

On a new genus and species of theraphosid spider from Serpent Island, Mauritius (Araneae, Theraphosidae, Eumenophorinae)

Richard C. Gallon

23a Roumania Crescent,
Llandudno, North Wales, LL30 1UP

Summary

A new genus and species of theraphosid, *Mascaraneus remotus*, is described from Serpent Island, Mauritius. The new species, although eumenophorine, lacks stridulatory setae, but plesiomorphically retains divided metatarsal scopulae on leg IV and distal clavate trichobothria on the tarsi. It is the first theraphosid spider recorded from the Mascarene Islands. Its biogeography and taxonomy are discussed.

Introduction

The island theraphosid fauna of the western Indian Ocean is depauperate, and shows affinities with that of Africa and the Arabian Peninsula. Socotra has a single eumenophorine, *Monocentropus balfouri* Pocock, 1897. Zanzibar holds the eumenophorine *Loxomphalia rubida* Simon, 1889 and the harpactirine *Pterinochilus murinus* Pocock, 1897. The Seychelles fauna consists of three ischnocoline species: *Chaetopelma gardineri* Hirst, 1911, *Nesiergus halophilus* Benoit, 1978 and *Nesiergus insulanus* Simon, 1903. Benoit (1978) suggested there is a fourth undescribed theraphosid from the Seychelles. He based this on the discovery of a single 6.7 mm long left chelicera found in a forest on Mahé. Madagascar has three eumenophorines: *Encyocrates raffrayi* Simon, 1892, *Monocentropus lambertoni* Fage, 1922 and *Phoneyusa bouvieri* Berland, 1917.

These islands display a high degree of species endemism, with only *P. murinus* known to occur on mainland Africa. Genus endemism is also marked, occurring in the cases of *Loxomphalia* Simon, 1889, *Nesiergus* Simon, 1903 and *Encyocrates* Simon, 1892. *Chaetopelma* Ausserer, 1871 has a mainland distribution centred on the Middle East, extending down the Arabian Peninsula. *Monocentropus* Pocock, 1897 exhibits an interesting distribution on the Arabian Peninsula, Socotra and Madagascar, but is not recorded from mainland Africa. *Phoneyusa* Karsch, 1884 appears to be paraphyletic and its presence on Madagascar is inconsistent with the equatorial African distribution of *Phoneyusa sensu stricto*. Work on redefining *Phoneyusa sensu lato* is in progress (Gallon in prep.).

No theraphosids have previously been recorded from the Mascarene Islands, but in 1992 a large adult male was collected from Serpent Island, a 19 ha islet about 25 km north-east of Mauritius (Safford, 1993). On examination, this was found to represent an unusual new genus and species of Eumenophorinae Pocock, 1897.

Methods

Methods follow Gallon (2002), except ocular measurements were obtained microscopically using an

eyepiece graticule ± 0.01 mm. All measurements are in mm. *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, MPL=medial prolateral, DMV=distal midventral, DPD=distal prodorsal, DRD=distal retrodorsal. R=right, L=left. Spinnerets: DS=distal segment.

Genus *Mascaraneus* gen. n.

Type and only species: *Mascaraneus remotus* gen. et sp. n.

Etymology: From the Latin for spider and the Mascarene Islands. Gender masculine.

Diagnosis: Distinguished from the Selenogyriinae Smith, 1990 by the absence of stridulatory bristles between the chelicerae, and from most Harpactirinae Pocock, 1897 by the absence of stridulatory scopulae between the chelicerae and palpal trochanter. Its unmarked abdomen and large size provide distinction from *Harpactirella* Purcell, 1902. It is distinguished from the Stromatopelminae Schmidt, 1993 by the absence of dark markings on the legs and abdomen and by possessing more numerous labial cuspules. Integral tarsal scopulae and the absence of medial and proximal tibial leg spines distinguish it from all Ischnocolinae Simon, 1892. It is further distinguished from male *Chaetopelma*, *Cratorrhagus* Simon, 1891 and *Nesiergus* by the absence of tibial spurs on leg I. It differs from all other eumenophorines by the complete absence of stridulatory setae (robust, hooked or plumose) between palp–leg I and leg I–II surfaces. Its transverse fovea further distinguishes it from *Batesiella* Pocock, 1903, *Citharischius* Pocock, 1900, *Eumenophorus* Pocock, 1897, *Hysteroocrates* Simon, 1892 and *Phoneyusa*, which have procurved foveae. The absence of a tibial spur on leg I distinguishes it from males of *Encyocrates*, *Eumenophorus* and *Monocentropus*. The broad, bi-keeled, spoon-like embolus is also highly characteristic.

