simon (1901: 46) also mentioned the similarity of his species to that of Thorell's species, differentiating it in the original description mainly on the size of the eyes. The locality for Simon's *O. thorelli* is Ulu Selama, State of Perak, mainland Malaysia, which is close to the island of Penang, the location for Thorell's *O. schioedtei*. Therefore, based on the similar geographical area of these species and indistinguishable palpal bulb and tibial apophyses morphology, we propose that *O. thorelli* be regarded as a junior synonym of *O. schioedtei* **syn. nov.**

Omothymus violaceopes (Abraham, 1924) comb. nov.

Lampropelma violaceopedes Abraham, 1924: 1108, pl. 5, figs. 19–24. (in part—female only)
Lampropelma violaceopedes Smith 1990: 14, figs. 1–15.
Lampropelma violaceopes Schmidt 2003: 252, figs. 826–830.
Omothymus violaceopes Smith & Jacobi 2015: 29 (not accepted by World Spider Catalog (2018), considered "not sufficiently justified").

Type material: Holotype ♀ *Lampropelma violaceopes* BMNH 1924.27.19.1.37, Kranji, Singapore, Id., Coll. H. C. Abraham 9 February 1923, examined.

Remarks: First placed into the genus *Lampropelma* during its original description by Abraham (1924), Smith & Jacobi (2015: 27) assigned the species to the genus *Omothymus* stating "has all the characteristics of the genus *Omothymus*" but failed to say what these characters were and, further, that (Smith & Jacobi, 2015: 29) "the female should have been described as a new species of *Cyriopagopus*…" and proposed the transfer to the genus *Omothymus*, believing that *Lampropelma* would only be found on Sangihe Island. However, the World Spider Catalog (2018) stated that these comments in Smith & Jacobi (2015) are "not sufficiently justified" therefore, the suggested transfer to *Omothymus* was "not followed". After our examination of a number of conspecific female museum specimens, we conclude that *L. violaceopes* does, in fact, belong in the genus *Omothymus* based on comparative leg measurements and geographical distribution, and also based on the morphology of the palpal bulb and tibial apophyses of conspecific males examined

	I	II	III	IV	Palp
Femur	17.6	16.5	14.2	16.2	11.9
Patella	7.9	7.0	6.2	7.7	5.2
Tibia	18.2	14.7	11.7	15.5	11.7
Metatarsus	12.1	11.0	12.6	16.6	–
Tarsus	6.4	6.2	6.0	6.1	4.5
Total	**62.2**	**55.4**	**50.7**	**62.1**	**33.3**

Table 1: *Omothymus rafni* sp. nov. holotype male HMNH. Lengths of leg and palp podomeres.

in BMNH (see material examined). Therefore, we propose that *L. violaceopes* be transferred to the genus *Omothymus* giving the combination *Omothymus violaceopes* **comb. nov.**

Phormingochilus Pocock, 1895

Phormingochilus Pocock, 1895: 180; Strand 1906: 6; Smith 1986: 107; Smith 1994: 19; Schmidt 2003: 253.
Phormingochilus Smith & Jacobi, 2015: 30 (in part).

Type species: *Phormingochilus everetti* by original designation (Pocock, 1895).

Diagnosis: *Phormingochilus* is differentiated from *Omothymus* by the rounded apex of the male palpal bulb in the apical view and from *Lampropelma* by the absence of swelling to the apical embolus. Further distinguished by the comparative difference between the total lengths of leg I and IV in females (+/– 2–3 mm *v*. +/– 5 mm in *Lampropelma* and +/– 10 mm in *Omothymus*) and by biogeography with a distribution limited to Borneo.

Distribution: Sarawak and Sabah, Borneo

Remarks: Within the genus *Phormingochilus*, species with known males all possess a single megaspine on the inside of the tibial apophyses (Fig. 14; see also Smith & Jacobi 2015: 41, fig. 38). This feature has not been found in any *Lampropelma* or *Omothymus* specimens used in our analysis, suggesting this may be another informative generic level feature.

Species included: *P. arboricola* comb. nov., *P. everetti*, *P. pennellhewletti* and *P. tigrinus* **comb. rest.**

Phormingochilus arboricola Schmidt & Barensteiner, 2015 comb. nov.

Lampropelma nigerrimum arboricola Schmidt & Barensteiner, 2015: 5, figs. 1–4.

Type material: Holotype ♀ *Lampropelma nigerrimum arboricola* SMF, (no other data), not examined.

