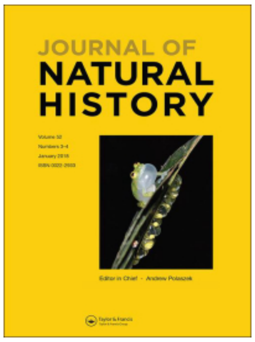

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New Chilopoda from the Chagos Archipelago

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ABSTRACT

The single published record of centipedes from the Chagos Archipelago, British Indian Ocean Territory, is for the scolopendrid *Rhysida longipes* Newport, 1845, from Eagle Island. Recent collections from Diego Garcia atoll include new records of *R. longipes* as well as four other centipede species, including the first records of the orders Lithobiomorpha and Geophilomorpha. A new species of the lithobiid *Australobius* Chamberlin, 1920, *A. chagosensis* **sp. n.,** is closely allied to species described from southern India, Sri Lanka and the Maldives. The henicopid *Lamyctes* is represented by two geographically wide-spread species, *L. mauriesi* Demange, 1981 and *L. tristani* (Pocock, 1893), from which sequence data for the COI barcode marker are presented and analysed phylogenetically. The types of *Lamyctes albipes* (Pocock, 1894), and *L. tristani*, from Java and Tristan da Cunha, respectively, are illustrated for the first time to facilitate taxonomic comparisons with Chagos material. Specimens of *Mecistocephalus* are identified as *Mecistocephalus lohmanderi* Verhoeff, 1939, closely resembling specimens from the Seychelles. Collections from the archipelago in 1971–1972 also included *Mecistocephalus angusticeps* (Ribaut, 1914), and *Nycternyssa dekania dekania* (Verhoeff, 1938). The Chagos centipede fauna reveals affinities to those of the southern Indian Subcontinent, East Africa, Madagascar, the Maldives, the Seychelles, and Java.

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Centipedes; Diego Garcia; barcodes; British Indian Ocean Territory

Introduction

The arthropod fauna of oceanic island systems continues to provide valuable insights into how the processes of diversification (Gillespie 2004) and dispersal (Vanbergen *et al*. 2017) shape arthropod communities, within the context of island biogeography. Centipedes comprise a group of particular interest among soil arthropods for their low overall vagility, allowing for biogeographic investigations into the origin and establishment of predatory soil arthropod communities, especially over narrow ranges (Bharti *et al*. 2021).

The Chagos Archipelago comprises 60 islands located at the southernmost end of the Laccadives-Maldives-Chagos Ridge in the Indian Ocean. Its formation is attributed

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to volcanic hotspot activity in the Late Cretaceous, representing the oldest section of the Laccadives-Maldives-Chagos Ridge (Eisenhauer *et al*. 1999). Despite this, the terrestrial sections of the archipelago are estimated to be much younger (ca. 6500 years BP), having emerged with the decline in sea level following the Holocene sea-level high stand (Duplessy *et al*. 1992). The nearest landmasses include Addu atoll in the Maldives, located 600 km north of the archipelago, and the Seychelles and Mauritius, located 1700 and 1900 km to the west of the Chagos Archipelago, respectively. Diego Garcia atoll, with the largest dry land area (27.33 km^2), supports an extensive arthropod community and has benefitted from broad surveys of its terrestrial fauna.

Affinities of the Chagos arthropod fauna have been characterised as predominantly southern Indian, but with many putative introductions of species occurring throughout Australia and South and Southeast Asia (Khan and Kamaluddin 2009). Scott (1933) treated this in more detail, drawing a distinction between the Chagos and Aldabra (Seychelles) arthropod faunas, despite their common characterisation as coralline islands. More recent surveys of Chagossian insects (Barnett and Emms 1999) have identified several endemic subspecies and one endemic species of macrolepidoptera, *Stictoptera hironsi* Barnett, Emms and Holloway, 1998. The majority of insects recorded are, however, ascribed to widespread Indo-Australian or Oriental species, reinforcing the proposed similarity between the terrestrial arthropod fauna of the Chagos Archipelago and that of the southern Indian subcontinent (Scott 1933; Kevan and Kevan 1995).

Previous surveys of the Chagos myriapod fauna only recorded the scolopendrid centipede *Rhysida longipes* (Newport, 1845) (Lewis and Cole 2007), a widely distributed Pantropical species, likely recently introduced to many oceanic islands (Siriwut *et al*. 2018). New sampling of soil fauna from Diego Garcia in 2022, comprising most of the material here examined, has revealed a significantly more diverse centipede assemblage, increasing the number of recorded centipede species from one to five. Significantly, this includes the first records of the orders Geophilomorpha and Lithobiomorpha, the latter also represented by a new species of the Oriental-Australian genus *Australobius* Chamberlin, 1920, and additional records of *Rhysida longipes*. The examined specimens collected in 2022 are described, with remarks and illustrations provided for important diagnostic characters. We supplement these new data with records from material collected in 1971–1972, adding an additional two centipede species to the Chagos biota. Biogeographical considerations are given with regard to the origin and affinities of the Chagossian centipede fauna.

Materials and methods

Specimen collection and preservation

Specimens collected from Diego Garcia in 1971 and from Egmont Atoll in 1972 were fixed in 80% industrial methylated spirit. Those collected from Diego Garcia in June–July 2022 were fixed in absolute ethanol for DNA extraction. All specimens are deposited in the

Natural History Museum, London (prefixed NHMUK or BMNH(E)), except for one at the Senckenberg Research Institute, Frankfurt (SMF).

Morphological examination

Specimens were examined under Leica MZ16A and Nikon SMZ1270 stereomicroscopes and a Leica DMR binocular microscope. Partial dissection was carried out as necessary according to the protocol outlined by Pereira (2000), with anatomical structures temporarily mounted in glycerol. Drawings were prepared with the aid of a camera lucida. Morphological terminology follows Bonato *et al*. (2010).

DNA sequencing

The mitochondrial barcode marker cytochrome *c* oxidase subunit I (COI) was successfully sequenced for three specimens representing two different species of *Lamyctes* Meinert, 1868, and for one specimen of *Mecistocephalus lohmanderi* Verhoeff, 1939.

Samples were databased and imaged and then the whole body was used for DNA extraction. A KAPA Express Extraction Kit was used for DNA extraction and the lysis was amplified using a one-step polymerase chain reaction (PCR) with KAPA3G Plant PCR Kit and uniquely indexed LCO and HCO primers (Folmer *et al*. 1994).

Resulting amplicons were sequenced using Oxford Nanopore Technologies (ONT) Flongle R10.4.1 Flow Cell on a GridION, using the SQK-LSK114 Ligation Kit. Sequences were processed using ONTBarcoder (Srivathsan *et al*. 2021).

Voucher specimens were recovered after extraction and stored in 80% ethanol. Sequence data are deposited in GenBank with the accession numbers and voucher registrations indicated below.

Phylogenetic analysis

COI sequence data for species of *Lamyctes* and the closely allied *Henicops* Newport, 1844, from previous analyses (Edgecombe *et al*. 2002; Edgecombe and Giribet 2003a; Enghoff *et al*. 2013; Decker *et al*. 2017; Qiao *et al*. 2019) were retrieved from GenBank. The sequences were edited and aligned in CodonCode Aligner v. 3.7.1. (CodonCode Corporation, Dedham, MA, USA). We included 25 COI sequences for all available species of *Lamyctes*, four COI sequences comprising two species of *Henicops*, mined from GenBank, and one representing *Paralamyctes cammooensis* Edgecombe, 2004.

Monophyly of the *Lamyctes-Henicops* group has been supported in several previous molecular and total evidence analyses (eg Edgecombe *et al*. 2002; Edgecombe and Giribet 2003b). Trees are rooted with a species of another genus of Henicopini, *P. cammooensis*, as outgroup.

In order to evaluate the phylogenetic relationships between the newly sampled *Lamyctes* species and their congeners, we performed a phylogenetic analysis by maximum likelihood (ML) using raxmlGUI v. 2.0 (Edler *et al*. 2020) and Bayesian inference (BI) using MrBayes v. 3.2.7 (Ronquist and Huelsenbeck 2003). DNA polymorphism values were calculated using DnaSP v. 6.12.03 (Rozas *et al*. 2017). The best-fit model for nucleotide substitution was estimated using jModelTest v. 2.1.10 (Darriba *et al*. 2012) and found to be GTR+I+G under the Akaike information criterion (AIC, 8780.7801) and Bayesian information criterion (BIC, 9085.9426). ML analyses were conducted under the GTR+I+G model, using the thorough bootstrap algorithm for 10 independent ML runs with 1000 replicates each. Default settings were used for all other parameters. BI analyses were conducted under the GTR+I+G model in two simultaneous runs with 20,000,000 generations each, sampling every 20,000 generations, the first 25% of samples being discarded as burn-in, as the default relative burn-in fraction. Gaps were treated as missing data and default settings were used for all other parameters. Marginal density and trace plots were examined in Tracer 1.7 (Rambaut *et al.* 2018) to determine that chains converged and that samples were not autocorrelated. Trees obtained were visualised using FigTree v. 1.4.4 (Rambaut 2018).

Genetic p-distances between and within species of *Lamyctes* were calculated using MEGA11 (Tamura *et al*. 2021).

Results

Order LITHOBIOMORPHA

Family LITHOBIIDAE

Australobius Chamberlin, 1920

Australobius chagosensis Popovici & Edgecombe **sp. n.**
(Figures 1, 2(A–I))

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Etymology
The specific epithet reflects the origin of the two known specimens, both from Diego Garcia in the Chagos Archipelago.

Type material
Holotype, NHMUK015619673, ♀, Diego Garcia, 7.359°S, 72.432°E, leaf litter, 02 July 2022, leg. W. Rabitsch. Paratype NHMUK015626351, juvenile ♀, Point Marianne Culture site, 7.319°S, 72.427°E, leaf litter, 22 June 2022, leg. W. Rabitsch.

Diagnosis
Small-sized *Australobius*, body length 7–10 mm. Antenna with 19–20 articles. 4 + 4 ocelli of similar size. Anterior margin of forcipular coxosternite with 3 + 3 teeth; small spiniform porodont situated between the medial and outermost teeth. Tergites 9, 11 and 13 with small posterior triangular projections. Ultimate leg pair with greatly reduced tarsus 2, less than 1/3 length of tarsus 1; ultimate leg apical claw simple. Female gonopods with 3 + 3 slender spurs and a trifurcate claw.

Description
Habitus. Body length 10 mm (holotype), 7 mm (paratype). Colour in ethanol dark brown with violet pigmentation in the anterior part of the body and the proximal articles of the legs.

