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Scolopendromorph centipedes from Seychelles with a review of previous records (Chilopoda: Scolopendromorpha)

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Abstract: Six species of scolopendromorph centipede are here recorded from Seychelles. The scolopendrids are *Scolopendra subspinipes subspinipes* Leach, *Otostigmus (O.) rugulosus* Porat and *Otostigmus (O.) orientalis* Porat, of which *Otostigmus seychellarum* Attems is shown to be a junior synonym. Records of *Scolopendra morsitans* L. and *Rhysida longipes longipes* are in error although it is possible that they could occur on the islands. Likewise the record of *Otostigmus (O.) astenus* appears to be incorrect. The cryptopids are *Cryptops (C.) doriae* Pocock, *C. (C.) decoratus* Lawrence and *C. (C.)* cf. *kempi.* There is no evidence for the occurrence of *C. (C.) philammus.*

Key words: Seychelles, Chilopoda, Scolopendromorpha, Scolopendridae, Cryptopidae, *Scolopendra*, *Otostigmus*, *Cryptops*.

Introduction

Previous publications on the centipedes of Seychelles are those of Brölemann (1895), Attems (1900) and Demange (1981). Gerlach (1997) provided a key to the myriapods. Recently collected material and specimens from the Natural History Museum, London are here described and specimens in the collection of the Musée Royale de l'Afrique Centrale, Tervuren, determined as *Cryptops philammus* Attems are reassessed. Unless otherwise stated, the specimens were collected by Dr Justin Gerlach.

The specimens were examined by reflected light but the *Cryptops* species were, in addition, cleared in ethylene glycol and examined by transmitted light. Single legs of *Cryptops* species were mounted in Canada Balsam or Hoyer's Mountant. For each species with the exception of *Cryptops* cf. *kempi*, two voucher specimens (indicated by **V**) will be deposited at the Nature Protection Trust of Seychelles, Silhouette, Seychelles. The other specimens will be deposited in the Natural History Museum, London.

Acronyms used
MRACT Musée Royale de l'Afrique Centrale, Tervuren.
BMNH The Natural History Museum, London.

Key to recorded and potential Seychelles species

1. With four ocelli on each side of the head plate 2
   Head plate without ocelli 6
2. Spiracles elongated antero-posteriorly with a three-flapped valve. The head plate overlaps the first tergite 3
   Spiracles round or oval, without three-flapped valve. The head plate overlapped by the first tergite 4
3. Prefemora of ultimate legs generally with three rows of three spines on ventral surface (not currently recorded from Seychelles) *Scolopendra morsitans*
   Prefemora of ultimate legs one or two spines on ventral surface *Scolopendra subspinipes subspinipes*
4. With ten pairs of spiracles on segments 3, 5, 7, 8, 10, 12, 14, 16, 18 & 20 (not currently recorded from Seychelles) *Rhysida longipes longipes*
   With nine pairs of spiracles on segments 3, 5, 8, 10, 12, 14, 16, 18 & 20 5
5. With 17 antennomeres, ultimate leg coxopleuron with two end spines and one lateral spine and no dorsal spine *Otostigmus orientalis*
   With 19, 20 or 21 antennomeres coxopleuron with three or four end spines, one lateral and one dorsal spine *Otostigmus rugulosus*
6. Head plate with incomplete longitudinal sutures, tergite 1 with fine transverse anterior suture and incomplete paramedian sutures *Cryptops* cf. *kempi*
   Head plate and tergite 1 without sutures 7
7. Ultimate leg femur with saw tooth *Cryptops doriae*
   Ultimate leg femur without saw tooth *Cryptops decoratus*

Taxonomic part

Scolopendra morsitans LINNAEUS, 1758

S. morsitans Linnaeus, 1758: 638.
S. morsitans: Attems, 1930: 23, Figs. 38 & 39.

Remarks: A species widely distributed throughout tropical and warm regions, Schileyko (1995) gave 'Seychelles [Attems, 1930]' in his distribution of *S. morsitans* and this was repeated by Shelley et al. (2005). Attems (1930), however, did not list Seychelles in his distribution and there are no records of its occurrence on the Islands although it has been recorded from the Comoros, Madagascar, Mauritius, Rodrigues and Réunion. It could well occur on the islands but there is no evidence that it does so.

Scolopendra subspinipes subspinipes LEACH, 1815

S. subspinipes Leach, 1815: 383.
S. machaeropus Attems, 1900: 136.
S. subspinipes subspinipes: Attems, 1930: 29.

Previous Seychelles records
S. subspinipes: Brölemann, 1895: 525. La Digue.
S. machaeropus Attems, 1900: 136. Mahé.
S. machaeropus ?S. subspinipes: Kraepelin, 1903 257, 259.
S. subspinipes: Demange, 1981: 627, 629. Mahé, Frégate.
S. subspinipes: Gerlach, 1997: 59. Mahé, Silhouette, Aride and Frégate.

Material examined
2 spms. ♀ 160mm, ♂ 102 mm, La Passe, Silhouette 31.x.2001 (**V**).
2 spms, juvenile, 37mm & 22mm (broken), Aride 2000.
1 spm, juvenile, 22mm, *Otostigmus* SEY U1999.3, La Passe, Silhouette, 19.i.1999.
1 spm, juvenile, 23mm, Aride -.vii.2000.
1 spm, juvenile, 29mm, North Island 29.vii.2000.
1 spm, juvenile, 23mm, Blue-headed centipede. Near Houses, Plateau, Aride Feb. 1999, J. Bowler (**V**).
1 spm juvenile, 20mm approx., X 41in rotten wood, Mon Plaisir, Silhouette 09.viii.2000.

Remarks: The specimens show the characters of *S. subspinipes subspinipes* as given in Attems (1930) with the exception of two specimens from Aride which lack a tarsal spur on leg 20.

Distribution: A few peripheral localities in Africa, Islands of the Indian Ocean (Seychelles, Madagascar, the Comoros, Rodrigues but not Mauritius), India, South East Asia, north to Japan, Oceania, the Caribbean, South America. Old records from Australia and New Zealand.