Remarks: Schmidt & Barensteiner (2015) described a spider from mainland Borneo as a subspecies of *L. nigerrimum*: *L. n. arboricola* Schmidt & Barensteiner, 2015 and separated it from *L. nigerrimum* based on the size of the eyes, leg spination, and scopula of metatarsus IV. Their diagnosis is vague and they stated that the female carries no collector or locality information (Schmidt & Barensteiner 2015: 5) which makes the species enigmatic. However, based on comparitive leg measurements, adapted from the table presented in Schmidt & Barensteiner (2015), and geographical location, *L. n. arboricola* is transferred to the genus *Phormingochilus* and its full species status is recognised, based on the difference in leg spination to other known Borneo species, making the new combination *Phormingochilus arboricola* **comb. nov.**

	I	II	III	IV	Palp
Femur	18.8	18.2	14.5	16.9	10.1
Patella	7.8	7.8	6.0	6.8	5.3
Tibia	18.0	15.3	12.1	14.9	9.1
Metatarsus	14.3	12.8	13.2	17.8	–
Tarsus	9.3	8.7	7.7	8.7	3.2
Total	**68.2**	**62.8**	**53.5**	**65.1**	**27.7**

Table 2: *Phormingochilus everetti* male BMNH. Lengths of leg and palp podomeres.

Phormingochilus everetti Pocock, 1895 (Figs. 9–16)

*Phormingochilus everetti*i Pocock, 1895: 180, pl. 10, fig. 4.
Phormingochilus everetti Smith 1994: 20, figs. 1–10, 17.
Phormingochilus everetti Schmidt 2003: 253, figs. 832–835.
Phormingochilus everetti Smith & Jacobi 2015: 30, figs. 3–9, 42–43.

Type material: Holotype ♀ *Phormingochilus everetti* BMNH 88.122, north-west Borneo, Coll. A. Everett, examined; non-type ♂ *Phormingochilus everetti* BMNH 03.7.4.1–4, Baram District, Sarawak, Coll. Charles Hose, examined.

Diagnosis: Male palpal bulb possessing a minimally pronounced PS keel and gently angled embolus (Figs. 9–10), with a sharply curved apex when viewed in dorsal or ventral views (Figs. 11–12). Reduced apical projection of the tibial apophyses (Fig. 16). Female can be distinguished from *P. tigrinus* by tibia I spination and the absence of soft setae on the retrolateral femur I.

Description of non-type male (BMNH): Total length including chelicerae 32.9. Carapace length 13.9, width 13.2. Caput slightly raised, eye tubercle raised, length 2.0, width 3.1. Anterior eye row procurved, posterior row slightly recurved, eyes ALE < AME, AME > PLE, PLE > PME. Clypeus 0.2, clypeal fringe long. Fovea deep, transverse. Abdomen: length 12.6, width 9.5. Chelicera length 6.4, width 2.6. Maxilla with 110–130 cuspules covering approximately 27% of the proximal edge. Labium length 1.0, width 1.4, with 70–80 cuspules mostly separated by 0.5–1.5 times the width of a cuspule. Labio–sternum mounds separate. Sternum length 6.8, width 6.0, with three pairs of sigilla. Tarsi I–IV fully scopulate. Metatarsal scopulae: I 72%; II 66%, III 56%, IV 27%. Lengths of legs and palpal segments (Table 2), legs 1,4,2,3. Spination: tibia II v 0–0–2 (apical), III v 0–0–2 (apical), IV v 0–0–2, III v 0–0–3 (apical), IV v 0–0–2 (apical). Palpal bulb with gently curved embolus. Reduced ridges on embolus, rounded embolic apex which, in dorsal and ventral views, ends in sharp taper (Figs. 9–13). Tibia I: single retrolateral apophyses capped with spines, pronounced but gently curved in apical view (Figs. 14–16). Posterior lateral spinnerets with three segments, basal 1.9, median 1.3, digitiform apical 2.8; lateral median spinnerets with one segment. Stridulation organ consisting of stout thorn setae on the prolateral maxillae and a pad of plumose setae on the retrolateral chelicerae. A small number of these setae are longer and stouter than the main pad and are situated towards the posterior half of scopulate pad.

Colour in alcohol brown.

Distribution: Sarawak, Borneo

Remarks: The exact geographical location of the holotype of *P. everetti* is unknown; the data label states “North West Borneo”. Albert Everett, the collector of the holotype held

Figs. 9–16: *Phormingochilus everetti* Pocock, 1895, BMNH non-type male, left palpal bulb (9–13) and left tibial apophysis (14–16). **1** prolateral view; **2** retrolateral view; **3** dorsal view; **4** ventral view; **5** apical view; **6** ventral view; **7** prolateral view; **8** apical view. Scale bars = 1 mm.

many governmental roles within Sarawak and later explored with the North Borneo Company (Kruseman, published online). It is also on record he held positions in Brunei and Trusan (Kruseman, published online). Pocock (1895: 181) remarked that the location for the specimen was "probably mainland opposite Labuan" which, if taken to mean "south of", would place it at the northernmost regions of the state of Sarawak or in the Kingdom of Brunei (it is unknown if Pocock ever spoke or corresponded with A. Everett to substantiate this suggested location or if Everett's specimens were simply donated or purchased to/by the museum). However, as the location data is somewhat vague, it is not entirely possible to pinpoint a precise site of location, a familiar problem with late nineteenth century specimens. A second possibility we considered is that Pocock (1895) meant opposite as East which would place the specimen in western Sabah, extremely close to the stream Kuala Lama, the type locality of *P. tigrinus*.