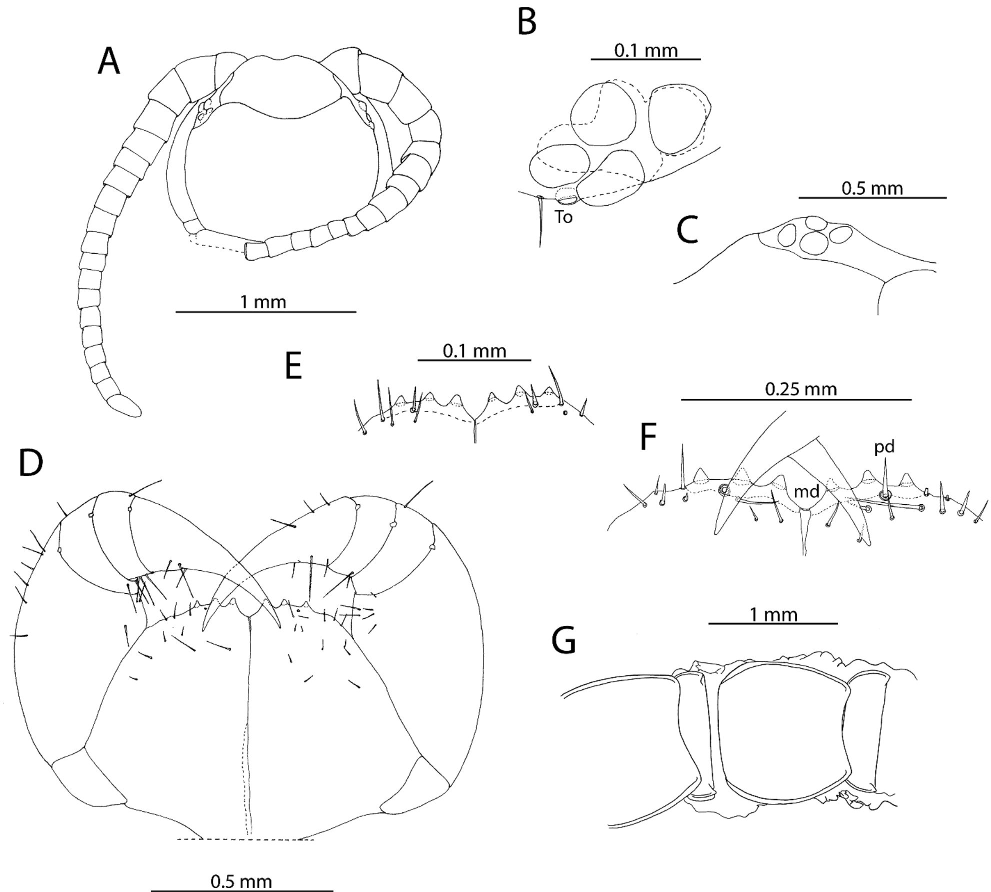

Figure 1. *Australobius chagosensis* **sp. n.** Holotype NHMUK015619673 except (E) paratype NHMUK015626351. (A) Cephalic plate and antennae, dorsal view. (B) Ocellar field and Tömösváry's organ, lateral view. (C) Ocellar field, lateral view. (D) Forcipular segment, ventral view. (E) Anterior margin of forcipular coxosternite, ventral view. (F) Anterior margin of forcipular coxosternite, ventral view. (G) Tergites 8–11, dorsal view. Abbreviations: med, median diastema; pd, porodont; To, Tömösváry's organ.

Head and antennae. Cephalic plate of subequal length and width; frontal margin with medial notch (Figure 1(A)). 4 + 4 ocelli, arranged in two rows comprising two ocelli each (Figure 1(B,C)). Principal ocellus only slightly larger than seriate ocelli, all of which are of similar size. Tömösváry's organ small, positioned below the principal ocellus (Figure 1(B)). Antenna with 19 (holotype, one complete antenna)–20 articles; 2.4 times longer than the cephalic capsule and 25% of body length (Figure 1(A)).

Forcipular segment. Anterior margin of forcipular coxosternite only slightly protruding, with 3 + 3 teeth of roughly equal size (Figure 1(D)). Porodont slender, spiniform, situated between the medial and outermost teeth (Figure 1(E,F)). Dental margin continuous with the remainder of the anterior margin. Median diastema broadly U-shaped (holotype: Figure 1(D)) or rounded V-shaped (paratype: Figure 1(E)).

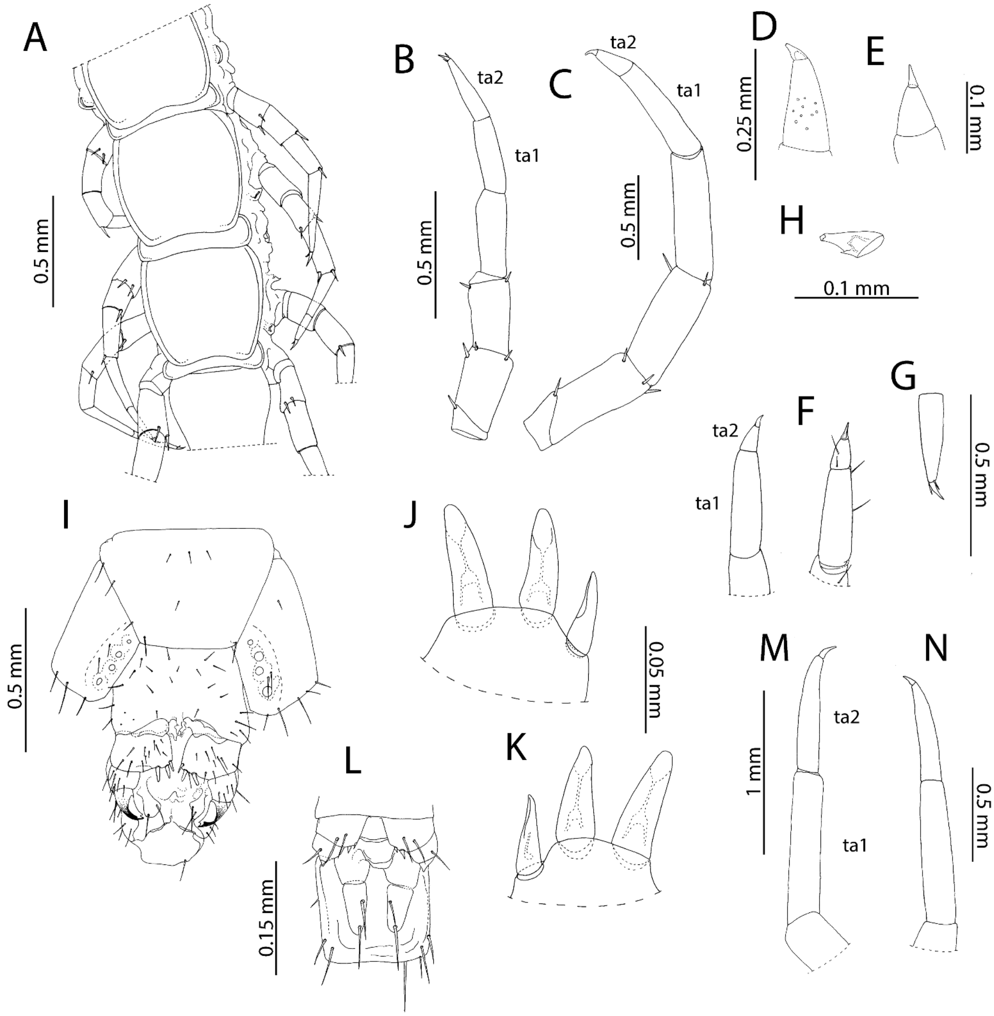

Figure 2. (A–J) *Australobius chagosensis* **sp. n.** (A–D, H–K) Holotype NHMUK015619673; (E–G,I) Paratype NHMUK 015626351. (A) Posterior third of trunk (TT 8–14), dorsal view. (B) Leg 14, lateral view. (C) Leg 15, lateral view. (D) Tarsus 2 of left leg 15, lateral view. (E) Tarsus 2 of left leg 15, dorsal view. (F) Distal end of left leg 15, lateral and dorsal views. (G) Tarsus 2 of left leg 14, lateral view. (H) Pretarsus of left leg 15, lateral view. (I) Segment 15 and postpedal segments, ventral view. (J,K) Gonopod spurs. (L) Gonopods of immature female, ventral view. (M) *Australobius sculpturatus* (Pocock, 1901), NHMUK 1952.12.11.73–74. Distal end of right leg 15, lateral view. (N) *Australobius palnis* (Eason, 1973). Holotype, BMNH(E) #200319 Chilo 1894.10.24.66. Distal end of left leg 15, lateral view. Abbreviations: ta1, tarsus 1; ta2, tarsus 2.

Trunk. Large tergites wrinkled, with evident lateral but indistinct posterior margination. Posterior angles of tergites 9, 11 and 13 of holotype with small, feeble triangular projections (Figure 1(G)) but these are completely absent in the paratype (Figure 2(A)). Coxal pores on legs 12–15, round, arranged as 2, 3, 3, 3/2, 3, 3, 3 (paratype) or 3, 3, 4, 4/3, 4, 5, 4 (holotype) (Figure 2(I)).

Ultimate leg-bearing and postpedal segments. Ultimate leg telopodite slender and elongate (Figure 2(C)). Tarsus 2 greatly reduced in size, only 24.5% (paratype) – 31% (holotype) of the length of tarsus 1 (Figure 2(C–F)). Telopodite of leg pair 14 similarly elongate but tarsus 2 not greatly reduced in size (Figure 2(B,G)). Pretarsus without accessory claws, main claw bearing a minute anteroventral spine (Figure 2(H)). Female gonopods with 3 + 3 elongate, slender spurs (Figure 2(J,K)); apical claw with well-developed lateral and medial denticles (Figure 2(I)). Gonopods of immature female paratype with 2 + 2 minute spurs (Figure 2(L)). Male unknown.

Plectrotaxy. As in the following tables (C, coxa; P, prefemur; T, tibia; t, trochanter; a. anterior; m, median; p. posterior).

Plectrotaxy of female holotype (NHMUK015619673).

	Ventral					Dorsal				
Leg pair	C	t	P	F	T	C	t	P	F	T
1	–	–	–	a	m	–	–	amp	p	–
13	–	m	amp	amp	am	?	–	amp	ap	p
14	–	m	amp	amp	a	a	–	amp	ap	–
15	–	m	amp	amp	–	a	–	amp	p	–

Plectrotaxy of female paratype (NHMUK 015626351).

	Ventral					Dorsal				
Leg pair	C	t	P	F	T	C	t	P	F	T
1	–	–	–	a	m	–	–	amp	a	–
13	–	m	amp	mp	m	–	–	mp	ap	p
14	–	m	amp	amp	–	–	–	mp	p	–
15	–	m	amp	am	–	–	–	amp	p	–

Discussion. The specimens from Diego Garcia compare most closely to *A. sculpturatus* (Pocock, 1901) (revised by Eason 1973), from southern India, Sri Lanka, the Laccadives and the Maldives, and *A. palnis* (Eason, 1973) from Sri Lanka (Eason 1993). Similarities include the low number of ocelli, no more than diminutive posterior projections on tergites 9, 11 and 13, slender spurs on the female gonopods, and plectotraxy. However, examination of the types of both *A. sculpturatus* and *A. palnis*, as well as specimens from the Maldives assigned to the former, shows a substantially longer tarsus 2 than in both specimens of *A. chagosensis* (Figure 2(M,N) vs Figure 2(C)). Additional characters in which *A. chagosensis* differs include ocelli more homogeneous in size, and 3 + 3 (vs 4 + 4 or 3 + 4) teeth on the anterior margin of the forcipular coxosternite.