Otostigmus (O.) rugulosus PORAT, 1876
(Figs. 1-4)

O. rugulosus Porat, 1876: 21.
O. carinatus Pocock, 1891: 412 (nec Porat 1876).
O. (O.) rugulosus: Attems, 1930: 144.

Previous Seychelles records
Otostigmus rugulosus: Brölemann, 1895: 527. La Digue and Mahé.
O. rugulosus: Gerlach, 1997: 59. Mahé, Silhouette.

Material examined
Spm 1, 28mm, La Passe, Silhouette 10.ix.1999 (**V**).

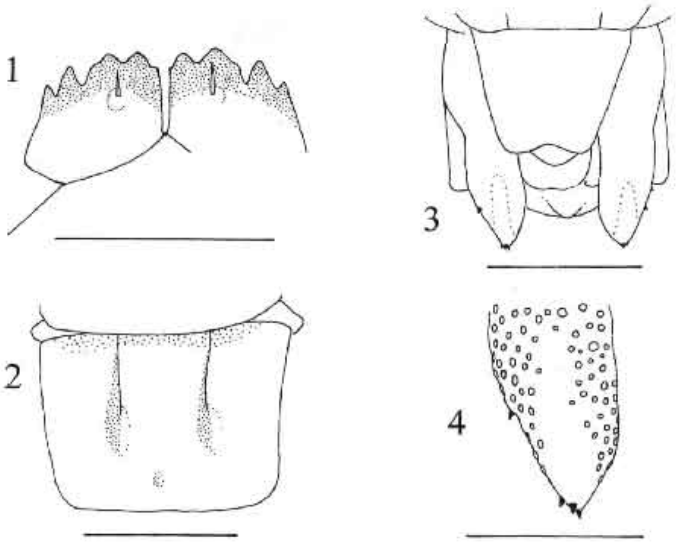
Spm 2, 24mm, end leg 7.7mm, Cousine 4.iv.2001 (**V**).
Spms 3-5, 21, 27 & 29mm in poor condition. Cousine, 15.iii. 1998, J. Kelly.
BMNH 1 spm 40mm 1952.12.17 239-240. Labelled *Otostigmus seychellarum* Attems. Silhouette. J. S. Gardiner.

Description of Seychelles material: Antennomeres (19) 21, basal 2 to 2.2 glabrous. Forcipular coxosternal teeth 4+4, the median two on each side somewhat longer and partially fused, the outer small and pointed (Fig. 1). Forcipular trochanteroprefemoral process with two very low teeth.

Tergite paramedian sutures complete on T5 or T6, marginate from 6, 8 or 9 with low median keel more or less developed. In specimen 2 only, a well-marked median keel from T6, the deep paramedian sulci and lateral corrugations form nine rounded ridges from T10 to T19. Tergites without spinules.

Sternite paramedian sutures occupying anterior 50% of sternite in mid trunk with weak posterior median depression on 6-19 and weak depressions at the end of the paramedian sutures on 7 to 18 in spm 1 (Fig. 2). Sternite 21 with sides converging posteriorly and hind border embayed (Fig. 3).

Coxopleural process of segment 21 with three apical spines (or two apical and one subapical) one (two) lateral spines (Fig. 4) and one dorsal spine very near the apex. The BMNH specimen has only two apical, one lateral and one dorsal spine. Ultimate leg prefemur with three rows of spines: four, rarely three ventrolaterals, three ventromedials, two dorsomedials and a corner spine.



Figs. 1-4. *Otostigmus rugulosus.* 1). Forcipular coxosternal toothplates spm 2 Cousine. 2). Sternite 21 spm 1 Silhouette. 3). Terminal segments, ventral view spm 1 (pores not shown). 4). Detail of right coxopleural process spm 1. Scale line =1mm, except Fig. 4 = 0.5mm

Legs with two tarsal spurs from 1 or 2 to 13, 14, or 15. One tarsal spur to 18 and sometimes 19. Legs 20 and 21 lack tarsal spurs.

Remarks: Attems (1930) stated that the mid and posterior tergites of *O. rugulosus* were spined "wenigstens die mittleren und hinteren … dornstrichelig". However, Porat (1876) made no mention of spines in his original description and the Seychelles specimens have no tergite spinules nor did eight specimens from Mauritius and Rodrigues (Lewis, 2002). This is a character subject to geographical variation.

Distribution: India, Nepal, Mauritius, Rodrigues, Seychelles, Andamans, Myanmar, Thailand, Indonesia (Sumatra)

Otostigmus (O.) orientalis PORAT, 1876
(Figs. 5-10)

O. orientalis Porat, 1876: 19.
O. splendens Pocock, 1890: 245.
O. morsitans Pocock, 1890: 246.
O. seychellarum Attems, 1900: 136 **syn. nov**.
O. seychellarum [not a synonym of *O. insularis* Haase, 1887 as proposed by Kraepelin, 1903:112].
O. (O.) orientalis: Attems, 1930:139.