The male described here for the first time was collected by Charles Hose in Baram, Sarawak. The palpal bulb morphology of this specimen matches photographs of the bulbs of captive male specimens (e.g. those referred to by Smith & Jacobi 2015) provided by colleagues, and is from a location under 100 km from a female specimen in the BMNH which matches very closely in morphology (predominately by the absence of brush setae on the retrolateral femur I; see discussion for *P. tigrinus* below) to the holotype female. Based on this, we conclude this male is conspecific with the holotype.

In the bulb of *Phormingochilus everetti*, the embolus rises parallel, does not widen, and is rounded at the tip (Fig. 13). This rounded tip has so far not been found in specimens outside Borneo, giving a distinct morphological feature to complement a geographical grouping for the genus *Phormingochilus* (Fig. 25).

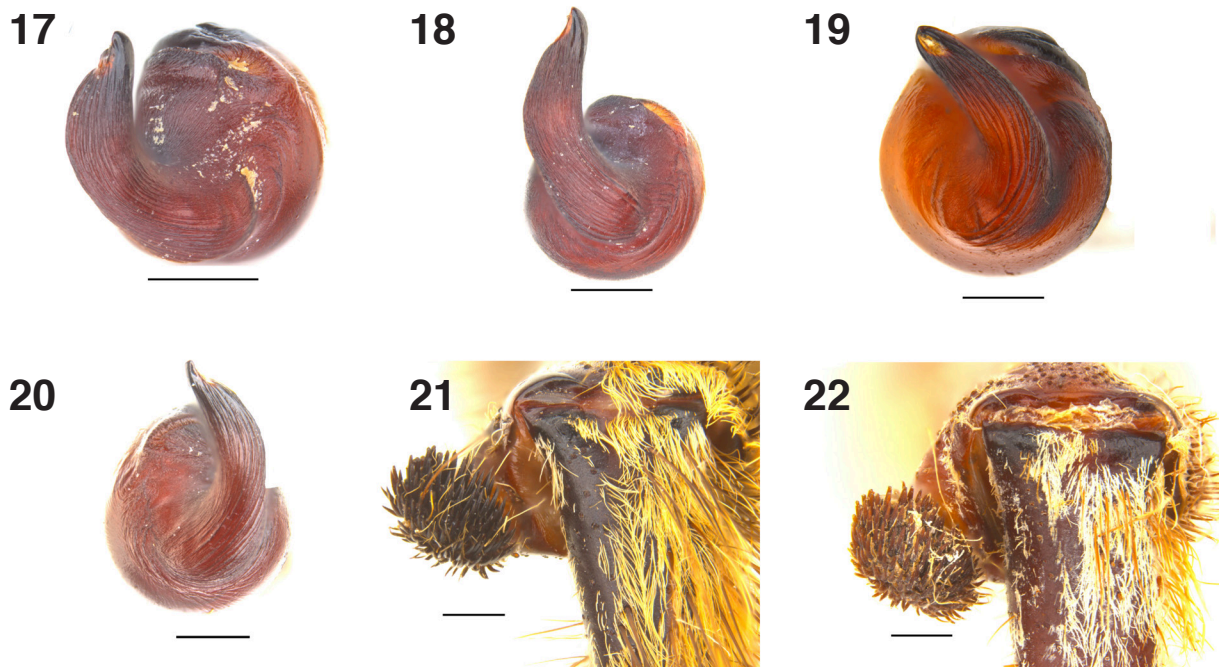
Pocock (1895), and later Smith (1994), believed a specimen labelled only "Corea", and lacking tibial apophyses, to be the male of *P. everetti*, although Pocock (1895) never formally described it as such. This specimen was later described as the paratype of *P. everetti* by Smith (1994) although, following Recommendation 73D of the ICZN (2018), the usage of the word paratype in this paper is incorrect. Smith & Jacobi (2015) recognised this specimen to be in systematic error as pet hobby males (which they presumably observed or were at least aware of) of *P. everetti* possess tibial apophyses and, therefore, described the so-called paratype (which lacks tibial apophyses) as a new species, *P. kirki*, thus leaving the male of *P. everetti* undescribed. This male specimen, however, is found to be synonymous with another species described by Smith & Jacobi (2015) and its previous reported geographical locations have been questioned (see below).