The position of the porodont, between the second and third teeth, is shared with *Australobius malayicus* (Verhoeff, 1937); however, *A. chagosensis* can be distinguished from that Malaysian species by the fewer ocelli (four vs six) and 3 + 3 vs 4 + 4 coxosternal teeth.

Family HENICOPIDAE

Lamyctes Meinert, 1868

Lamyctes mauriesi Demange, 1981

(Figure 3)

Material examined

6 ♀♀: NHMUK015558196, DNA barcode voucher; NHMUK015619674 (5 ♀♀), Diego Garcia, 7.359°S, 72.432°E, leaf litter, 02 July 2022, leg. W. Rabitsch; 1 ♀, NHMUK015558199, DNA barcode voucher, Diego Garcia, Plantation Gate closed, 7.411° S, 72.452°E, leaf litter, 23 June 2022, leg. W. Rabitsch.

Description

Habitus. Body length 4.8–5.5 mm (for specimens used as DNA barcode vouchers). Colour in ethanol: Cephalic shield and tergites uniformly dark brown, legs light brown with violet distal articles. No dark colouration around ocellus or anterior margin of cephalic shield.

***Cephalic shield* (Figure 3(A)).** Frontal margin with evident medial notch, lacking a median furrow, ocellus present. Posterior margin of cephalic shield nearly transverse, with indistinct margination. Antenna with 32–34 articles, ca. 5 times longer than cephalic shield and about half of body length. Pairs of articles 3–4, (6)7–8, 11–12, 14–15, 17–18, 23–24 and 26–27 relatively shortened.

Forcipular coxosternite. Subtrapezoidal with weak shoulder and gently converging lateral margin. Anterior margin with 2 + 2 teeth and a short, spinous pseudoporodont (Figure 3(B)). Pseudoporodont displaced proximally to teeth. Median diastema 1.5 times wider than the gap between teeth, with rounded apex. Long setae clustered near anterior margin and on the internal side of forcipular articles.

Trunk. All tergites with rounded posterior angles and without projections. Posterior margins weakly concave. Large tergites with complete posterior margination.

Legs. Distal spinous projection distinctly acuminate and present on tibiae 1–12 (Figure 3 (C)). Legs 13–15 without projections. Ultimate legs up to 3 mm long (approx. 60% of body length). Tarsus 1 20% and tarsus 2 18.5% of its length (Figure 3(D)). All legs with anterior and posterior accessory claws, approximately 40% of the length of the apical claw. Coxal pores on legs 12–15 arranged as 2 + 2, 2(3) + 2(3), 2(3) + 3, 3 + 3 respectively.

***Gonopods* (Figure 3(E–G)).** Female gonopods with 3 + 3 (rarely 2 + 3) spurs and simple claw. Article I with 7–9 setae, article II with 2–3 setae and article III with 1 seta.

COI barcode. GenBank accession numbers PQ165822 (NHMUK015558199), PQ165823 (NHMUK015558196).

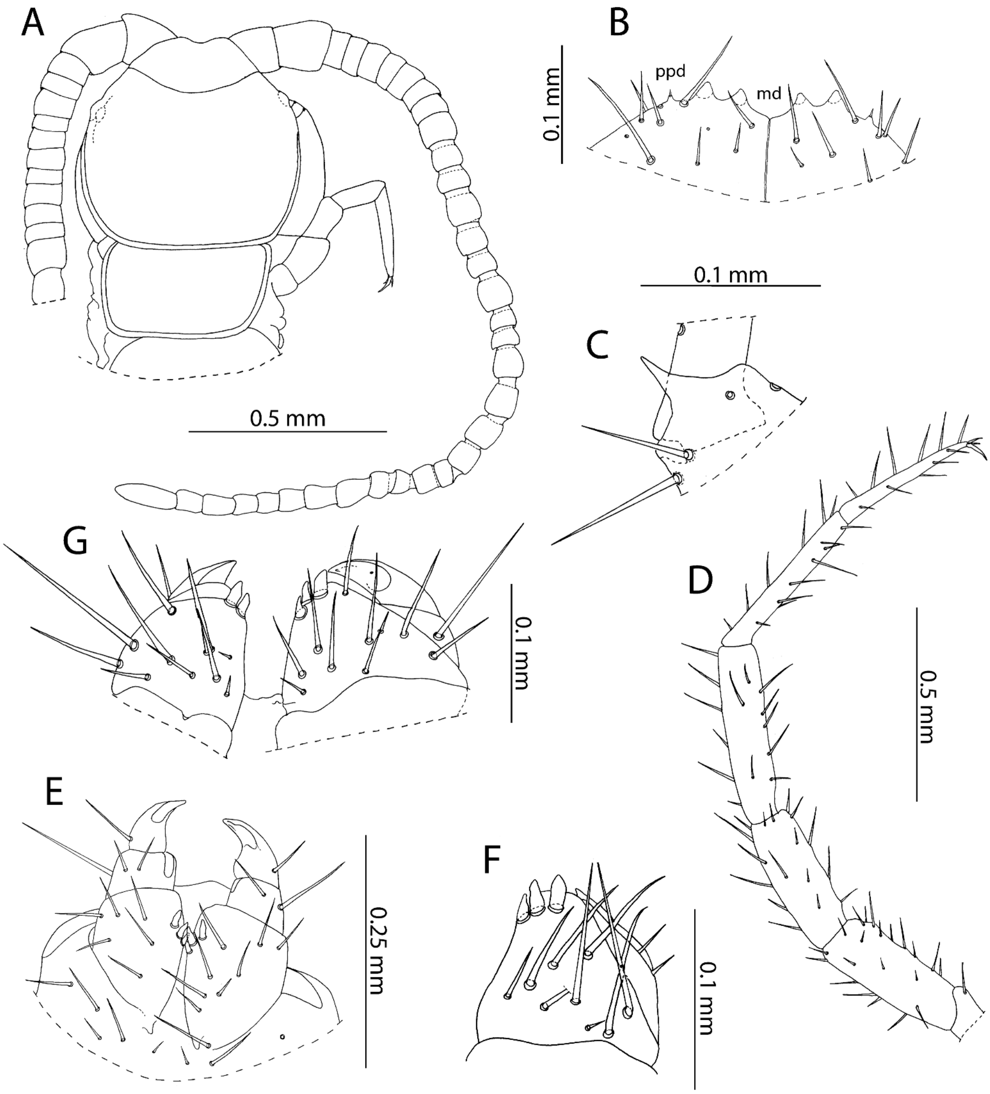

Figure 3. *Lamyctes mauriesi* Demange, 1981. (A–E) NHMUK015619674; (C–G) NHMUK NHMUK015619674. (A) Cephalic plate and antennae, dorsal view. (B) Anterior margin of forcipular coxosternite. (C) Distal end of tibia 12, lateral view, showing spinose projection. (D) Leg 15 (left side), lateral view. (E) Female gonopods, ventral view. (F–G) Female gonopods, ventral view. Abbreviations: md, median diastema; ppd, pseudoporodont.

Remarks. A possible synonymy with *Lamyctes albipes* (Pocock, 1894), originally described from Java, and *L. mauriesi* Demange, 1981, originally described from Guadeloupe, was discussed by Eason and Enghoff (1992) and has generally been endorsed in recent studies (eg Akkari and Ganske 2018). Variability in number of antennal articles and number of spurs on the female gonopod has been a focus of discussion. Pocock's type of *L. albipes* has 28 articles and 2 + 2 spurs on the gonopod (Figure 4(D)), but Attems (1907) assigned a specimen from Buitenzorg (Bogor), Java, with 33–34 articles and

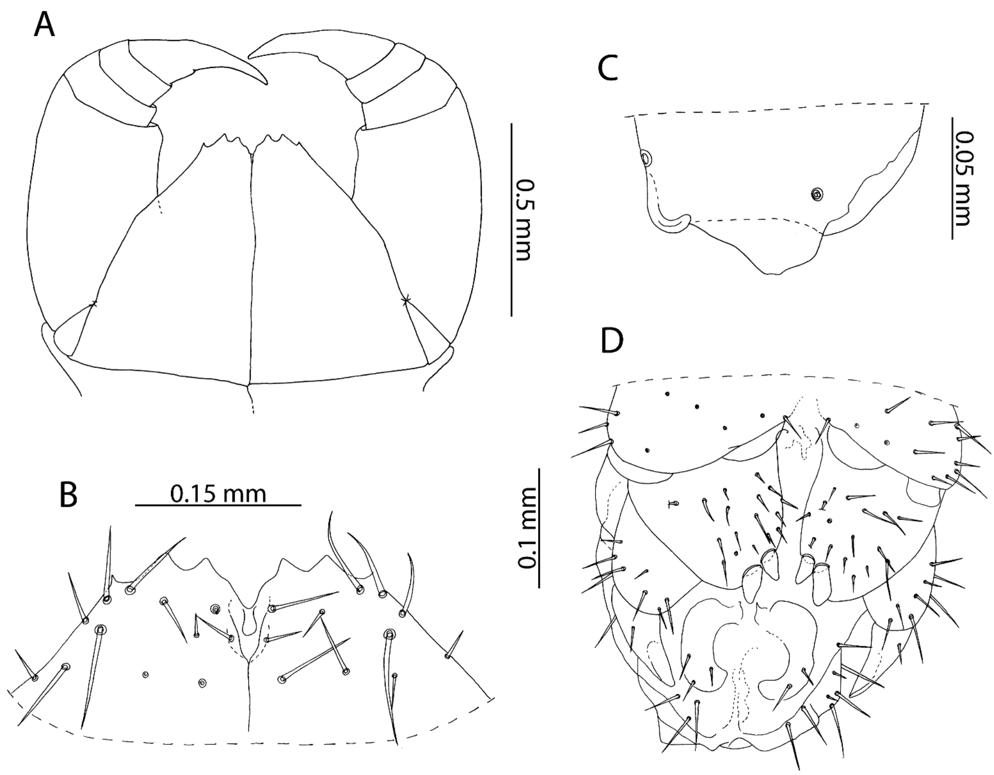

Figure 4. *Lamyctes albipes* (Pocock, 1894). Holotype BMNH(E) 1896.10.6.7. (A) Forcipular segment, ventral view. (B) Anterior margin of forcipular coxosternite, ventral view. (C) Distal end of tibia of leg pair 12, lateral view, showing blunt projection. (D) Female gonopods, ventral view.

3 + 3 spurs to that species. Demange (1981a) considered Attems' specimen to be without doubt ('sans doute') a different species, which he compared to *L. mauriesi*. The holotype of *L. mauriesi* has 30 articles and 3 + 3 spurs. However, specimens from the Canary Islands that were confidently identified as *L. mauriesi* mostly show 2 + 2 spurs apart from two specimens with 3 + 2 or 2 + 3 (Eason and Enghoff 1992). A female from the Karakaram Range in India or Pakistan assigned to *L. albipes* by Silvestri (1935) has 28 and 23 (the latter 'certainly anomalous') articles and 2 + 2 spurs. Eason (1996) assigned females from Sakhalin Island in the Russian Far East to *L. albipes*, matching Pocock's type in having 28 articles and 2 + 2 spurs. Females assigned to *L. albipes* from the Seychelles (Mahé, Silhouette, Praslin) have 30 antennal articles and 3 + 3 spurs (Demange 1981b; Stoev and Gerlach 2010).