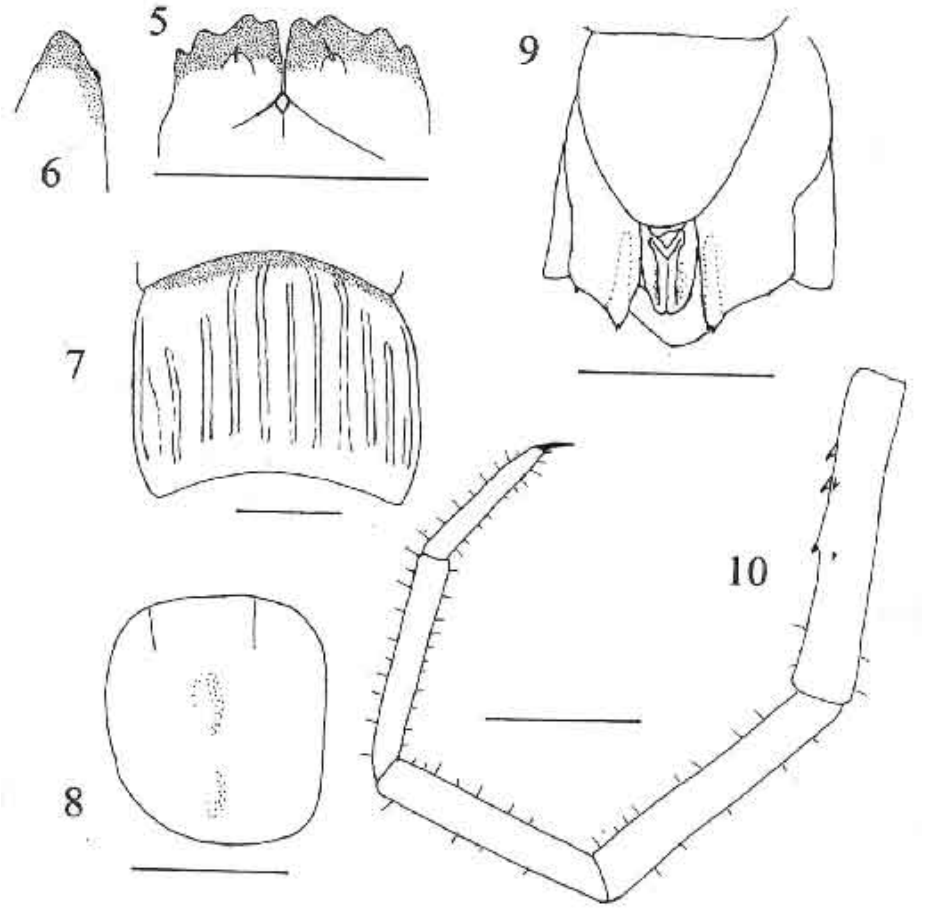
Previous records
Otostigmus orientalis: Brölemann, 1895: 527. Marianne.
Otostigma orientale Pocock (sic !): Attems, 1900: 136. Mahé.
Otostigma seychellarum Attems, 1900: 136. Mahé.
O. orientalis: Demange, 1981: 626-628. Mahé, Silhouette.
O. orientalis: Gerlach, 1997: 59. Mahé, Silhouette.
O. seychellarum: Gerlach, 1997: 59. Silhouette.

Material examined
Spm 1, U1992:36, 23 mm, ultimate leg 11.4 mm (**V**) and spm 2, U1992:35, 29 mm, ultimate leg 12.5 mm (**V**). Oxford University Silhouette Expedition 1990, *Pisonia sechellarum* forest, vii-ix.1990. Colour brown.
Spm 3, 35 mm, ultimate leg 11.5 mm. Gratte Fesse, Silhouette, *Pandanus hornei*, 13.vii.2000. Colour olive, legs white.
Spm 4, 14 mm. Jardin Marron, Silhouette, -.iii. 2001.
BMNH spms 1-6, 20, 26, 30, 28, 36, and 39 mm, 1952.12.17.239-240 labelled *Otostigmus seychellarum* Attems, Seychelles, Silhouette, J. S. Gardiner (all lack ultimate legs).
BMNH spm 7, 14 mm 1952.12.17.238 labelled *Otostigmus seychellarum* Attems, Seychelles Mahé, Forêt Noire Diot, J. S. Gardiner.

Description of Seychelles material: Antennomeres 17, basal 2.1-2.5 glabrous, atypically 3 virtually glabrous (with a few scattered setae) in spm 1. Forcipular coxosternal teeth 4+4,

the median two on each side partially fused (Fig. 5). Forcipular trochanteroprefemoral process with two low teeth (Fig. 6).

Tergite paramedian sutures complete from 5, 6, 7 or 9, marginate from 3, 5, 6, 7, 8, 12 or 13, with (Fig. 7) or without keels or spinules. Sternites with very short anterior paramedian sutures, anterior 10-25% in mid body region, most with a median and some with two lateral depressions and, or, a median posterior depression at least in the mid body region (Fig. 8). The depressions are very shallow and not always apparent. Sternite 21 trapezoidal, as long as wide or wider than long, 1.3 wider than long in spm 3. Hind border straight or rounded (Fig. 9).



Figs. 5-10. *Otostigmus orientalis.* 5). Forcipular coxosternal toothplates spm 1 Silhouette. 6). Forcipular trochanteroprefemoral process spm 1 Silhouette. 7). Tergite 13 BMNH spm 1 (spinules not shown). 8). Sternite 11 spm 3 Gratte Fesse. 9). Terminal segments, ventral view spm 1 BMNH (pores not shown). 10). Ultimate leg spm 2 Silhouette. Scale line =1mm, except figs 5&6 = 0.5mm.

Coxopleural processes of ultimate legs short with two terminal spines and one lateral spine (Fig. 9), no dorsal spines. Ultimate leg prefemur with two or three ventrolateral, two or three ventromedials, that is, only two spine rows (Fig. 10). No corner spine.

With or without a tarsal spur on leg 1, one tarsal on 2 to 20, atypically to 19. Leg 21 (ultimate) without spurs.

Variation: Spms 1 and 3. Tergite paramedian sutures complete on 6 or 7, marginate from 12 or 13, without keels or spines. Spm 2 tergite paramedian sutures not apparent, marginate from T5. With seven keels or ridges from T5, the outer two weakly developed on 5 and 6, nine on T7 to T 18. The keels and margins with small spinules/tubercles. Three low ridges on anterior half of T20.

BMNH spms 1-3 and 5 and 6 have seven keels from 5, 6 or 7 and nine from 9 or 10. Tergite 20 without or with three or five keels, tergite 21 without. The keels with fine spinules except in spm 2, which lacks them. With, or without scattered small tubercles between the keels. The nature of the spinules and tubercles unclear. Spm 4 has a median ridge from 4-19 but no lateral keels/ridges and is without spinules.
Spm 10 is an early adolescens stadium. It has tergites with narrow keels but without spinules and tarsal spurs are not developed.

Remarks:

Attems (1930) described the last sternite of *O. orientalis* as one and a half times as long as wide, strongly attenuated posteriorly, the posterior border straight or rounded. In the Seychelles specimens the last sternite is only as long as wide or less. However, Attems gave the size of *O. orientalis* as up to 70 mm whereas the largest Seychelles specimen measures 39mm. The difference in shape is probably size related. Although Porat (1876) gave the antennomere number as 17 to 19 and this was repeated by Attems (1930), Kraepelin (1903), who re-examined the type material, gave 17 only. The antennomere number is likewise 17 in *O. splendens* Pocock, 1890 and *O. morsitans*, both junior synonyms of *O. orientalis*.