Phormingochilus tigrinus Pocock, 1895 comb. rest.

Phormingochilus tigrinus Pocock, 1895: 181.
Phormingochilus tigrinus Smith 1994: 21, figs. 11–15.
Phormingochilus tigrinus Schmidt 2003: 253, fig. 837.
Phormingochilus everetti Smith & Jacobi, 2015: 30, figs. 3–9, 42–43 (misidentification).

Type material: Holotype ♀ *Phormingochilus tigrinus*, BMNH 1894.6.27.1, Kuala Lama, north Borneo, Coll. A. Everett, examined.

Remarks: Smith & Jacobi (2015) synonymized *P. tigrinus* with *P. everetti* based on colouration, and stated it came from the "same coastal forest in Northern Sarawak" as *P. everetti*. As discussed above, in *P. everetti*, there is no exact location for the holotype female of *P. everetti* so, at present, it cannot be said with total certainty that it comes from the same coastal forest as *P. tigrinus*. At present, there are few established, stable, morphological features by which female arboreal Ornithoctoninae can be delineated. The holotype



Figs. 17–22: **17** *Lampropelma nigerrimum* non-type male palpal bulb apical view; **18** *Lampropelma carpenteri* comb. nov. (holotype of *Phormingochilus kirki* BMNH), palpal bulb apical view; **19** *Omothymus* sp. male BMNH, "East India Museum", palpal bulb apical view (tip of embolus damaged giving false appearance of apex being rounded); **20** *Omothymus violaceopes* comb. nov. non-type male BMNH, palpal bulb apical view; **21** *Omothymus violaceopes* comb. nov. non-type male BMNH, tibial apophyses apical view; **22** *Omothymus* sp. male BMNH, "East India Museum", tibial apophyses apical view. Scale bars = 1mm.

of *P. tigrinus* is relatively small, suggesting it may be a sub-adult specimen or an adult of a smaller species. Therefore, we feel little evidence was given for this synonymy. Furthermore, in contradiction to this synonymy, Smith & Jacobi (2015) later used colour as a feature to separate their new species *P. pennellhewletti* from the closely related *P. everetti*.

Volker von Wirth (pers. comm.) advised us that *P. tigrinus* has a brush of soft setae on the retrolateral femur of leg I, a feature not found in the holotype of *P. everetti*. Furthermore, that *P. tigrinus* lacks a comb of five spines on the apical ventral, retrolateral, and prolateral faces of the tibia of leg I which is present in *P. everetti*. Following our examination of these type specimens, we can confirm these differences. The intra- and interspecific variations of these characters will need to be assessed by future workers with access to bigger sample sizes, especially from the type locality of *P. tigrinus*. Therefore, due to contradictory justification for the synonymy by Smith & Jacobi (2015) and a number of different morphological features as mentioned above, we propose the reversal of the synonymy with *P. everetti* restoring the combination *Phormingochilus tigrinus* **comb. rest**.

Lampropelma Simon, 1892

Lampropelma Simon, 1892: 151; Abraham 1924: 1108; Raven 1985: 116; Smith 1986: 106; Smith 1990: 14; Schmidt 2003: 252; Schmidt & Barensteiner 2015: 5.
Lampropelma Smith & Jacobi 2015: 28 (in part).

Type species: *Lampropelma nigerrimum* (Simon, 1892) by original designation.

Diagnosis: *Lampropelma* is differentiated from *Phormingochilus* and *Omothymus* by the apical swelling of the embolus (Figs. 17–18), (absent in *Phormingochilus* and *Omothymus*), further distinguished from *Phormingochilus* by the embolus narrowing to a point in apical view (rounded at the tip in *Phormingochilus*) and is additionally distinguished from both genera by a geographic distribution currently restricted to Sangihe Island and Sulawesi.

The type species *L. nigerrimum* was described from a single female, housed in MNHN (photographs of holotype examined, courtesy of Fabian Vol) and is known only from Sangihe Island where it is likely endemic. The spermathecae are typical of arboreal female Ornithoctoninae, as is the stridulation organ, and neither can be used for robust delineation against its single current congener. However, the prominent femoral fringe present in this species does differentiate it from *L. carpenteri* comb. nov. because the latter taxon does not possess prominent femoral fringing (pers. obs.). Thus, it is demonstrable that this morphological feature varies at the species level and, as a consequence, is not an adequate generic feature for delineation.