Specimens from Diego Garcia correspond most closely to the Javanese specimen assigned (likely incorrectly) to *L. albipes* by Attems (1907). A distal spinous projection is present on the tibia of leg 12 in Chagos specimens (Figure 3(C)), as in the Java specimen, but is lacking in the types of *L. mauriesi* and *L. albipes*, the latter having a weak, blunt projection (Figure 4(C)). The Chagos and Java specimens have the highest antennal article count of any material assigned to *L. mauriesi* or *L. albipes* (32–34 vs 28–30). With respect to *L. albipes, L. albipes sensu* Attems (1907) and *L. mauriesi*, the shape of the forcipular coxosternite and its anterior margin do not carry diagnostic information, with descriptions of these characters largely matching among all three species (compare Figure 3(B) to Figure 4(A,B)). Without molecular data for populations other than the Chagos Archipelago, we are unwilling to name additional species within what is likely to be a species complex and treat populations with 3 + 3 spurs on the female gonopod and 30 or more antennal articles as *L. mauriesi*.

Accepting a close affinity between *L. mauriesi* and *L. albipes*, this likely clade is known exclusively from females throughout its broad geographic range. These species are thus likely to be parthenogenetic like other *Lamyctes* species with cosmopolitan distributions, such as *L. africanus* and *L. emarginatus* (males are known only from limited parts of their ranges).

Lamyctes tristani (Pocock, 1893)
(Figures 5, 6)

Material examined

2 adult ♀♀, NHMUK015626352, Diego Garcia, Downtown, 7.263°S, 72.374°E, 26 June 2022, leg. W. Rabitsch, suction sampler; 1 adult ♀, NHMUK015619670, Diego Garcia, wetland site, 7.310°S, 72.419°E, 22 June 2022, leg. W. Rabitsch, suction sampler.

Description

Body length up to 6.5 mm. Colour in ethanol: Cephalic shield and tergites uniformly dark brown, legs light brown with violet distal articles. No dark colouration around the ocellus and anterior margin of the cephalic shield.

Cephalic plate. Frontal margin with evident medial notch, lacking a median furrow, ocellus present (Figure 5(A)). Posterior margin of cephalic shield weakly concave, with evident margination. Antennae of two specimens with 18–20 (Figure 5(C)) and 21–24 articles respectively, 2.75 times longer than cephalic shield and 31% of body length. Ultimate antennal articles generally as long as or shorter than the penultimate (Figure 5 (B)). Pairs of articles 3–4, 6–7, 9–10, 12–13, 15–16, 18–19 relatively shortened.

Forcipular coxosternite. Subtrapezoidal with weak shoulder and gently converging lateral margin (Figure 6(A,B)). Anterior margin with 2 + 2 teeth and a short, spinous pseudoporodont (Figures 5(D), 6(C)). Pseudoporodont displaced proximally to teeth. Median diastema 1.7 times wider than the gap between teeth, narrowed medially. Long setae clustered near anterior margin and on the internal side of forcipular articles.

***Trunk* (Figure 5(E)).** All tergites with rounded posterior angles and without projections. Posterior margins weakly concave. Large tergites with complete posterior margination.

Legs. Distal spinous projection on leg pairs 1–12. Projection of tibia 12 short and rounded (Figure 5(F)). Coxal pores on legs 12–15 arranged as 3, 3, 3, 4/3, 3, 4, 4

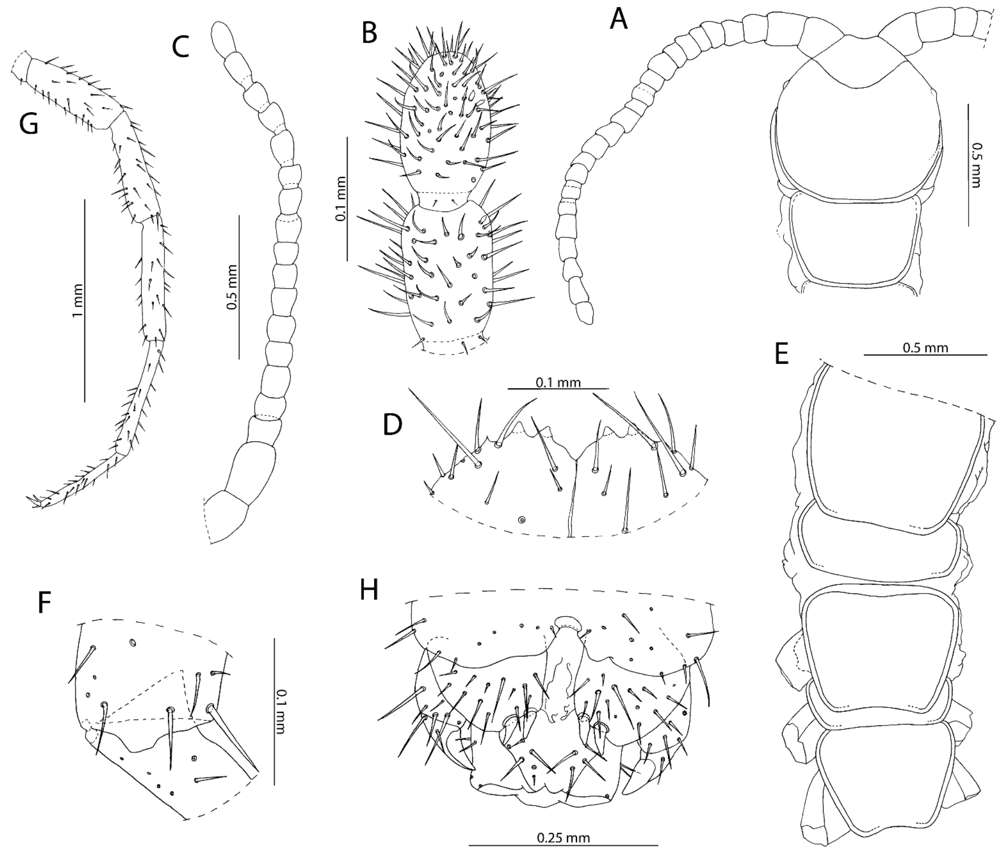

Figure 5. *Lamyctes tristani* (Pocock, 1893). All NHMUK015626352 except (G) NHMUK NHMUK015619670. (A) Cephalic plate and antennae, dorsal view. (B) Ultimate articles of antenna, ventral view. (C) Left antenna, ventral view. (D) Anterior margin of forcipular coxosternite, ventral view. (E) Posterior third of trunk (TT10–14) dorsal view. (F) Distal end of tibia of leg pair 12, lateral view. (G) Leg 15, lateral view. (H) Female gonopods, ventral view.

(NHMUK015626352). Middle two pores variably share an opening despite having separate channels. Telopodite of ultimate legs slender and elongate; tarsus 1 21% and tarsus 2 17% of its length (Figure 5(G)).

Gonopods. Female gonopods with 2 + 2 spurs and simple claw (Figure 5(H)). Article I with 13–14 setae, article II with 5–6 setae and article III with 1–2 setae. Male not known from Chagos samples (Figure 6(F,G), for male gonopods of a syntype from Tristan da Cunha).

COI barcode. GenBank accession number PQ165824.

Remarks. Specimens from Diego Garcia compare closely with *Lamyctes tristani*, originally described from Tristan da Cunha (Pocock 1893; Lawrence 1956) and subsequently reported from Madagascar (Lawrence 1960). Among taxonomically informative similarities are the number of antennal articles (usually 23 or 24 in

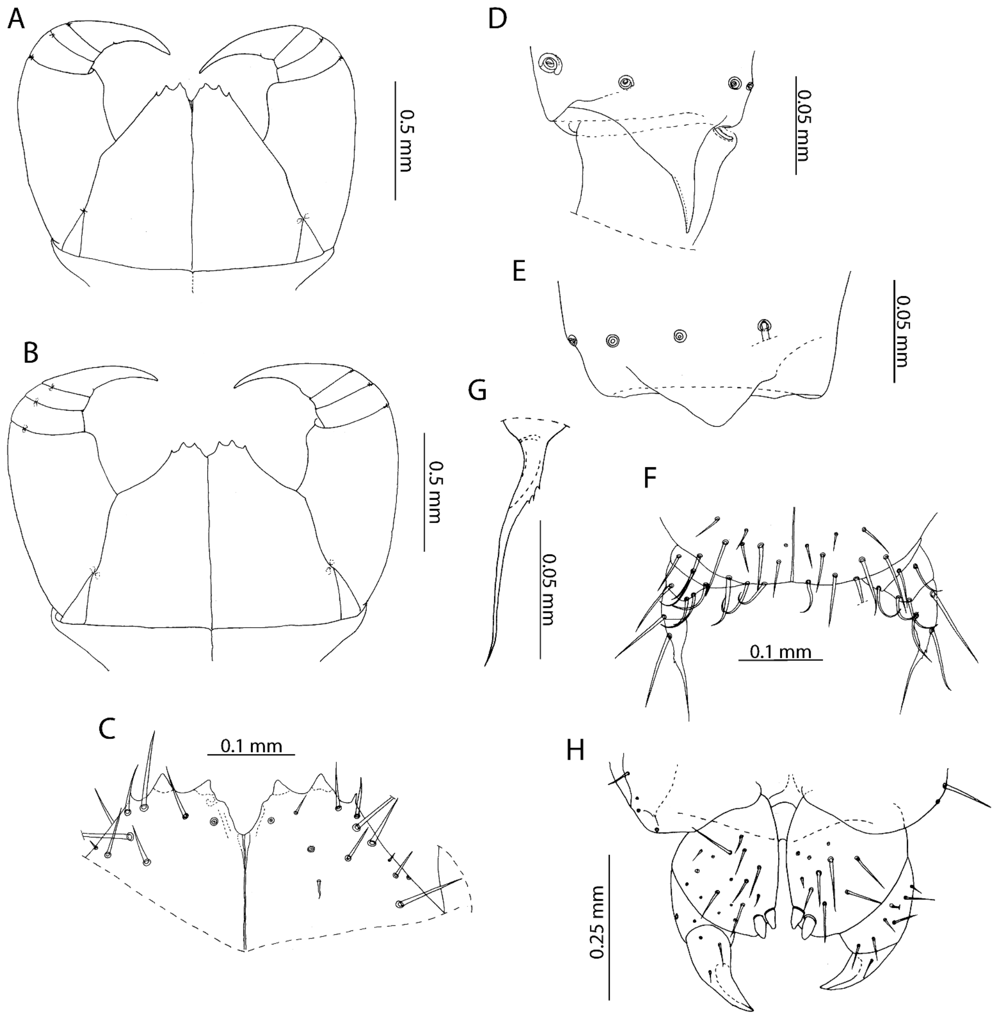

Figure 6. *Lamyctes tristani* (Pocock, 1893). Syntypes, NHMUK015087793. A, F, G, ♂; B–E, H, ♀. (A) Forcipular segment, ventral view. (B) Forcipular segment, ventral view. (C) Anterior margin of forcipular coxosternite, ventral view. (D) Distal end of tibia of leg pair 11, lateral view. (E) Distal end of tibia of leg pair 12, lateral view. (F) Male gonopods, ventral view. (G) Filament of male gonopods, ventral view. (H) Female gonopods, ventral view.