Kraepelin (1903), who did not re-examine the type material, synonymised *O. seychellarum* under *O. insularis*. Subsequently Chao & Chang (2003) synonymised *O. insularis* under *O. scaber* but did not list *O. seychellarum* in their synonymy. It is obvious that Attems' *O. seychellarum* is clearly not *O. scaber*, but apart from the keeled tergites it shares all other characters with *O. orientalis* which was first described as having somewhat wrinkled and atuberculate tergites ("Scuta dorsalis … lateribus subrugulosus, granulis nullis.") However, Lewis (1996) synonymised *O. morsitans* Pocock, 1890, which has wart-like spines present on the most posterior tergites, under *O. orientalis*.

Specimen having seven to nine sharply ridged and finely toothed or spinulose tergite keels here regarded as *O. orientalis*, run down to couplets 18 and 19 in Attems (1930) key. That is to *O. insularis* Haase, 1887, *O. malayanus* Chamberlin, 1914, *O. scaber* Porat, 1876 and *O. amballae* Chamberlin, 1913 but correspond to none of these species. They match Attems (1900) description of *O. seychellarum* from Mahé which

comprised four specimens all lacking ultimate legs, namely, 17 antennomeres, four or five coxosternal teeth, with nine keels from T7 and coxopleural process with one or two end spines, one lateral, no dorsal spine.

The Seychelles population thus comprises individuals both with and without tergite keels whereas current evidence suggests that all Indian specimens have tergites without keels.

O. seychellarum is a junior synonym of *O. orientalis*

Distribution: India, Seychelles, Indonesia (Flores and Halmahere)

Otostigmus (O.) astenus KOHLRAUSCH, 1878

Branchiotrema astenus Kohlrausch, 1878: 22.
Branchiotrema calcitrans Kohlrausch, 1878: 23.
Branchiotrema luzonicum Kohlrausch, 1878: 23.
Otostigmus orientalis Porat, 1876:19 [not a senior synonym of *Branchiotrema astenon* Kohlrausch 1881 (=*O. astenus*), as proposed by Haase, 1887:73].
O. astenus: Kraepelin, 1903: 114.
O. (O.) astenus: Attems, 1930: 143.

Remarks: Kraepelin (1903) and Attems (1930) listed the Seychelles in the distribution of *O. astenus*. However, I can find no published record for this. Haase (1887) and Brölemann, (1895) gave *Branchiotrema astenon* and also *B. calcitrans* and *B. luzonicum* (both synonyms of *O. astenus*) as synonyms of *O. orientalis* and this may well have led to the confusion. Currently there is no evidence of *O. astenus* occurring on the Seychelles. It is widely distributed in South East Asia, Australia and the islands of the Pacific. A re cord from Madagascar (an introduction) should be checked.

Rhysida longipes longipes (NEWPORT, 1845)

Branchiostoma longipes Newport, 1845: 41.
R. l. longipes: Attems, 1930: 194, Fig. 244.

Remarks: Attems (1930) listed the Seychelles in the distribution of *R. l. longipes*, a species widely distributed in the tropics. However, I can find no published record for this. Kraepelin (1903) mentions specimens from Mahé, (Malabarküste). Presumably Attems took this to be Mahé in the Seychelles but it is, in fact, Mahé, Kerala State, India. There is no evidence for *Rhysida l. longipes* occurring in the Seychelles, even though it is widespread in the Indian Ocean on Madagascar, Mauritius, the Maldives, Eagle Island (Chagos Archipelago) and the Andaman and Nicobar Islands.

***Cryptops (C.)* doriae** POCOCK, 1891

(Figs. 11-16)

Cryptops doriae Pocock, 1891: 421.
C. (C.) doriae: Attems, 1930: 214.
C. (C.) doriae: Lewis, 1999:20, figs 10-13, 14-35 & 51-53.

Material examined

4 spms 13.5 (**V**), 14 (**V**) and 7 mm, U1998.34. Le Niol, Mahé about 250m asl, Cinnamon litter 3.viii.91. (A further four specimens lacking terminal legs not examined in detail).

4 spms 12, 12, 9 and 11 mm, U1999.3. Chemin Montagne Possee, Silhouette, 10.i.99.

1 spm 13.5 mm Vallée de Mai, Praslin 19.iii.2002.

MRACT 1 spm 12.5 mm. 13.534 labelled *Cryptops philammus* Att. Det. J. M. Demange, 1980. Loc. Séchelles: Praslin, Vallée de Mai, 22-23.vii.1972. Rec P L G Benoit & J J Van Mol.

MRACT 4 spms 16. 15.5,12 and 11.5 mm. 13.555, labelled *Cryptops philammus* Att. (fôret melangée humide). Det. J. M. Demange, 1980. Loc. Séchelles: Mahé Centre, La Misère, 438m, 12.vii.1972. Rec. P L G Benoit & J J Van Mol.

MRACT 4 spms 17, 15, 14 and 8 mm. 13.596, labelled *Cryptops philammus* Att. Det. J. M. Demange, 1980. Loc. Séchelles: Silhouette, Mare aux Cochons, 500m., 2-8.vii.1972. Rec. P L G Benoit & J J Van Mol.

MRACT 2 spms 13 and 8 mm 13.606, labelled *Cryptops philammus* Att. Det. J. M. Demange, 1980. Loc. Séchelles: Mahé nord, Mt. Crève Coeur versant Ouest. 300m 11.vi.1972. Rec. P L G Benoit & J J Van Mol.

Description: Body length 7.0-17 mm. Colour light orange, greyish orange or light brown without dark subcutaneous pigment.

Antennomeres 17, antennomere 1 with long and medium setae with gradual transition through 2 and 3 to antennomere 4 with dense short setae and basal whorl of long setae.