Distribution: Sangihe Island and northern Sulawesi

Remarks: At present, *Lampropelma* has a more restricted distribution than the genera *Phormingochilus* and *Omothymus*, limited to northern Sulawesi and Sangihe Island. However, this may be an artefact of relatively small numbers of specimens from these regions being housed in European natural history museum collections. Future sampling efforts may reveal a wider distribution throughout the island of Sulawesi for this genus and, if so, will likely reveal additional putative species.

Species included: *L. carpenteri* comb. nov. and *L. nigerrimum*

***Lampropelma carpenteri* (Smith & Jacobi, 2015) comb. nov.**

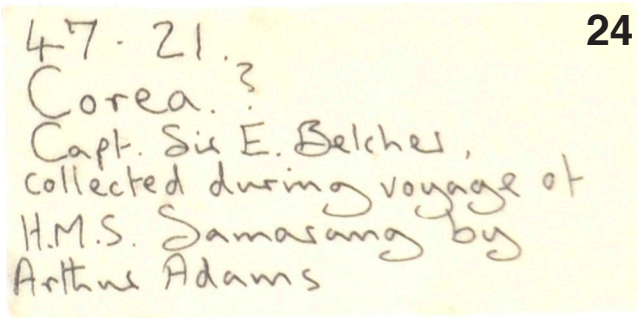
Phormingochilus carpenteri Smith & Jacobi, 2015: 34, figs. 10–16.
Phormingochilus kirki Smith & Jacobi, 2015: 35, figs. 17–23; **new synonymy**.

Type material: Holotype ♀ *Phormingochilus carpenteri*, BMNH, north-east Celebes, Kema, examined; holotype ♂ *Phormingochilus kirki*, BMNH 47.21, Corea, Captain Sir E. Belches, collected during voyage of HMS Samarang by Arthur Adams, examined.

Remarks: Smith & Jacobi (2015) described *P. carpenteri* from Sulawesi. Based on our examination of male arboreal Ornithoctoninae we demonstrate that Sulawesi is a geographical location for the genus *Lampropelma* while Borneo is the sole location for members of the genus *Phormingochilus*. The holotype female hails from Kema, northern Sulawesi but was erroneously referred to as "Kema Ang. South Sulawesi" by Smith & Jacobi (2015). Interestingly, the paratype female was collected from Djaladja in the far south of the island, a significant distance away from the holotype; therefore, we suspect this female represents a different species. Future workers should seek to investigate this specimen further. So, based on geographical location and comparative leg measurements, adapted from the measurements presented in Smith & Jacobi (2015), we propose *P. carpenteri* be transferred to the genus *Lampropelma* making the new combination *Lampropelma carpenteri* **comb. nov.**

The type locality for *P. kirki* is nebulous, the original (but first of many) data label accompanying the holotype simply states the location as "Corea" (Fig. 23). We strongly suspect this locality is erroneous. The suggestion of Smith & Jacobi (2015) that Corea is likely located in Borneo seems to be without basis since we can find no literature reference to a location called Corea in Borneo nor could locate it on maps from the time period. We could find no mention by Adams (1847) that he collected the specimen in Borneo; indeed, we found no mention in his notes of him collecting theraphosid spiders in a particular area on the voyage at all. However, much text is devoted to Adams's collection of non-arachnids in the Korean Peninsula (spelt in Adams (1847) as Corean Peninsula) and he frequently refers to the mainland nation of Korea (spelt in Adams (1847) as Corea) in the South China Sea. Thus, we suspect the locality of the specimen was likely not recorded and merely speculated, given the large amount of time Adams spent near to Korea during the voyage of HMS Samarang, when the specimen was presented to the BMNH, hence the question mark present at the end of the given locality on a later, more detailed label (Fig. 24).

However, despite the questionable locality data, this ex-pinned specimen has an intact palpal bulb and the bulb morphology demonstrates it belongs to the genus *Lampropelma*. In apical view, the embolus is swollen, much like in males of *L. nigerrimum* (Fig. 17). The bulb of *P. kirki* also shares other bulb features with *L. nigerrimum* namely an enlarged embolus and dark matte appearance with dense, rough microsculpture (Fig. 18). Geographically, Sangihe Island is located north of the northern tip of Sulawesi,



Figs. 23–24: **23** original data label of *P. kirki* holotype male BMNH, (= *L. carpenteri*) stating locality as "Corea"; **24** later data label of *P. kirki* holotype male BMNH, (= *L. carpenteri*) stating "Corea" alongside the accession number and some additional information.

revealing a congruent distribution pattern (Fig. 25). Photographs provided to us by colleagues showed the palpal bulb morphology of male specimens reportedly found at the type locality of *L. carpenteri*. Our comparison of these photographs against the bulb of *P. kirki* strongly suggested the material is conspecific. Therefore, we propose *P. kirki* be regarded as a junior synonym of *L. carpenteri* **syn. nov.**