L. tristani), the blunt distal projection on the tibia of leg 12 (Figures 5(F), 6(E)) and the female gonopods (Figures 5(H), 6(H)), which all agree between the Chagos specimens and the type material of *L. tristani*. In both species, the distal spinous projection of the tibia is described as terminating on leg pair 11 (Figure 6(D)).

Order SCOLOPENDROMORPHA

Family SCOLOPENDRIDAE

Rhysida Wood, 1862

Rhysida longipes (Newport, 1845)

(Figure 7)

Material examined

1 subadult (35 mm), NHMUK015619677, Chagos Archipelago, Diego Garcia Island, Eclipse Point, April 1971, leg. A.M. Hutson; 1 juvenile (16 mm), NHMUK015558200, from Diego Garcia, site O4BM2, July 2022, leg. W. Rabitsch, Malaise slam trap; 1 juvenile (15 mm), NHMUK015619672, Diego Garcia, Downtown, 7.263°S, 72.374°E,

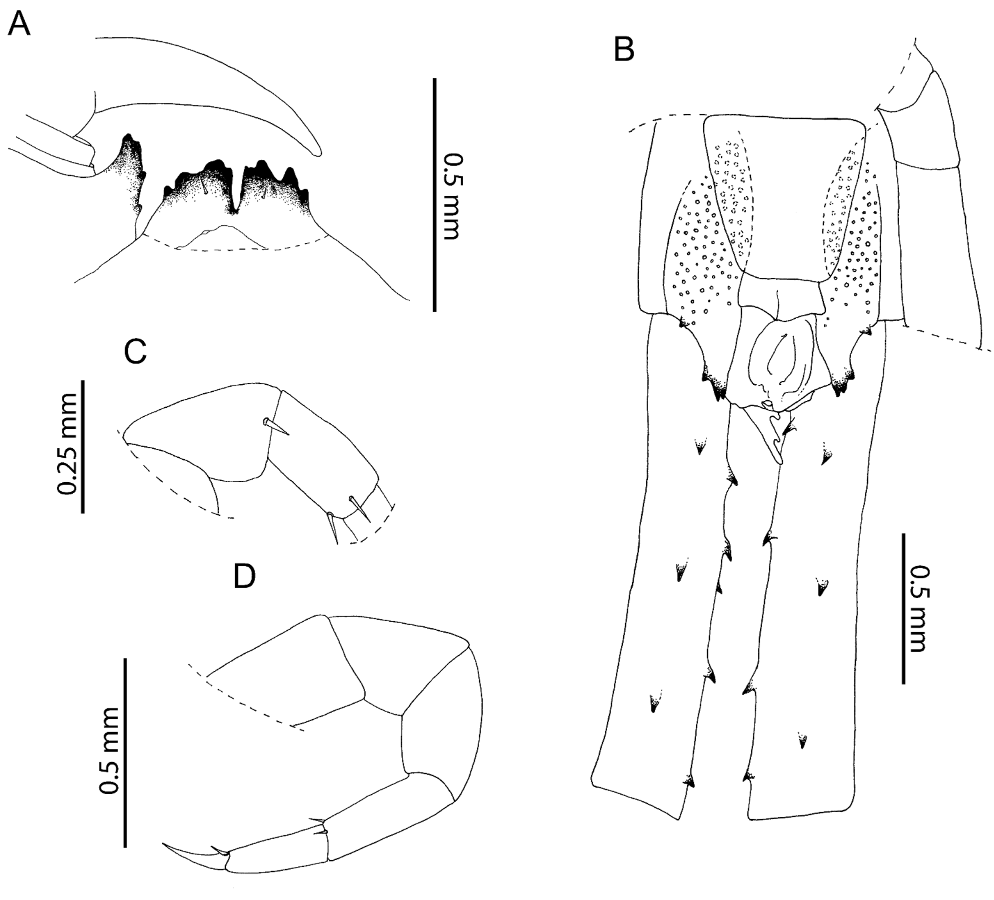

Figure 7. *Rhysida longipes* Newport, 1845. NHMUK015619672. (A) Anterior margin of forcipular coxosternite and internal margin of left forcipule, ventral view. (B) Ultimate leg-bearing segment and postpedal segments, ventral view. (C) Leg 1, lateral view, showing tibial spur and tarsal spurs. (D) Leg 7, lateral view.

26 June 2022, leg. W. Rabitsch, suction sampler; 1 adult, SMF, Diego Garcia, Tschagos Archipel, 1899.

Description

Habitus. Proximal half of antenna pale yellow, distal half pale blue. Cephalic plate, tergites 1–2 and tergite of ultimate leg-bearing segment yellow-brown, remaining tergites pale blue.

Head and forcipular segment. Antenna with 18 articles, the first four glabrous dorsally, first three glabrous ventrally. Coxosternal tooth-plates with four teeth grouped into medial and outer pairs (Figure 7(A)). Medial pair with innermost teeth greatly reduced. Trochanteroprefemoral process with four distinct teeth.

Trunk. Paramedian sutures beginning on tergite four or five. No evident paramedian sutures on sternites. Tergite margination incomplete on tergites 7 or 8, complete from tergites 8 or 9.

Walking legs. Femoral spur present on leg pair 1 (Figure 7(C)). Tibial spur present on leg pairs 1–2, 3 or 4, two tarsal spurs present on leg pairs 1–5, 6 or 7, one tarsal spur present on leg pairs 6/8–19 (Figure 7(D)); tarsal spurs lacking on legs 20 and 21.

***Ultimate leg-bearing segment* (Figure 7(B)).** Sternite of ultimate leg-bearing segment with straight lateral margins converging posteriorly; posterior margin nearly straight. Coxopleural process moderately long, with 2 apical spines (1 on one side of specimen NHMUK015558200), 1 subapical and 1 lateral spine; pore field terminates at base of coxopleural process in juveniles (Figure 7(B)). Prefemur with 3 ventrolateral, 2 or 3 ventromedian, 0 or 1 median, and 3 dorsolateral spines.

Remarks. The morphology of the specimens agrees with the description of *R. longipes* from Eagle Island in the Chagos Archipelago (Lewis and Cole 2007). Similarities in the pattern of glabrous antennal articles between specimens collected in Sri Lanka and those from the Chagos (ie four articles glabrous dorsally vs the usual three) were given as a potential indication of introduction through human activity. The wide distribution of *R. longipes* throughout Southern and Southeastern Asia is indicative of its dispersal capability; however, as the similarity between the fauna of Diego Garcia (Chagos) and Sri Lanka extends to centipedes not known to be associated with anthropochoric dispersal (see *Australobius chagosensis*), the case for natural colonisation of the archipelago by *R. longipes* cannot be excluded.

Order GEOPHILOMORPHA

Family MECISTOCEPHALIDAE

Mecistocephalus Newport, 1843

Mecistocephalus angusticeps (Ribaut, 1914)

Material examined

1 ♀, 47 leg-bearing segments, NHMUK015619675, Chagos Archipelago, Egmont Atoll, Ile Sudest, 04 June–July 1972, leg. M.J.D. Hirons; 1 juvenile, 47 leg-bearing segments, same collection data as preceding.

Remarks

This species has been previously recorded from a site on the Kenyan coast (Ribaut 1914) and a few coastal localities in the Seychelles (Demange 1981b; Bonato and Minelli 2010). The record from the Chagos Archipelago represents another coastal locality. Morphological variation in *M. angusticeps* remains poorly documented due to the small number of specimens that have been described and illustrated in past literature. The present specimens agree in all diagnostic characters with the material redescribed by Bonato and Minelli (2010) from the Seychelles, so a redescription is not presented herein. This implies a larger distribution is possible for *M. angusticeps*, potentially including other coastal sites in the Western Indian Ocean. Potential channels of introduction to the Chagos Archipelago, as well as the current status of *M. angusticeps* in light of its absence from the material recently collected from Diego Garcia, remain a matter of speculation, although its prevalence near coastal sites suggests natural dispersal as a possibility.

Mecistocephalus lohmanderi Verhoeff, 1939

(Figures 8, 9)

Material examined

1 ♀, NHMUK015626353, Diego Garcia, Plantation Gate, 7.412°S, 72.453°E, leaf litter, 03 July 2022, leg. W. Rabitsch; 1 ♂, NHMUK015619671, Diego Garcia, below Barton Point, 7.277°S, 72.469°E, leaf litter, 24 June 2022, leg. W. Rabitsch.

Summary description

Habitus. Body length 15 mm (♂), 31 mm (♀). Both with 49 leg-bearing segments. Bright yellow with cephalic shield, antennae and forcipular coxosternite dark red. No dark pigmentation of trunk.

***Cephalic plate and antennae* (Figure 8(A)).** Cephalic plate sub-rectangular, 1.8 times longer than wide. Setae only present in the posterior half of the buccae. Spiculum