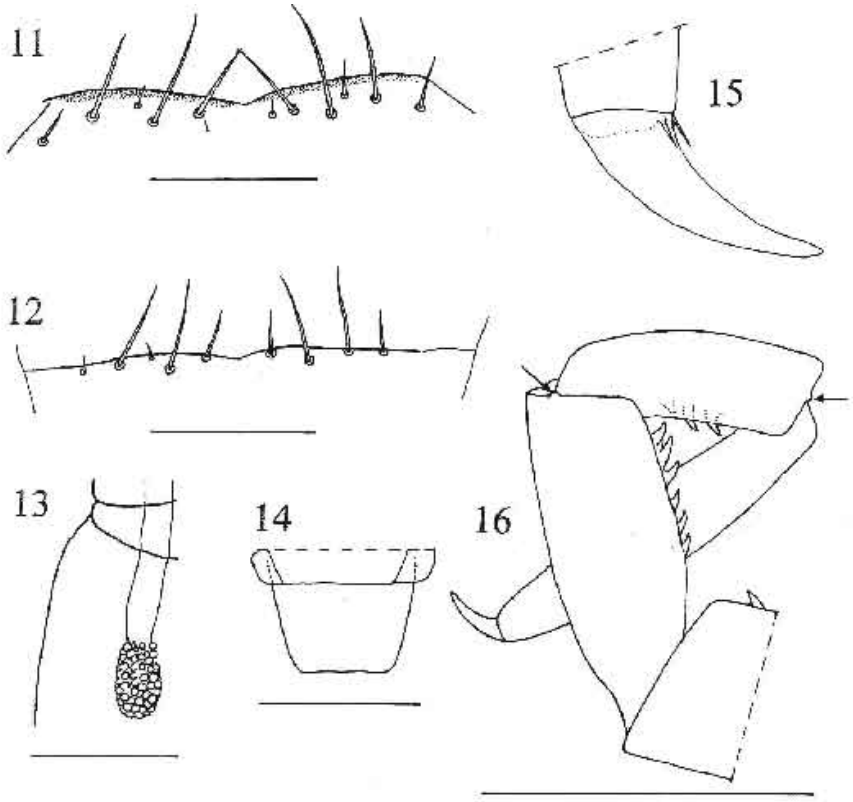
Head plate and tergite 1 without sutures, tergite 1 overlying the posterior edge of the head plate. Clypeus in larger specimens with 2+1+2+2 setae and a row of eight to ten setae in front of the labrum. Anterior edge of forcipular coxosternum very slightly biconvex and with three four or five long and or medium and one or small two setae but generally a maximum of five to seven setae in all behind the edge on each side (Fig. 11). Rarely, the setae only just behind the anterior edge (Fig. 12). Calyx of poison gland ovoid and situated in the anterior third of the forcipular trochanteroprefemur (Fig. 13).

Tergite paramedian sulci from tergite 4, 5 or 6, but difficult to see. Lateral crescentic sulci from 3 or 4. Paramedian sutures very fine and incomplete (almost complete on posterior tergites). Sternites with longitudinal and transverse sulci. Transverse apodeme present. Sternite 21 with sides converging very slightly and hind border straight (Fig. 14).

Coxopleuron with 19 to 48 pores, occupying 64 to 70% of coxopleuron with five to fifteen small setae in the pore field, three to seven behind and four to nine on the posterior edge of the coxopleuron.

Legs 1-19 with or without tarsus weakly divided. Under high power magnification it is not clear whether there are one or two accessory spurs on the tarsal claw. Often only one is seen, but when cleared in Hoyer's mountant (Le Niol spm 5) a smaller second spur is seen (Fig. 15). Leg 20 with dense fine setae ventrally on prefemur, femur and tibia in some specimens.

Ultimate legs (Le Niol spm 1) with strong setae on anterior, ventral and posterior surfaces of prefemur and on ventral and posterior surfaces of femur. No distal tubercles on tibia, small anterodistal tubercle on tarsus. Anterior and posterior tubercles on tibia and tarsus I (Chemin Montagne Possee spm 2). A loose leg with anterior tubercle on tibia and (very small) on tarsus and narrow glabrous area postero-distally on prefemur but this is not seen in other specimens. A single saw tooth on the femur, six to ten on the tibia and three to five on the tarsus (Fig. 16). In two specimens there were, unilaterally, two saw teeth on the femur. In one specimen from Mahé Centre (MRACT 13.555) and one from Silhouette (MCRACT) 13.596) there are two saw teeth on one of the prefemora. Spiracles round or slightly oval.



Figs. 11-16. *Cryptops doriae.* 11). Anterior margin of forcipular coxosternum Le Niol spm 3. 12). Anterior margin of forcipular coxosternum LeNiol spm 1. 13). Forcipular poison claw calyx Le Niol sp. 1. 14). Sternite 21 Le Niol spm 3. 15). Tarsal claw Le Niol spm 5. 16). Ultimate leg femur, tibia and tarsus I and II Chemin Montagne Possee spm 2. Tubercles arrowed, setae not shown. Scale line = 0.5mm, except Fig. 13 = 0.1mm

Maturity: Males between 11.5 and 15 mm long contained two or three spermatophores. Juvenile specimen (Le Niol spm 4): Length 7.0 mm has 2+1+2 clypeal setae and a row of six in front of the labrum, seven coxal pores, one seta in the pore field, one behind and three on the posterior edge.

Remarks: The Seychelles specimens fall within the diagnosis of *C. doriae* given by Lewis (1999). They are, however, much smaller than many of the Nepalese specimens described by Lewis, a maximum of 17 mm as compared with up to 33 mm. There is also a smaller number of coxal pores, up to 48 in the Seychelles material as compared to a maximum of 72.

Distribution: Seychelles, India, Burma, Vietnam, Indonesia (Java), Papua New Guinea. Introduced into Cornwall, UK in wet tropical biome of Eden Project (Lewis in preparation).

Cryptops (C.) decoratus LAWRENCE 1960

(Figs. 17-25)

Cryptops decoratus Lawrence, 1960: 84, figs. 25 c, d, 26.
Cryptops decoratus: Lewis, 2002: 96, figs. 36-43.