Discussion

In the bulb of *Omothymus* species, the embolus rises parallel and does not widen but slopes to a point at the tip (Figs. 5, 21). One of the palpal bulbs of an undetermined *Omothymus* sp. male in BMNH was broken at the tip which made it appear as if the tip was rounded as in *Phormingochilus* (Fig. 20). However, this is simply an artefact of the broken tip giving the false impression of a rounded embolic tip. Subsequent examination of the bulb of the opposite side of the specimen (which is undamaged) demonstrated the presence of the sharpened tip which characterizes the genus *Omothymus* from *Phormingochilus*. Nonetheless, this specimen highlights that damage to the embolic tip can complicate identification of a specimen should the worker not be familiar with arboreal ornithoctonine morphology.

By shifting focus from generalist features such as the height of the caput and the width of the ocular tubercle to male palpal bulb and tibial apophyses morphology, female comparative leg measurements and consideration of geographic distributions; we show the morphological and biogeographical criteria to distinguish three natural generic groups currently recognised within the subfamily Ornithoctoninae: *Lampropelma*, *Omothymus*, and *Phormingochilus*. Use of the low height of the caput by earlier authors as a diagnostic feature has proved erroneous because all arboreal Theraphosidae have a caput comparatively lower than terrestrial species (pers. obs.) and we could find no instance where the caput could be used to determine specific arboreal taxa (pers. obs.). Indeed, von Wirth & Striffler (2005) had

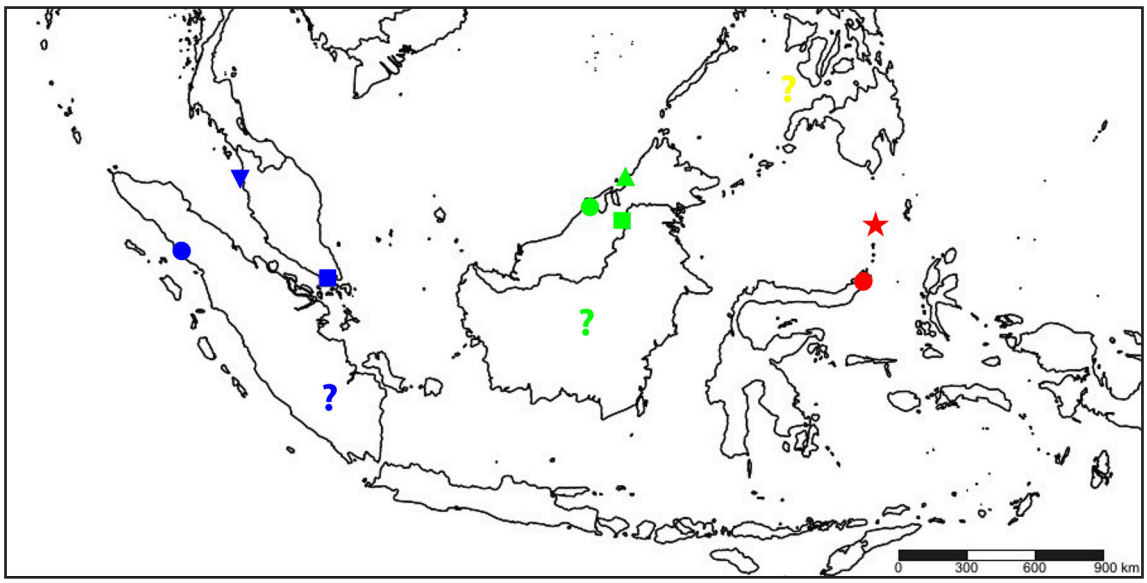


Fig. 25: Map of type localities of some arboreal Ornithoctoninae showing distinct geographical separation of genera: ▼ = *Omothymus schioedtei*, ■ = *Omothymus violaceopes* comb. nov., ● = *Omothymus fuchsi* comb. nov., ▲ = *Phormingochilus tigrinus* comb. rest., ■ = *Phormingochilus pennellhewletti*, ● = *Lampropelma carpenteri* comb. nov., ★ = *Lampropelma nigerrimum*, ● = locality of non-type male of *Phormingochilus everetti* described in this work. The type localities of *Melagnathus dromeus* comb. rest. (?), *Omothymus rafni* sp. nov. (?) and *Phormingochilus arboricola* comb. nov. (?) are inexact and these three map markers are general country indicators, not precise locations.

previously criticized the use of this character and did not regard it as informative, instead proposing new morphological features in their work focusing on some terrestrial ornithoctonine taxa.