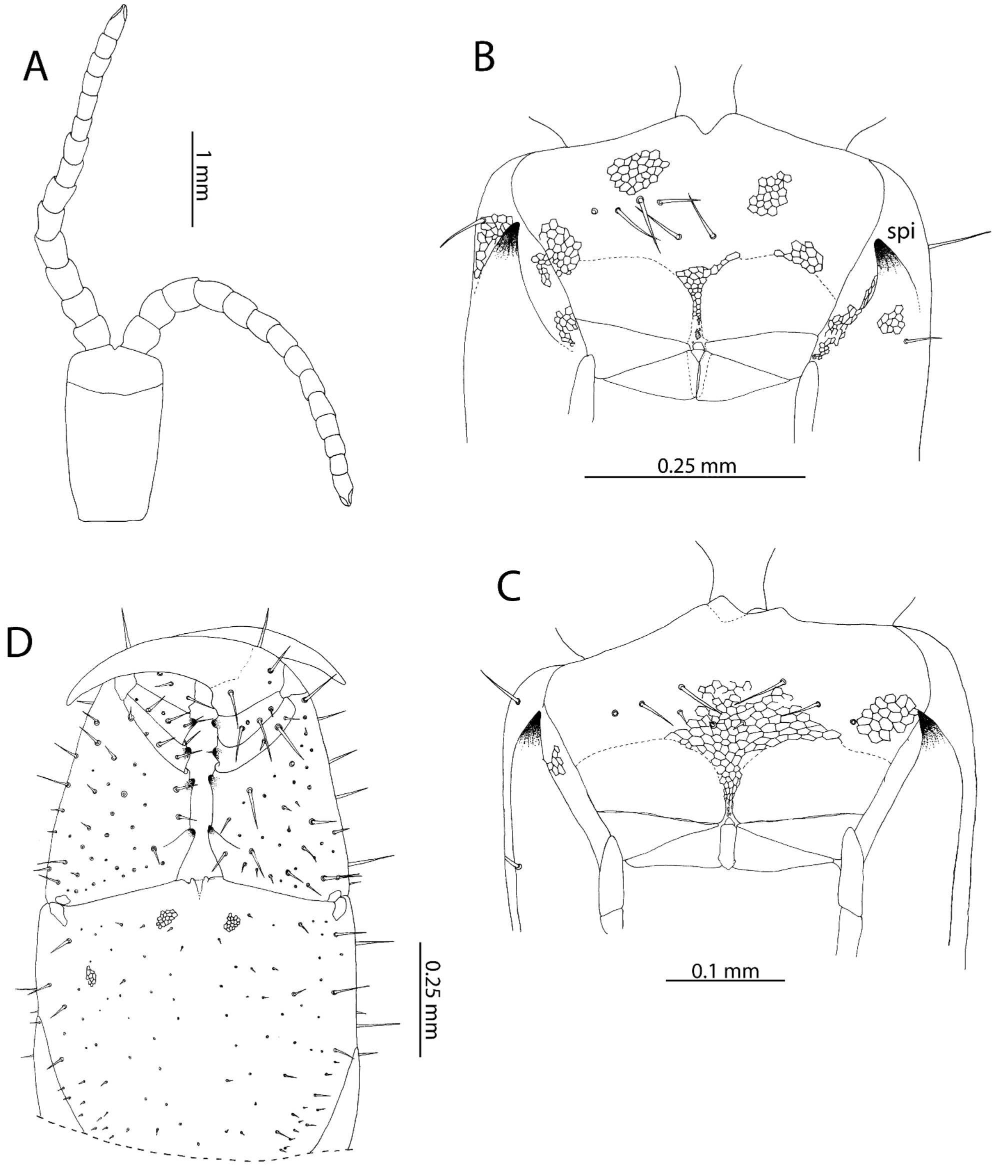

Figure 8. *Mecistocephalus lohmanderi* Verhoeff, 1939. NHMUK015626353, except (C) NHMUK015619671. (A) Cephalic plate and antennae, dorsal view. (B) Labrum and clypeus, ventral view, showing spiculum (spi). (C) Labrum and clypeus, ventral view. (D) Forcipular segment, ventral view.

evident, not reduced in size (Figure 8(B,C)). Antenna 4.3 times longer than width of cephalic plate.

***Clypeus and labrum* (Figure 8(B,C)).** Areolate part of the clypeus 1.3–1.5 times longer than the plagulae; armed with 3 + 3 postantennal and two medial setae. Finely areolate area or insulae absent. Labrum with wide medial part clearly separating the lateral parts. Internal margin of anterior ala longer than internal margin of posterior ala.

***Forcipular coxosternite* (Figure 8(D)).** Internal margin of trochanteroprefemur as long as basal width. Trochanteroprefemur armed with two sclerotised tubercles, the distal more prominent. Femoroid and tibia each armed with one sclerotised tubercle. Basal tubercle of tarsungulum reduced in size. Forcipular cerri absent.

***Trunk* (Figure 9(E)).** Anterior metasternites with poorly sclerotised mid-longitudinal sulcus. Anterior margins bifurcating at obtuse angle.

***Ultimate leg-bearing and postpedal segments* (Figure 9(A–D)).** Posterior margin of ultimate metatergite variably rounded or straight (Figure 9(B,C)). Ultimate metasternite sub-triangular to trapezoidal; 1.1 times wider than long. Posterior pillow-like process present (Figure 9(A)). Coxopleurae with ca. 15–20 coxal organs opening on the entire ventrolateral surface. Telopodal articles elongate, more densely setose on the ventral side in both the male and female. Gonopods fully developed, conspicuously articulated in male (Figure 9(D)).

COI barcode. GenBank accession number PQ165825.

Remarks. The geographically closest sampled localities to the Chagos Archipelago include the Maldives (Inguiradhoo). *Mecistocephalus* specimens in the NHM collection, labelled as *Mecistocephalus insularis* Lucas, 1863, collected during the 1899–1900 Maldive-Laccadive expedition (Gardiner 1901–06), show a great degree of morphological similarity to the *Mecistocephalus* present on Diego Garcia. Further examination of diagnostic characters revealed that these are consistent with *Mecistocephalus lohmanderi*, originally described from Mauritius (Verhoeff 1939), and recently revised based on material from the Seychelles and maintained as a valid species (Bonato and Minelli 2010).

Mecistocephalus insularis, a problematic and inadequately described taxon, has in past literature been used indiscriminately for *Mecistocephalus* specimens with 49 leg-bearing segments collected around the Indian Ocean. This species is in urgent need of revision to adequately assess the diversity of African and Southeast Asian members of the genus. In the absence of recently collected specimens from the type locality and a redescription of the type material, questions concerning the morphological variability of *Mecistocephalus* species as well as their potential for dispersal and introduction to new sites cannot be adequately addressed.

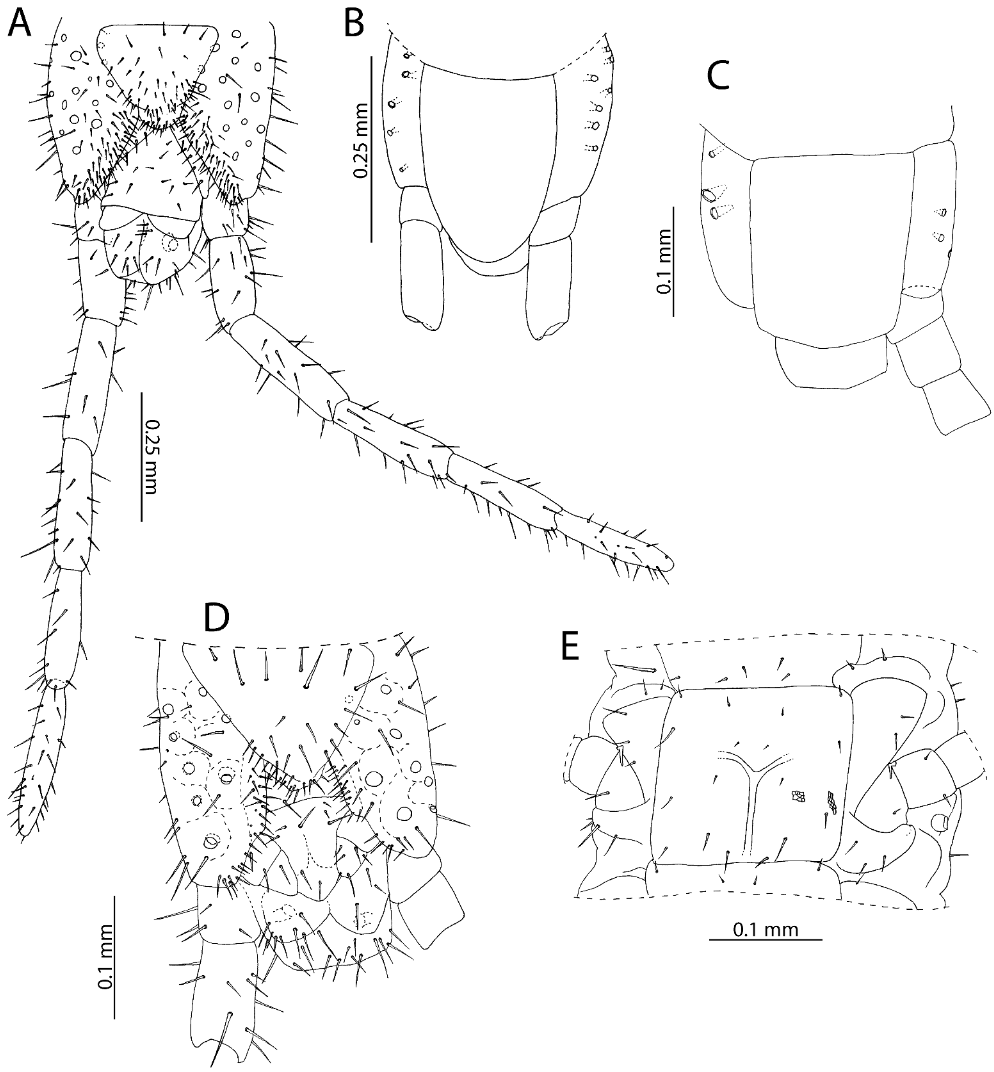

Figure 9. *Mecistocephalus lohmanderi* Verhoeff, 1939. (A–E) NHM UK015626353; (C,D) NHM UK015619671. (A) Female ultimate leg-bearing segment, ventral view. (B) Female ultimate leg bearing segment, dorsal view. (C) Male ultimate leg-bearing segment, dorsal view. (D) Male ultimate leg-bearing segment, ventral view. (E) Metasternite of segment 7, ventral view.

Family ORYIDAE

Nycternyssa Crabill, 1959

Nycternyssa dekania dekania (Verhoeff, 1938)

(Figure 10)

Material examined

1 ♀, 81 leg-bearing segments, NHMUK015619678, Chagos Archipelago, Diego Garcia Island, Minni Minni (beach), 14 May 1971, leg. A.M. Hutson.; 1 ♂, 73 leg-bearing segments,

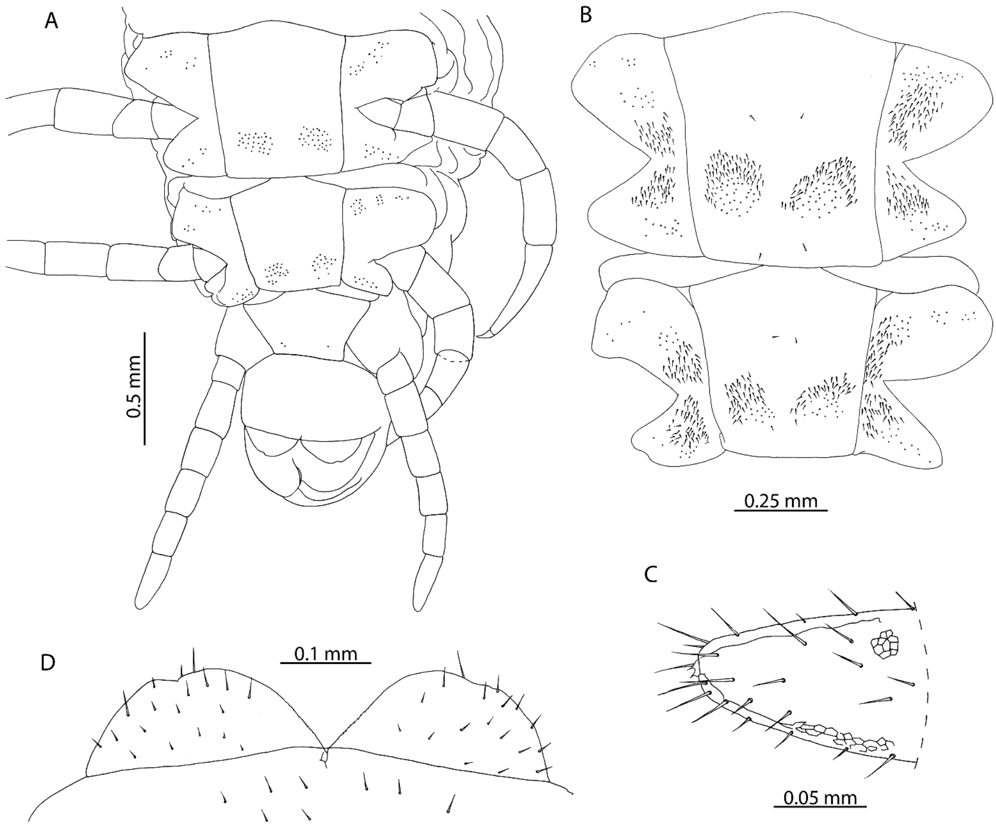

Figure 10. *Nycternyssa dekania dekania* (Verhoeff, 1938). (A–D) NHMUK015619678. (A) Penultimate and ultimate leg-bearing segments and postpedal segments, ventral view. (B) Sternites and coxae of penultimate and ultimate leg-bearing segments. (C) Ultimate leg tarsus. (D) Female gonopods.