Mascaraneus remotus sp. n. (Figs. 1–9)

Type material: Holotype ♂ from Serpent Island, Mauritius, c. 50 m a.s.l., 19°48'57" S, 57°47'57" E, 17 November 1992, leg. Carol Knight, deposited in Liverpool Museum, UK.

Etymology: From the Latin adjective for remote, referring to the isolated type locality.

Remarks: The holotype was found desiccated in the field, but is now in alcohol. Missing right leg III, but otherwise in a good state of preservation.

Diagnosis: As for genus.

Description: *Male holotype* (Fig. 1): Total length 45.3 including chelicerae, but excluding spinnerets. Carapace profile low, not raised at caput (Fig. 2), length 21.9, width 19.0. Abdomen length 17.7, width 12.5. Fovea transverse. Ocular tubercle (Fig. 3) length 2.32, width 2.83. Clypeus 0.87. Eye sizes: AME 0.58, ALE 0.78, PME 0.71, PLE 0.73. Sternum (Fig. 4) with three pairs

of sigilla (anterior and medial pairs round and submarginal, posterior pair large, ovoid and more remote from sternal margin). Labium trapezoid with *c.* 120 cuspules. Labium not notched anteriorly, not protruding. Paired glabrous labiosternal areas present on labiosternal suture. Maxilla with *c.* 110 cuspules. DS of posterior spinneret digitiform. Chelicerae with 13R, 12L teeth on promargin. Stridulation organs: absent; no stridulatory setae between chelicerae, chelicera–palp, palp–leg I or leg I–II. Lateral femoral scopulae absent. Leg and palp segment lengths in Table 1. Femur III incrassate. All tarsi with integral scopulae. Metatarsal scopulae: legs I–II 80%; legs III–IV 50% (I–III integral, IV bisected longitudinally by band of stiffened setae). Paired claws smooth, third claw absent. Clavate trichobothria on legs I–IV in V-shaped region on apical half of tarsi (tarsus I: 28R, 25L). Spination: palp tibia 1DPV; leg I tibia 1DPV (0R); leg II tibia 1DPV (0R), metatarsus 1DMV; leg III tibia 1DPV, metatarsus 1MRV, 1DRV, 1DMV, 1DPV, 1MPL, 1DPD, 1DRD; leg IV tibia 1DPV, metatarsus 1MRV, 1MPV, 1DRV, 1DMV, 1DPV, 1DPD (0R), 1DRD. Remaining leg segments aspinose. Tibial spur (Fig. 5): absent, no apophyses. Setation: leg setae short except for a few long, isolated setae on tarsi and metatarsi. Abdominal setae short, uniform in length. Carapace setae extremely short. Chelicerae with a few longer setae anteriorly. Coloration: uniformly pale mustard brown. Palpal bulb

| | Fe | Pa | Ti | Mt | Ta |
|-------------|------|------|------|------|-----|
| I | 17.3 | 11.1 | 14.6 | 15.0 | 9.8 |
| II | 16.3 | 9.7 | 13.1 | 13.7 | 8.6 |
| III | 14.7 | 8.2 | 10.8 | 13.3 | 8.5 |
| IV | 17.7 | 8.6 | 14.2 | 17.4 | 9.9 |
| Palp | 11.4 | 7.0 | 9.8 | — | 4.5 |

Table 1: *Mascaraneus remotus* gen. et sp. n. Lengths of leg and palp segments of male holotype.

(Figs. 6–8): tegulum sub-spherical, embolus broad with dorsal and ventral keel. Embolus spoon-like and crescentic in cross-section.

Female: Unknown.

Other material examined: Only the holotype.

Distribution: Known only from Serpent Island, an islet off the coast of Round Island, Mauritius, in the Indian Ocean (Fig. 9).

Ecology: Live specimens were observed living within volcanic rock crevices on a subsequent visit to the islet by London Zoo staff (Andrew Smith, pers. comm.). The islet is poorly vegetated and hosts an active seabird colony. Captive specimens fed on lizards — two species of which occur on Serpent Island (R. Safford, pers. comm.). The male is mature in November, since the holotype was found dead in good condition during that month.