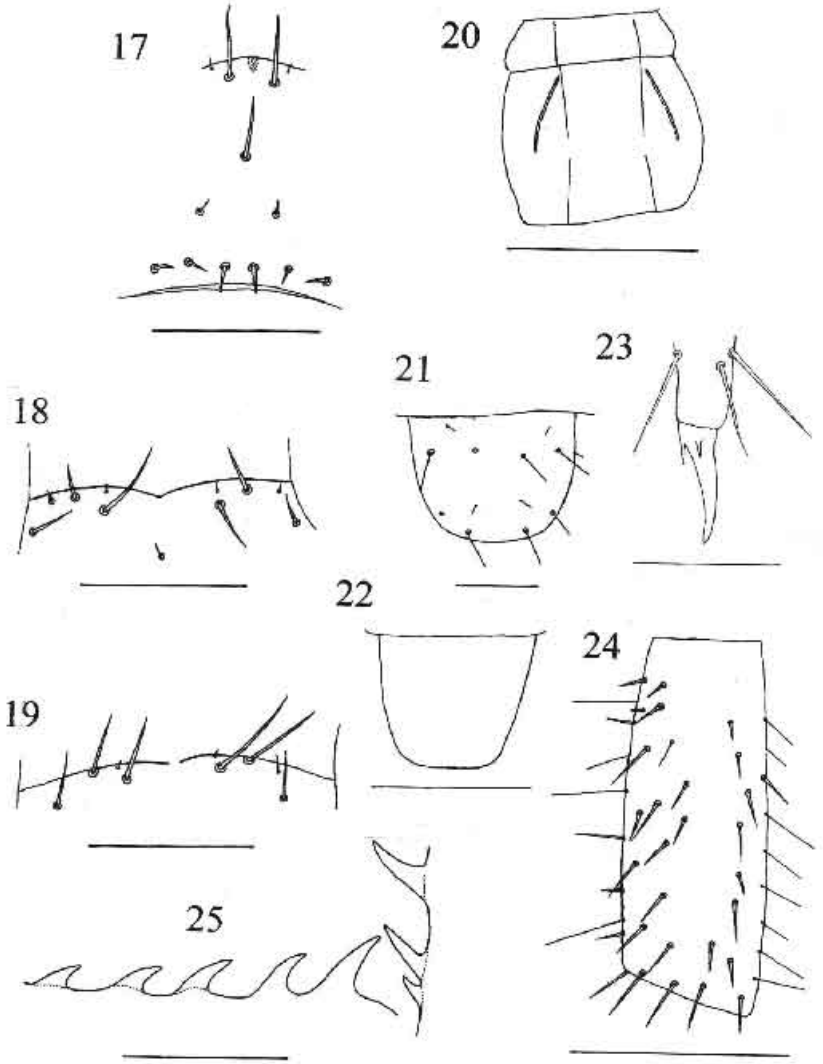
Material examined

Spms 1 & 2, 13 and 10 mm, Aride, –.vii.2000 (**V**).
Spms 3-7, 9.5, 11.5, 12 and 14 mm, Aride, –.xi 2000.
2 spms 7.5 and 9.5 mm, L2 Mon Plaisir, Silhouette Litter, 8.vii.2000.
1 spm 14 mm, D3 *Dracaena reflexa* crown, Mon Plaisir, Silhouette 550m asl 9.viii.2000.
2 spms 7 and 9 mm, Booby, 20.iii.2002.
MRACT 4 spms 7.5, 9.5, 10 and 10 mm. 13.520, labelled *Cryptops philammus* Att. Det. J. M. Demange, 1980. Loc. Séchelles: Mahé Centre, Morne Séchellois. 750-800 m. 13-17.vii.1972. Rec. P L G Benoit & J J Van Mol.
MRACT 3 spms 12, 9 and 13.5mm. 13.534, labelled *Cryptops philammus* Att. Det. J. M. Demange, 1980. Loc. Séchelles: Praslin, Vallée de Mai, 22-23.vii.1972. Rec P L G Benoit & J J Van Mol.
MRACT 11 spms (only 5 measured – 7, 7.5, 7.5, 8.5 and 12 mm, 13.575, labelled *Cryptops philammus* Att. (sur *Pandanus seychellarum*). Det. J. M. Demange, 1980. Loc. Séchelles: Silhouette, Mare aux Cochons, 500 m., 3-4.vii.1972. Rec P L G Benoit & J J Van Mol.
MRACT 1 spm 8.5 mm, 13.596, labelled *Cryptops philammus* Att. Det. J. M. Demange, 1980. Loc. Séchelles: Silhouette, Mare aux Cochons, 500m., 2-8.vii.1972. Rec. P L G Benoit & J J Van Mol.

Description of Seychelles material: Body length 7.5-14 mm. Colour: greyish yellow, pale yellow or greyish-orange with or without dark subcutaneous pigment varying from pale grey to very dark grey/black best developed beneath tergites 2 to 7 or 8 and again

on 18 to 20.

Antennomeres 17, the basal with long and medium setae with gradual transition through 2 and 3 to antennomere 4 with dense short setae and basal whorl of long setae.



Figs. 17-25. *Cryptops decoratus*. 17). Clypeus spm 1 Aride. 18). Anterior margin of forcipular coxosternum Aride spm 3. 19). Anterior margin of forcipular coxosternum Aride spm 5. 20). Tergite 8 Aride spm 3. 21). Sternite 21 Aride spm 5. 22). Sternite 21, Mahé Centre, La Misère (13.555). 23). Distal region of tarsus II and tarsal claw Aride spm 4. 24). Ultimate leg prefemur, internal (posterior view) Praslin, Vallée de Mai spm 1. 25). Tibial and tarsal saw teeth of ultimate leg Silhouette spm D3. Scale line=0.1mm, except Figs. 20&22=0.5mm.

Head plate and tergite 1 without sutures, tergite 1 overlying the posterior edge of the head plate. Clypeus with 2+1+2+setae and a row of six setae in front of the labrum (Fig. 17). Anterior edge of forcipular coxosternum very slightly biconvex, typically with two long or medium setae and two small behind anterior edge and a third set farther back on each side (Fig. 18). Sometimes one of these setae immediately behind the edge (Fig. 19). Calyx of poison gland ovoid and situated in the anterior third of the forcipular trochanteroprefemur.