NHMUK015619676, Chagos Archipelago, Diego Garcia Island, Eclipse Point, 04 April 1971, leg. A.M. Hutson; 1 ♂, 75 leg-bearing segments, NHMUK 1951.12.11.100, Maldives: Kenurus, Maldive-Laccadive Expedition 1899–1900.

Remarks

Assignment to *Nycternyssa* Crabill, 1959, rather than *Orphnaeus* Meinert, 1870, is based on the unipartite female gonopods (Figure 10(D)). The Chagos specimens are determined as *N. dekania*, originally described from a female from Trivandrum (Thiruvanathapum), Kerala, India, based on the posteriorly tapering, trapezoidal sternite of the ultimate leg-bearing segment (Figure 10(A)) and the medial contact between the female gonopods (Figure 10(A,C); Verhoeff 1942, fig. 9). They are more precisely the nominate subspecies, rather than *N. dekania singaporensis* (Verhoeff, 1937), based on sternal pore areas being limited to a posterior pair only on the penultimate leg-bearing segment (Figure 10(A,B)). Short setae clustered immediately anterior to the pore areas are observed in the Chagos specimens (Figure 10(B)) as well as the holotype from India (Verhoeff 1938, fig. 61), and are similarly developed in both sexes. Dense clusters of short setae are also observed adjacent to pore fields on the coxae (Figure 10(B)). Although the holotype female of *N. dekania*

dekania has 77 segments, 81 segments are recorded in a female of *N. dekania singaporensis*, such that the Chagos female is within the known range for the species. We assign a male from the Maldives with 75 leg-bearing segments to *N. dekania dekania* (collection data cited above), agreeing in all taxonomic characters shared by the Chagos specimens and the type. The subspecies is thus widespread in the Indian Ocean region, its range including at least south-western India, the Maldives and the Chagos Archipelago. It also occurs in the Aldabra atoll in the western Seychelles, for which a full description is in progress by the authors.

Phylogenetic results for *Lamyctes*

The pairwise distance between the COI sequences of *Lamyctes mauriesi* and *L. tristani* from Diego Garcia is 21.21% (Table 2). This is very similar to the distances between all other *Lamyctes* species. *Lamyctes tristani* exhibits 17.37–19.55% pairwise distance from *L. emarginatus*, 21.51–21.73% from introduced populations of *L. africanus* and 18.53% to a specimen from native South African forest, 21.81% from L. *coeculus*, and 18.72% from *L. hellyeri*. Similarly, *L. mauriesi* shows 21.99–23.06% distance from *L. emarginatus*, 21.92–22.19% from introduced populations of *L. africanus*, 20.61% from *L. coeculus*, and 22.47% from *L. hellyeri*. The COI data thus corroborate morphology in determining the two species of *Lamyctes* from the Chagos Archipelago as distinct from each other and from other congeners with sequences in GenBank.

The COI sequence of *Lamyctes tristani* exhibits 98.69% similarity to a specimen in the Barcode of Life Data System (boldsystems.org) assigned to *Lamyctes emarginatus* from Maharashtra, India. That specimen does not, however, show particularly close affinities to confidently determined specimens of *L. emarginatus* from other parts of its sampled geographic range, so it is very likely that the Indian specimen was misidentified. We are not able to retrieve additional voucher data associated with the deposited Indian sequence.

No sequence data are at hand for other populations of *Lamyctes mauriesi* or from the morphologically similar *L. albipes*. Our taxonomic referral of the Chagos specimens requires further testing with sequence data from populations in the relevant type localities in Guadeloupe (*L. mauriesi*) and Java (*L. albipes*) and other sampled occurrences of these nominal species (eg Canary Islands, Seychelles).

The results of phylogenetic analysis of the COI marker (Figure 11) reinforce the distinctness of the two Chagos species. *Lamyctes mauriesi* groups with *L. coeculus* in both Bayesian and ML trees, whereas *L. tristani* is an isolated lineage at the base of a clade that excludes *L. emarginatus* from most other *Lamyctes* species, although node support is insignificant. The intermixing of non-monophyletic *Henicops* and *Lamyctes* species in the trees is inferred to reflect the limitations of COI alone in estimating ancient divergences. Multilocus phylogenies recover *Lamyctes* and *Henicops* as monophyletic sister groups (Edgecombe and Giribet 2003b; Murienne *et al*. 2010).

Discussion

As suggested by early reviews of faunistic surveys (Stoddart 1971), the arthropod communities on Diego Garcia are likely richer than previously estimated. The comparatively

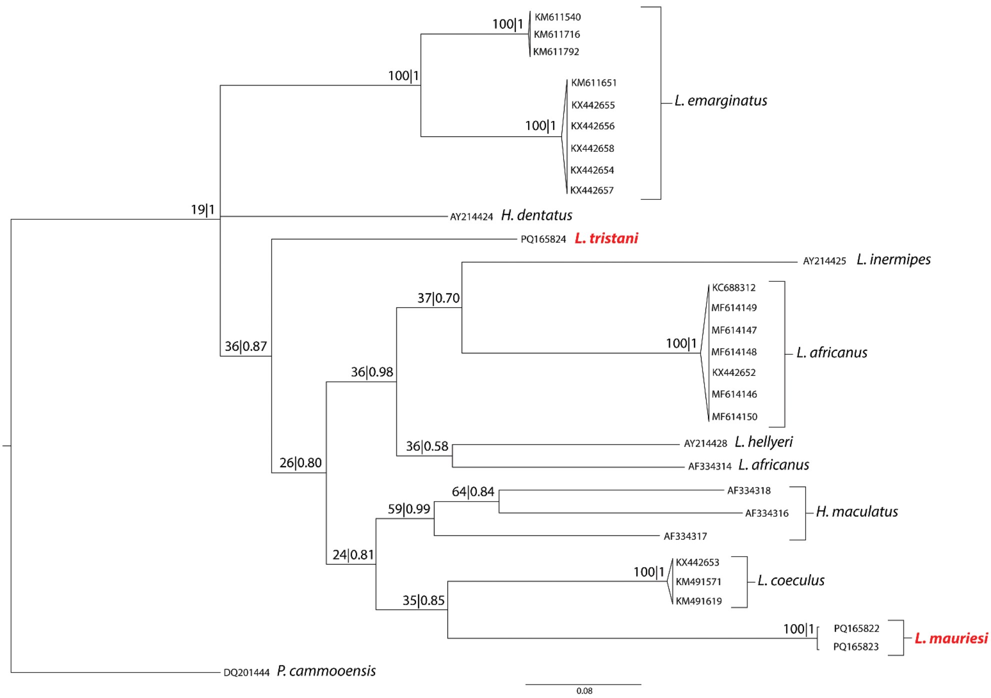

Figure 11. Phylogenetic relationships of the *Lamyctes-Henicops* group based on COI sequence data. Bootstrap support values (left) and posterior probabilities (right) indicated above each ingroup node. Tree figure based on maximum likelihood (ML) analysis.

higher diversity of centipedes on Diego Garcia is expected in light of its greater dry land mass and number of terrestrial habitat sites when compared to Eagle Island and Ile Sudest, the only other islands from which centipedes have been collected in the Chagos Archipelago. The recorded species further reinforce the observed link between the terrestrial arthropod biota of the Laccadive-Maldive-Chagos Ridge islands and that of Southern India. All centipede genera present in the Chagos Archipelago and two of the seven species have been previously reported from the Indian subcontinent or Sri Lanka.

Rhysida longipes, as remarked when first recorded from the Chagos, is a strong contender for anthropogenic introduction, with specimens often found in association with plant debris (Cole 2007) and encountered frequently around human settlements in other localities. However, *R. longipes* has been collected on Diego Garcia since 1899, and was present in collections made in 1971 and 2022, and on Eagle Island in 2006. The history of coconut palm cultivation on the Chagos Islands, as well as the introduction of other cultivated and non-cultivated plants (Whistler 1996), represents a potential channel for dispersal of surface-active *R. longipes* and lithobiomorph centipedes.

Of particular interest is the presence of a new species of *Australobius* from the Chagos Archipelago, easily distinguished from its other congeners by unique tarsal proportions of the ultimate leg pair. As literature records of *Australobius* from Southern India are sparse and the most recent was published more than 30 years ago, it is not presently possible to determine whether *A. chagosensis* is an endemic of the Chagos Archipelago or if it represents a relict population belonging to a more widespread species related to

Table 1. GenBank accession numbers, literature references and locality data for COI sequences used in phylogenetic analysis of *Lamyctes* spp.

Species	Sequence reference	GenBank accession number	Locality
Henicops dentatus	Edgecombe and Giribet (2003a)	AY214424	Australia
Henicops maculatus	Edgecombe and Giribet (2003a)	AF334316	Australia (New South Wales)
Henicops maculatus	Edgecombe and Giribet (2003a)	AF334317	Australia (Tasmania)
Henicops maculatus	Edgecombe and Giribet (2003a)	AF334318	New Zealand
Lamyctes sp.	Unpublished	KM611540	Canada (British Columbia)
Lamyctes africanus	Edgecombe and Giribet (2003a)	AF334314	South Africa
Lamyctes africanus	Enghoff *et al.* (2013)	KC688312	Denmark
Lamyctes africanus	Decker *et al.* (2017)	KX442652	Germany
Lamyctes africanus	Unpublished	MF614146	China (Tibetan plateau)
Lamyctes africanus	Qiao *et al.* (2019)	MF614147	China (Tibetan plateau)
Lamyctes africanus	Unpublished	MF614148	China (Tibetan plateau)
Lamyctes africanus	Qiao *et al.* (2019)	MF614149	China (Tibetan plateau)
Lamyctes africanus	Qiao *et al.* (2019)	MF614150	China (Tibetan plateau)
Lamyctes coeculus	Decker *et al.* (2017)	KM491571	Germany
Lamyctes coeculus	Decker *et al.* (2017)	KM491619	Germany
Lamyctes coeculus	Decker *et al.* (2017)	KX442653	Germany
Lamyctes emarginatus	Unpublished	KM611651	Canada (Alberta)
Lamyctes emarginatus	Unpublished	KM611716	Canada (British Columbia)
Lamyctes emarginatus	Unpublished	KM611792	Canada (Nova Scotia)
Lamyctes emarginatus	Decker *et al.* (2017)	KX442654	Germany
Lamyctes emarginatus	Decker *et al.* (2017)	KX442655	Germany
Lamyctes emarginatus	Decker *et al.* (2017)	KX442656	Germany
Lamyctes emarginatus	Decker *et al.* (2017)	KX442657	Germany
Lamyctes emarginatus	Decker *et al.* (2017)	KX442658	Germany
Lamyctes hellyeri	Edgecombe and Giribet (2003a)	AY214428	Australia (Tasmania)
Lamyctes inermipes	Edgecombe and Giribet (2003a)	AY214425	Argentina
Lamyctes mauriesi	This paper	PQ165822	Chagos Islands (Diego Garcia)
Lamyctes mauriesi	This paper	PQ165823	Chagos Islands (Diego Garcia)
Lamyctes tristani	This paper	PQ165824	Chagos Islands (Diego Garcia)
Paralamyctes cammooensis	Giribet and Edgecombe (2006)	DQ201444	Australia (Queensland)

A. sculpturatus and *A. palnis*. The absence of endemic species in the other centipede orders present in the Chagos Archipelago as well as the small land area and paucity of potential niches on Diego Garcia suggests it is unlikely that the range of *A. chagosensis* is restricted to the Chagos. Only additional sampling and review of the South and Southeast Asian members of the genus *Australobius* can clarify this matter.