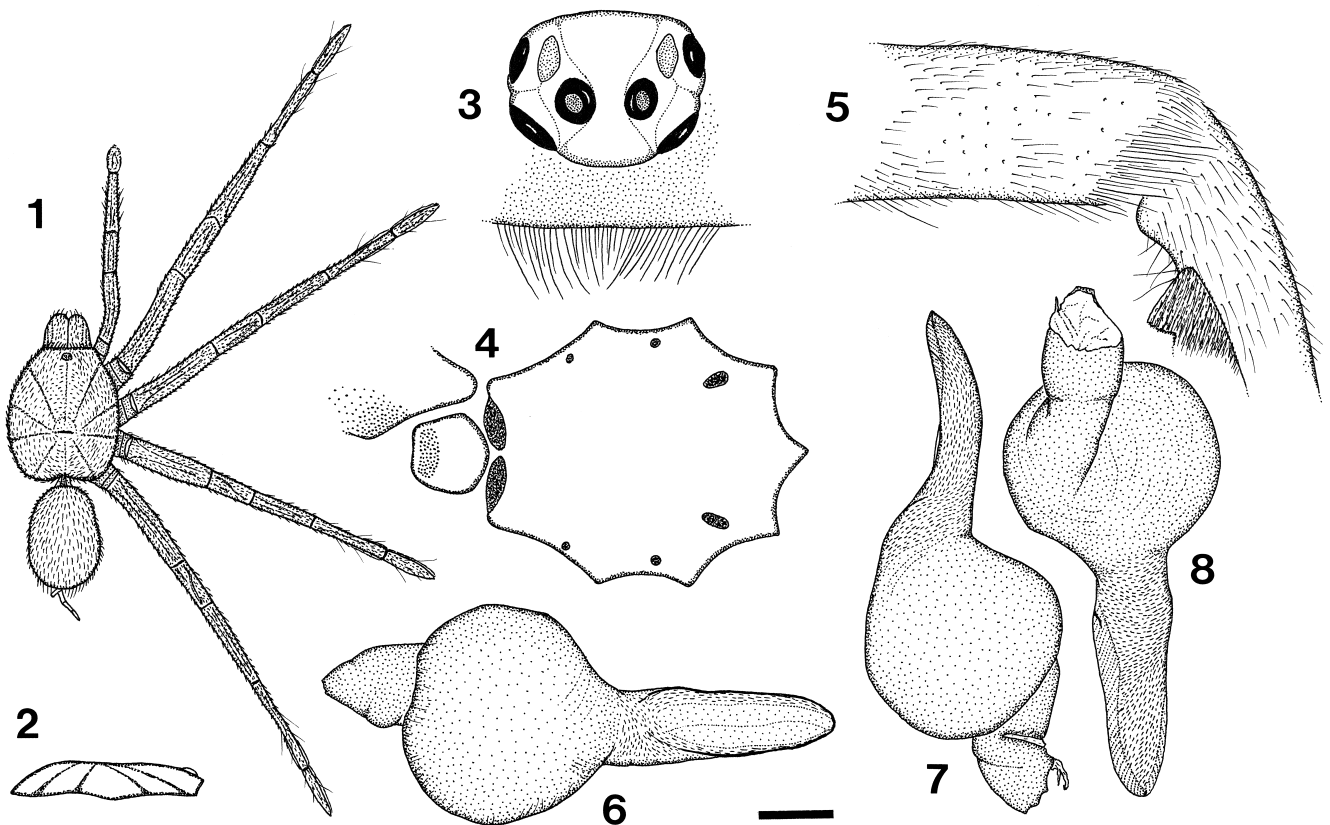


Fig. 1–8: *Mascaraneus remotus* gen. et sp. n., holotype male. **1** Dorsal view (right leg III missing, but drawn from left leg); **2** Carapace profile; **3** Ocular tubercle, dorsal view; **4** Sternum, labium and proximal region of maxilla, ventral view; **5** Left tibia and metatarsus I, prolateral view; **6** Palpal bulb, retrolateral view; **7** Ditto, ventral view; **8** Ditto, prolateral view. Scale line = 12.5 mm (1), 8.5 mm (2), 1.05 mm (3), 2.0 mm (4), 1.43 mm (5), 1.0 mm (6–8).

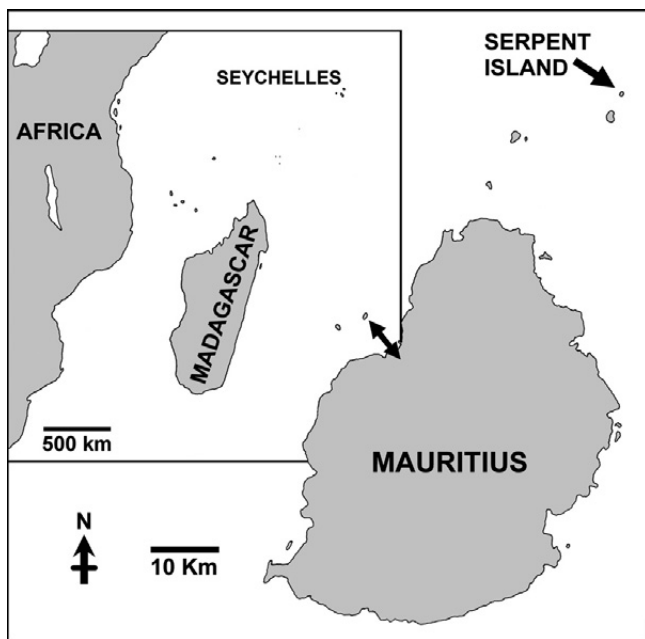


Fig. 9: Location map of Mauritius in relation to Madagascar (inset), with detail showing the position of Serpent Island relative to Mauritius.