Paramedian sulci present at least from tergite 6. Lateral crescentic sulci from 3, 4 or 5. Paramedian sutures very fine and incomplete (almost complete on posterior tergites) (Fig. 20). Sternites with longitudinal and transverse sulci. Transverse apodeme present. Sternite 21 with sides converging very slightly and hind border broadly rounded (Fig. 21) or, rarely, with hind border straight and posterior corners rounded (Fig. 22).

Coxopleuron with 8 to 14 pores occupying 64 to 70% of coxopleuron with four to six minute setae in the pore field, typically only one behind and three or four on the posterior edge of the coxopleuron.

Legs 1-19 without or with very slight indication of tarsal division. With two short accessory spurs on the tarsal claw (Fig.23), the second often very difficult to make out so may be scored as one. Leg 20 with dense fine setae ventrally prefemur, femur and tibia in some specimens.

Ultimate legs with strong setae on anterior, ventral and posterior surfaces of prefemur and on ventral and posterior surfaces of femur. A longitudinal glabrous strip internally on prefemur (Fig. 24) except Aride spm 1. No distal tubercles on tibia, small anterodistal tubercle on tarsus. Anterior tubercle on tibia or none. No saw tooth on the femur, four or five on the tibia and three on the tarsus (Fig. 25). Spiracles round.
Maturity: Males 9.5 mm long and above contained two or three spermatophores and a female 13 mm long contained eggs.

Remarks: The presence of dark subcutaneous pigment is a characteristic of some but not all the Seychelles *Cryptops decoratus* as some lack the pigment. All specimens from Mauritius described by Lewis (2002) were pigmented although this was very much reduced in those from Serpent Island.

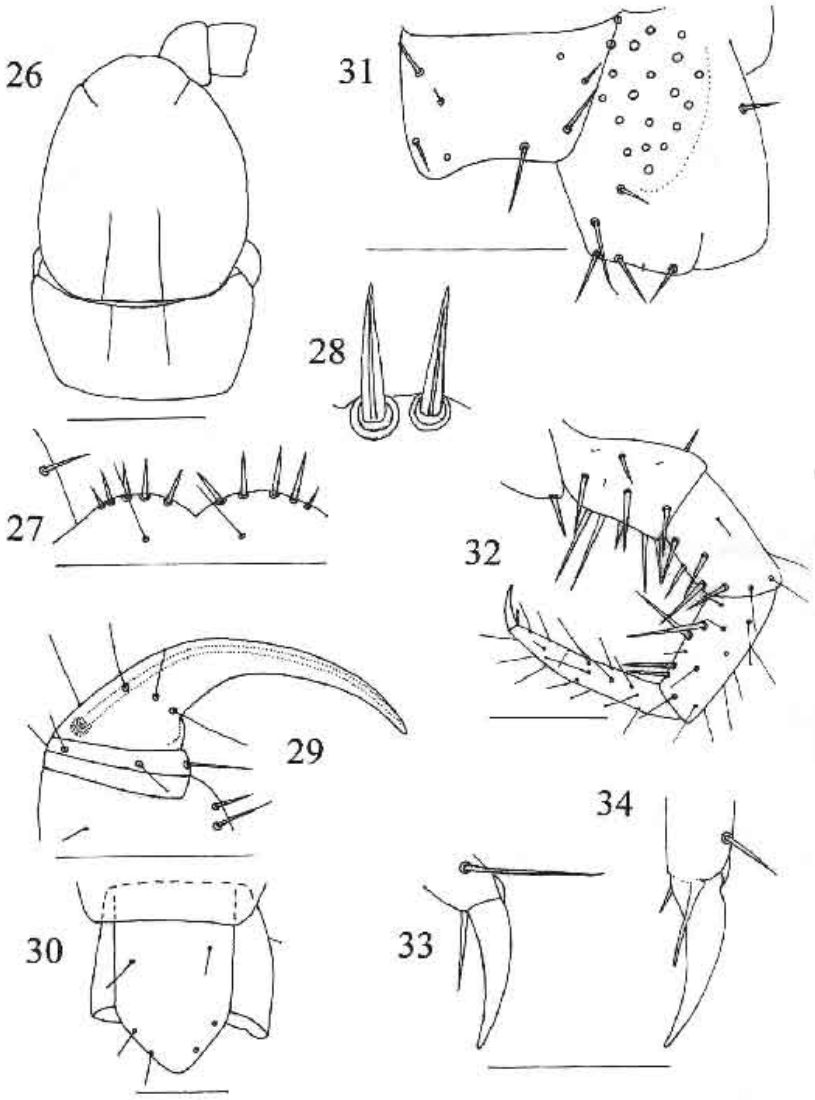
Distribution: Seychelles, Madagascar, Mauritius.

Cryptops (C.) cf**. *kempi*** SILVESTRI, 1924
(Figs. 26-34)

Material examined
Spm 1, 14.5 mm, Vallée de Mai, Praslin, 19.iii.2002 (**V**).
MRACT 1 spm (spm 2) ♂ 11 mm. 13.534, labelled *Cryptops philammus* Att. Det. J. M. Demange, 1980. Loc. Séchelles: Praslin, Vallée de Mai, 22-23.vii.1972. Rec P L G Benoit & J J Van Mol.

Description of Praslin material: NB Both specimens lack the ultimate legs and spm 2 has the terminal segments damaged. Body length 14.5 mm and 11 mm. Colour (spm.

1) brownish yellow pale yellow, head plate, T1 and T2 brownish orange, without dark subcutaneous pigment.



Figs. 26-34. *Cryptops* cf. *kempi*. 26). Head plate and tergite 1 spm 2. 27). Anterior edge of forcipular coxosternum spm 2. 28). Detail of forcipular coxosternal setae spm 2. 29). Distal region of right forcipule spm 2. 30). Tergite 21 spm 2. 31). Sternite 21 and ultimate leg coxopleuron spm 2. 32). Leg 3 spm 1. 33). Tarsal claw of leg 3 spm 1. 34). Tarsal claw of leg from mid-trunk region spm 1. Scale line = 0.25mm, except Fig. 26 = 0.5mm and Figs. 33 & 34 = 0.1mm.