Viewing the male palpal bulb from the apical view has not previously been used for assessing arboreal species within the Ornithoctoninae; however, we have found it to be stable and adequate for generic delineation. Palpal bulb morphology is also useful for species-level delineation within the genera, with prolateral, retrolateral, dorsal, and ventral views enabling differentiation, despite the homogeneity displayed within the known arboreal Ornithoctoninae. However, for species only known from a single male, additional specimens would enable evaluation of intraspecific variation within the palpal bulb and better assert species relationships.

Based on current examinations of museum material, tibial apophyses morphology also appears to be distinct for generic level delineation between *Omothymus* and *Phormingochilus*. The tibial apophysis is rounded and less pronounced in *Omothymus*, distant from the metatarsus when examined in apical view (Figs. 8, 21–22). Conversely, the tibial apophysis is pronounced and rounded with a gentle curve in *Phormingochilus*, intermediately spaced towards the metatarsus when examined in apical view (Fig. 16). The male of *L. carpenteri* comb. nov. lacks tibial apophyses and the male of *L. nigerrimum* is undescribed so, at present, it is not possible to adequately compare this feature in the genus *Lampropelma* also. However, this should be tested with a larger range of specimens should this become possible in the future in order to establish the role of intraspecific variation in *Omothymus* and *Phormingochilus* and to ascertain whether the feature also further delineates the genus *Lampropelma*.

Our current analysis of museum material indicated that females can be determined to generic level not only by geographical location but also by comparative leg measurements, specifically, the difference between the total lengths of leg I and IV. This appears to be distinct with a +/– 2–3 mm difference in *Phormingochilus*, +/– 5 mm in *Lampropelma* and +/– 10 mm in *Omothymus*. In all cases, leg I is longer than leg IV. A similar methodology, Leg Relation Factor, was proposed by von Wirth & Striffler (2005) for terrestrial Ornithoctoninae but Leg Relation Factor is a mathematical formula which presents the relation as a decimal number. Our leg measurement ranges were a methodology created independently during the course of this research and enable rapid assessment of generic placement based on a small defined range of variation in leg I and IV length difference for respective genera.

Nevertheless, future workers should seek to employ further morphological features and examine larger sample sizes for accurate delineation of female arboreal Ornithoctoninae. This subfamily would benefit greatly from molecular investigation and characterization.

Misplaced taxa

Melognathus dromeus Chamberlin, 1917 comb. rest.

Melognathus dromeus Chamberlin, 1917: 70, pl. 5, figs. 4–7.
Cyriopagopus dromeus Raven 1985: 156.
Melognathus dromeus Smith 1986: 120, fig. 21h.
Melognathus dromeus Smith 1987: 120, fig. 21h.
Cyriopagopus dromeus Schmidt 2003: 249, figs. 805–806.
Omothymus dromeus Smith & Jacobi 2015: 29 (not accepted by World Spider Catalog (2018), considered "not sufficiently justified").

Type material: Holotype ♂ *Melognathus dromeus* MCZ, East Indies? Philippines?, Coll. J. M. Barnard, Ship Monsoon, photographs examined.

Remarks: Chamberlin (1917: 70) described *M. dromeus* from an undetermined location simply stating "East Indies?

Philippines?" and housed the species into a new genus *Melognathus*. Raven (1985: 156) examined the type specimen and synonymized *Melognathus* with *Cyriopagopus* regarding their differences to be "species autamorphies" but failed to say what these species autamorphies were. Smith (1986, 1987) did not follow Raven (1985) in the main text of his work but noted Raven's synonymy at the end of his work (Smith, 1986: 178). Schmidt (2003) followed Raven (1985), listing the species in the genus *Cyriopagopus*; however, it is not clear whether Schmidt examined the type specimen himself. Smith & Jacobi (2015) transferred *C. dromeus* into *Omothymus* without examining the type specimen. This change was not accepted by the World Spider Catalog (2018) nor followed here.

Photographs of the holotype of *C. dromeus* provided by Søren Rafn show that the palpal bulb morphology differs from that of the genera illustrated here and from some male specimens of species in the genera *Cyriopagopus* (formerly contained in the genus *Haplopelma*) examined for this study. This is not surprising because members of those genera are predominately terrestrial species and *C. dromeus* is likely arboreal (based on the wide paddle-like shape of the dense scopulae on the ventral tarsi and metatarsi of leg pairs I–II). The dubious type locality is inherently problematic, but the palpal bulb morphology is distinctive and could likely be compared against other material by future workers to attempt to pinpoint a precise locality. We do not agree that the species belongs in *Cyriopagopus* or other genera discussed in this work based on the divergent palpal bulb morphology. Therefore, in spite of the problematic type locality, we propose the genus *Melognathus* be restored and *C. dromeus* tentatively returned to its original placement, *Melognathus dromeus* **comb. rest.** in order to be available once again in its original combination for critical reevaluation by future workers.