Discussion

The absence of stridulation organs in *Mascaraneus remotus* sp. n. is unusual. In all other eumenophorine genera, the upper prolateral surfaces of coxae I and II have robust stridulatory setae and large plumose setae (*Monocentropus* only has plumose setae). These specialised setae act against fields of spike setae on the retrolateral surfaces of the maxilla and coxa I. A dense retrolateral scopula is also present on the palpal trochanter which opposes hooked or curved setae on the adjacent trochanter I.

World-wide, most large terrestrial theraphosids possess stridulation organs of one form or another. It has been suggested, since their initial discovery, that these are used to discourage predation (Wood-Mason, 1875, 1877; Pocock, 1895; Vol, 2002). The only native mammals recorded from the Mascarene Islands are bats (Peake, 1971). Diurnal birds are unlikely to be significant predators of largely nocturnal theraphosids. The absence of terrestrial mammalian predators might explain the loss of stridulatory setae in *Mascaraneus* gen. n.

In *Mascaraneus* the scopula on metatarsus IV is divided by a band of setae. Gallon (2003) suggested that an undivided scopula in this position was apomorphic for the Eumenophorinae. This suggests that *Mascaraneus* is a basal taxon, retaining the plesiomorphic condition. This assertion is further supported by the plesiomorphic arrangement of clavate trichobothria on the tarsi (restricted to the distal half). The presence of clavate trichobothria extending along the entire length of the tarsus was proposed as an apomorphic character of eumenophorines by Gallon (2003).

The placement of *Mascaraneus* within the Ischnocolinae was considered, but rejected on the basis of the

following: large size and robust constitution which is highly consistent with eumenophorines, but not with ischnocolines; like eumenophorines, it has very few leg spines and none on the medial or proximal regions of the tibiae (ischnocolines are heavily spined); the large sub-spherical tegulum is consistent with many eumenophorines, but not with ischnocolines.

Unlike many small araneomorph spiders, which have the capacity for aerial dispersal, adult theraphosids are unable to balloon owing to their size (Pocock, 1903). Even spiderlings do not appear to balloon, but instead disperse nocturnally on foot from their mother's retreat en masse (Baerg, 1938; Reichling, 2000; Nicholas, 2002; Gallon, pers. obs.).

The Mascarene Islands are volcanic in origin and have never been connected to mainland Africa or Madagascar. During the Pleistocene Age, a higher proportion of the Mascarene Ridge was exposed owing to lower sea levels. This exposed land formed a chain of islands between the Seychelles and the present day Mascarenes. The existence of this ancient island chain has been used to explain the distribution of other terrestrial animals in the western Indian Ocean (Peake, 1971). It is plausible that the ancestor of *Mascaraneus* came from Madagascar, an island whose theraphosid fauna is exclusively eumenophorine. Theraphosid biology implies that colonisation was probably by sea-borne debris to one of the islands of the Mascarene Ridge. Subsequent island hopping, local extinction and rising sea levels would explain its current distribution on the tiny islet of Serpent Island.

Colonisation from East Africa, via the northern islands of the Mascarene Ridge, is less likely. Had this occurred, one would expect to find eumenophorines on extant islands in that region, particularly on the Seychelles. In this respect Benoit's suggested discovery of a large unidentified theraphosid chelicera from the Seychelles is worth considering (Benoit, 1978). He illustrated this chelicera and noted the presence of a condyle and a short fang. However, all theraphosids lack condyles and have an elongated fang which engages with a long row of cheliceral teeth. The shape of Benoit's chelicera suggests it came from a large araneomorph, perhaps a sparassid. Therefore the known Seychellois theraphosid fauna is exclusively ischnocoline, showing affinities with the Middle East and Arabian Peninsula.

It is surprising that *Mascaraneus* has not been recorded from mainland Mauritius, given the length of human occupation. If *Mascaraneus* is genuinely restricted to Serpent Island, it must have one of the smallest distributions of any theraphosid spider.

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