Antennomeres 17+16(damaged) in spm 1, 16+16 (both damaged) in spm. 2. Distal antennomeres long, ratio of length to width of antennomere 14 2.2:1in spm 1, but 1.9:1 in spm 2. Antennomeres 1 and 2 with long setae, antennomere 3 with some short setae in distal half, 4, 5 and 6 with short setae in distal half and and two irregular whorls of long setae proximally. By antennomere 9 distal two-thirds with short setae with an irregular basal whorl of long setae.

Head plate overlying tergite 1 and with incomplete longitudinal sutures, the anterior sutures oblique and very short, the posterior occupying 44% of the head plate (Fig. 26). Clypeus in spm 2 with four post antennal setae, 1 + 2 small setae (2 + 1 minute in spm 2) posterior to these and eight prelabral setae. Anterior edge of forcipular coxosternum strongly convex on each side with 6+7 (spm 1) or 5+5 short stout marginal setae (Fig. 27 & 28) and 1+1 prominent setae behind. Calyx of poison gland situated in proximal end of forcipular tarsungulum (Fig. 29).

Tergite 1 with fine anterior transverse suture and paramedian sutures originating thereon incomplete posteriorly (Fig. 26). Tergite 2 very narrow, ratio of length to width 1:4. Tergite paramedian sutures very fine. The extent of paramedian sutures and sulci not determined. Lateral oblique suture on tergites 4 to 19. Tergite 21 markedly triangular posteriorly (Fig. 30) without median suture.

Sternites with longitudinal and transverse sulci, their extent not determined. Transverse sternital apodemes present. Sternite 21 with posterior border concave (Fig. 31).

Coxopleuron with c. 48 small pores in spm 1, 20 in spm 2 (Fig. 31). With pore-free strip occupying 40-43 % of the distance between the anterior margin of the pore field and the posterior edge of the coxopleuron.

Legs 1–19 with long spine-like setae, mostly ventrally on prefemur, femur and tibia, fine setae on tarsus (Fig. 32). Which shows slight signs of subdivision or does not. Tarsal claw with a long prominent accessory spur as much as 60% the length of the claw. (Fig. 33). A second shorter accessory spur present except on some anterior legs (Fig. 34).

Remarks: The specimens are very distinctive yet cannot be assigned to a species as the ultimate legs are missing. Attems' (1930) key would suggest that they are most closely related to *C. kempi* Silvestri, 1924 from Siju cave, Garo Hills, Assam and *C. cornifer* Chamberlin, 1918 from Cuba but the latter has complete cephalic paramedian sutures whereas in *C. kempi* and the specimens described here they are incomplete.
The Praslin specimens are very similar to Silvestri's species, particularly notable being the biconvex anterior margin of the forcipular coxosternum with strong marginal setae, the long spine-like setae of the legs ("setis subspiniformibus") and the long accessory spur of the tarsal claw. Differences are the incomplete paramedian sutures on T1 (complete in *C. kempi*) and the hind border of sternite 21 concave (rounded in *C. kempi*). Further material from the Seychelles and a re-examination of the type of *C. kempi* is required in order to establish their relationship.

Cryptops (C.) philammus ATTEMS**,** 1928

Cryptops philammus Attems, 1928: 89, Fig. 267.
C. (C.) philammus: Attems, 1930 Das Tierreich 54:214, Fig. 267.
C. philammus: Demange, 1981: 642, Fig. 10.

Remarks: Recorded from several localities in Cape Province, South Africa, Demange (1981) noted that *Cryptops philammus* was particularly abundant in the Seychelles. It was the sole *Cryptops* species that he recorded from the islands it having been collected on Mahé, Praslin, Silhouette and Curieuse: 114 specimens in all. I have examined a representative selection of these specimens (see above): 21 from Mahé, 15 from Praslin and 18 from Silhouette. None were *C. philammus*. Twenty three were examined in detail of which 11 proved to be *C. doriae*, 11 *C. decoratus* and one, *C*. cf. *kempi*

The Seychelles specimens run down to *C. philammus* in Demange's (1963) key to African *Cryptops* but are clearly not this species. Attems (1928) described the porose area of the coxopleuron as consisting of relatively few pores, the last near the posterior margin. This is not the case in the species from the Seychelles here examined, all of which have a wide poreless strip in front of the posterior margin of the coxosternum, furthermore *C. philammus* has no saw tooth on the femur of the ultimate leg as does *C. doriae*. There is no evidence for the occurrence of *C. philammus* in the Seychelles and I therefore delete it from the Seychelles fauna.

Demange (1963) noted that many specimens have been decolourised in alcohol but some show the black maculations. An alternative interpretation is that *C. doriae* lacks the dark pigmentation and that its occurrence in *C. decoratus* is variable. He also described secondary sexual characters in the ultimate legs, shorter and differing from the female in pilosity and spines I have not observed this.

Cryptops (Cryptops) **spp.**

1 spm 7.5mm, L1, Jardin Marron, (Coco de Mer) Silhouette litter, 8.vii.2000. Colour: yellowish white with grey subcutaneous pigment. .
1 spm 8 mm, Vallée de Mai, Praslin, 19.iii.2002. With brown subcutaneous pigment.
1 spm 8.5 mm, Anonyme, 12.xii.2001.
1spm 13 mm, Curieuse, 20.iii.2002. Brownish orange.
1 spm 8 mm, St Anne, 10.xii.2001 With brown subcutaneous pigment.

Remarks: These specimens are either *C. doriae* or *C. decoratus* but they lack ultimate legs and cannot be determined with certainty although those with subcutaneous pigment are probably *C. decoratus*.

Discussion

As noted by Lewis (2002) subcuticular pigmentation can be variable in *Cryptops* as can the degree of subdivision of the tarsus on legs 1 to 19 and the second tarsal claw spine (=accessory spur) can easily be overlooked. Likewise, as shown by Lewis (1999), the distal tubercles on the tibia and tarsus I of the ultimate legs (which he incorrectly termed end teeth or unciform tubercles) may be present or absent. Lewis, Edgecombe

and Shelley (2005) did not consider these very small structures when they proposed a standardised terminology for taxonomic characters in the Scolopendromorpha.

It should be reiterated that these characters should be used with great caution and only in conjunction with others.

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