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Appendix

Holotype and paratype material examined (museum numbers given where known): BMNH specimens: 1♀ *Phormingochilus everetti*, BMNH 88.122, north-west Borneo, Coll. A. Everett; 1♀ *Phormingochilus tigrinus*, BMNH 1894.6.27.1, Kuala Lama, north Borneo, Coll. A. Everett; 1♂ *Phormingochilus kirki*, BMNH 47.21, Corea, Coll. Arthur Adams; 1 ♀ *Phormingochilus carpenteri*, BMNH, N. E. Celebes, Kema; 1♀ *Lampropelma violaceopes*, BMNH 1924.27.19.1.37, Kranji, Singapore, Id., Coll. H. C. Abraham 9/2/23., 1♂ in jar (from Penang) misidentified *Omothymus schioedtei*; 1♀ *Citharognathus hosei* BMNH 1894.9.19.1–2, Sarawak, Coll. G. Hose; 1♂, 2♀ *Haplopelma lividum* BMNH, Thailand, Kawkareik on the Thailand/ Burma frontier, Ralph Fitchett (imported by); 1♀ *Ornithoctonus andersoni* BMNH 1891.10.15.3–5, Burma, Coll. Dr Anderson. CUMZ specimens: 1♂ *Omothymus thorelli* CUMZ Reg. 30 November 1899, Ulu Selama, State of Perak, Malay Peninsular, 1899, Skeat Expedition.

Other material examined (museum numbers given where known): BMNH specimens: 1♀ *Cyriopagopus schioedtei*, Pinang, coll. Hardwick; 1♂ *Cyriopagopus schioedtei*, Penang hills, Sungei, Pinang, 29/05/1962, coll. H. T. Pagden, det. D. J. Clark 1971; 1♂ *Cyriopagopus schioedtei*, Penang, East India Museum, det. D. J. Clark 1961, not *C. schioedtei*, possible new species det. S. Rafn and R. Gabriel 2016; 1 *Cyriopagopus* sp., det. R. Gabriel and R. Gallon 16 January 2009; 1 *Cyriopagopus* sp., Padang, det. A. M. Smith October 1990; 2 *Lampropelma* sp., Ampang reservoir, Selengor, Kuala Lama Lumpur, 4 February 1947, det. A. M. Smith 29 March 2000; 1♀ *Lampropelma* sp., Penang, March 1967, det. A. M. Smith 2004, original label states *L. violaceopes* det. Clark 1967; 2♀ *Lampropelma violaceopes*, BMNH 1924.2.27 20–21, Palau Bulang Riau IMS, March 1923, Coll. Mrs De Burgh Thomas; 1♂ *Lampropelma violaceopes*, Singapore, det. A. M. Smith; 1 imm. *Phormingochilus* sp. Selamgore, The Caves 1897 Selamgore out of bamboo marked “T. P. 2”, Coll. H. M. Ridley, *Omothymus schioedtei* det. D. Sherwood and R. Gabriel 12 January 2018; 1♀ *Phormingochilus everetti*, Sarawak: Gunong Mulu N.P., Environs of base camp 65 m, collected by Berawan girls, 6 April 1978, Coll. P. Chapman; 1♀ *Phormingochilus* sp. BMNH 1898.10.161, N. Borneo, Coll. J. B. Bell; 1 imm. *Haplopelma doriae* BMNH, Borneo, 94; 4♀ *Melopoeus albostriatum* BMNH, Siam, Coll. W. H. Newman; 1♀ *Melopoeus albostriatum* BMNH 1968.28.11.23, Thailand, dead in burrow, Coll. Dr W. S. Bristowe, det. D. J. Clark; 1♀ *Melopoeus albostriatum* BMNH 97.9.7.20, Coll. Liam Oynthia; 1♀ *Melopoeus albostriatum* BMNH 09.10.7.38, Upper Tanasserium; 1♀ *Melopoeus* sp. BMNH 1926.6.30.4, Thailand, Coll. Herbert Stevens on the Percy Sladen, Godman exp.; 1♀ *Melopoeus* sp. BMNH 97.12.22.12, Laos/Thailand; 1♀ *Melopoeus* sp. BMNH, 02.9.18.9, Coll. H. N. Thompson. OUMNH specimens: 1♀ *Lampropelma* sp., Singapore Jar 92, Coll. J. E. H. Riley, O. Pickard–Cambridge coll., *Lampropelma violaceopes* det. S. Rafn 20 October 2003.