Despite the extensive intraspecific variation recorded in other *Lamyctes* populations (Table 1) and observed in our present specimens, both molecular and morphological data support the presence of two species of *Lamyctes* in the Chagos Archipelago. The high dispersal capacity of *Lamyctes* is evidenced by its frequent association with synanthropic sites and the many records of *Lamyctes africanus, L. coeculus* and *L. emarginatus* outside of their inferred natural range (Enghoff *et al*. 2013). The present species share morphological similarities with *Lamyctes mauriesi* and *L. tristani*, respectively. Although both of these

Table 2. Pairwise distances for COI sequences of *Lamyctes*, *Henicops* and *Paralamyctes* species used in phylogenetic analyses.

Sequence	PQ165822	PQ165823	PQ165824	KM611540	KM611716	KM611792	KM611651	KX442654	KX442657	KX442655
PQ165822	–	0.0000000000	0.2121328285	0.2306022142	0.2306022142	0.2288171383	0.2228391211	0.2198748764	0.2198748764	0.2220393820
PQ165823		–	0.2121328285	0.2306022142	0.2306022142	0.2288171383	0.2228391211	0.2198748764	0.2198748764	0.2220393820
PQ165824			–	0.1754978923	0.1754978923	0.1737901985	0.1941531484	0.1934710498	0.1934710498	0.1955500549
KM611540				–	0.0000000000	0.0000000000	0.1048106118	0.1026270604	0.1026270604	0.1044619248
KM611716					–	0.0000000000	0.1048106118	0.1026270604	0.1026270604	0.1044619248
KM611792						–	0.1031408120	0.1009662357	0.1009662357	0.1027977395
KM611651							–	0.0015290532	0.0015290532	0.0000000000
KX442654								–	0.0000000000	0.0015243914
KX442657									–	0.0015243914
KX442655										–
KX442656										
KX442658										
AY214425										
AF334318										
AF334316										
KC688312										
MF614146										
MF614150										
MF614149										
MF614147										
MF614148										
AF334317										
KX442653										
KX442652										
KM491571										
KM491619										
AY214424										
AY214428										
DQ201444										

KX442656	KX442658	AY214425	AF334318	AF334316	KC688312	MF614146	MF614150	MF614149	MF614147
0.2220393820	0.2220393820	0.2559630534	0.2094944665	0.2223984085	0.2219422313	0.2213894914	0.2213894914	0.2192435653	0.2192435653
0.2220393820	0.2220393820	0.2559630534	0.2094944665	0.2223984085	0.2219422313	0.2213894914	0.2213894914	0.2192435653	0.2192435653
0.1955500549	0.1955500549	0.1953991524	0.1914006535	0.2043068406	0.2173352759	0.2172385959	0.2172385959	0.2150599432	0.2150599432
0.1044619248	0.1044619248	0.2202244920	0.2233918450	0.2045926319	0.2121824124	0.2036219847	0.2036219847	0.2015167185	0.2015167185
0.1044619248	0.1044619248	0.2202244920	0.2233918450	0.2045926319	0.2121824124	0.2036219847	0.2036219847	0.2015167185	0.2015167185
0.1027977395	0.1027977395	0.2184511346	0.2216372489	0.2028704563	0.2103784768	0.2018734491	0.2018734491	0.1997726057	0.1997726057

(*Continued*)

Table 2. (Continued).

KX442656	KX442658	AY214425	AF334318	AF334316	KC688312	MF614146	MF614150	MF614149	MF614147
0.0000000000	0.0000000000	0.2230172243	0.2356876529	0.2099351791	0.2043786966	0.1981808130	0.1981808130	0.1960887597	0.1960887597
0.0015243914	0.0015243914	0.2222160668	0.2326205025	0.2091907092	0.2014807453	0.1953991524	0.1953991524	0.1933244607	0.1933244607
0.0015243914	0.0015243914	0.2222160668	0.2326205025	0.2091907092	0.2014807453	0.1953991524	0.1953991524	0.1933244607	0.1933244607
0.0000000000	0.0000000000	0.2243947195	0.2348328954	0.2113093565	0.2036359210	0.1974824888	0.1974824888	0.1953991524	0.1953991524
–	0.0000000000	0.2243947195	0.2348328954	0.2113093565	0.2036359210	0.1974824888	0.1974824888	0.1953991524	0.1953991524
	–	0.2243947195	0.2348328954	0.2113093565	0.2036359210	0.1974824888	0.1974824888	0.1953991524	0.1953991524
		–	0.2129961911	0.1807209469	0.2030406260	0.1969479017	0.1969479017	0.1990710471	0.1990710471
			–	0.1625649670	0.2290910626	0.2260414602	0.2260414602	0.2260414602	0.2260414602
				–	0.1925890576	0.1907422687	0.1907422687	0.1887014496	0.1887014496
					–	0.0047095916	0.0047095916	0.0078691598	0.0078691598
						–	0.0000000000	0.0030534446	0.0030534446
							–	0.0030534446	0.0030534446
								–	0.0000000000
									–

MF614148	AF334317	KX442653	KX442652	KM491571	KM491619	AY214424	AY214428	DQ201444	AF334314
0.2192435653	0.2252540510	0.2060767595	0.2192435653	0.2060767595	0.2060767595	0.2049801580	0.224728729	0.2151193365	0.217762492
0.2192435653	0.2252540510	0.2060767595	0.2192435653	0.2060767595	0.2060767595	0.2049801580	0.224728729	0.2151193365	0.217762492
0.2150599432	0.1930472584	0.2180599864	0.2150599432	0.2180599864	0.2180599864	0.1789256071	0.187151543	0.2137588846	0.185374269
0.2015167185	0.2065578954	0.2210988614	0.2015167185	0.2253999632	0.2253999632	0.1917011309	0.211018871	0.2316102600	0.191051909
0.2015167185	0.2065578954	0.2210988614	0.2015167185	0.2253999632	0.2253999632	0.1917011309	0.211018871	0.2316102600	0.191051909
0.1997726057	0.2048352549	0.2193529035	0.1997726057	0.2236447753	0.2236447753	0.1899637453	0.209279619	0.2298047268	0.189267158
0.1960887597	0.1951756661	0.2113732423	0.1960887597	0.2134874103	0.2134874103	0.1960887597	0.211913631	0.2463128497	0.203549067
0.1933244607	0.1944931103	0.2106251940	0.1933244607	0.2127304603	0.2127304603	0.1933244607	0.209047152	0.2431161904	0.201379866
0.1933244607	0.1944931103	0.2106251940	0.1933244607	0.2127304603	0.2127304603	0.1933244607	0.209047152	0.2431161904	0.201379866
0.1953991524	0.1965465013	0.2127304603	0.1953991524	0.2148446283	0.2148446283	0.1953991524	0.211161321	0.2454045239	0.203549067
0.1953991524	0.1965465013	0.2127304603	0.1953991524	0.2148446283	0.2148446283	0.1953991524	0.211161321	0.2454045239	0.203549067
0.1953991524	0.1965465013	0.2127304603	0.1953991524	0.2148446283	0.2148446283	0.1953991524	0.211161321	0.2454045239	0.203549067
0.1990710471	0.2089091632	0.1966639580	0.1990710471	0.1946063419	0.1946063419	0.2172515359	0.195399152	0.2726400075	0.207344206
0.2260414602	0.1756277481	0.1906266160	0.2260414602	0.1926716086	0.1926716086	0.2052661115	0.202757761	0.2549634168	0.199087006
0.1887014496	0.1776479529	0.1911213336	0.1887014496	0.1911213336	0.1911213336	0.1951133771	0.191400654	0.2637725233	0.176564362
0.0078691598	0.1891282313	0.2206741934	0.0078691598	0.2184568948	0.2184568948	0.2006991566	0.193084028	0.2488983249	0.177414266
0.0030534446	0.1875688760	0.2139281684	0.0030534446	0.2117868375	0.2117868375	0.2049801580	0.189338795	0.2499467577	0.176217337
0.0030534446	0.1875688760	0.2139281684	0.0030534446	0.2117868375	0.2117868375	0.2049801580	0.189338795	0.2499467577	0.176217337
0.0000000000	0.1875688760	0.2160787093	0.0000000000	0.2139281684	0.2139281684	0.2049801580	0.187285404	0.2545129995	0.171988982
0.0000000000	0.1875688760	0.2160787093	0.0000000000	0.2139281684	0.2139281684	0.2049801580	0.187285404	0.2545129995	0.171988982
–	0.1875688760	0.2160787093	0.0000000000	0.2139281684	0.2139281684	0.2049801580	0.187285404	0.2545129995	0.171988982

(*Continued*)

Table 2. (Continued).

MF614148	AF334317	KX442653	KX442652	KM491571	KM491619	AY214424	AY214428	DQ201444	AF334314
	–	0.1439883304	0.1875688760	0.1458609918	0.1458609918	0.1919083638	0.194606342	0.2271756411	0.190248524
		–	0.2160787093	0.0030534446	0.0030534446	0.2085287549	0.190989642	0.2426212140	0.168417784
			–	0.2139281684	0.2139281684	0.2049801580	0.187285404	0.2545129995	0.171988982
				–	0.0000000000	0.2085287549	0.190989642	0.2448533605	0.166372791
					–	0.2085287549	0.190989642	0.2448533605	0.166372791
						–	0.167202383	0.1983813719	0.197203758
							–	0.2366745244	0.162606142
								–	0.244061124

species have been remarked as morphologically similar to *Lamyctes africanus* (Pocock 1893; Lawrence 1956; Eason and Enghoff 1992), molecular data presented here show no close affinities to previously sequenced *L. africanus* specimens. The origin of the two *Lamyctes* species present in the Chagos Islands is difficult to establish in the absence of a comprehensive generic revision of *Lamyctes* and of recent records from nearby localities. Nevertheless, morphological and molecular data point at two separate origins. *Lamyctes tristani* is otherwise a South Atlantic/Afro-Malagasy species, and this lineage is apparently represented in India based on the similarity in the Chagos and Indian COI data noted above. *Lamyctes mauriesi* is currently understood to be a widespread Pantropical species.

The presence of *M. angusticeps* and *M. lohmanderi* is surprising in light of the general dissimilarity between the arthropod assemblages of the Chagos Islands and Seychelles. Until redescription of the type material of *M. insularis*, it is not possible to revise the status of *Mecistocephalus* collected from other island and coastal localities around the Indian Ocean, as the assignment of previously collected specimens to *M. insularis* remains doubtful until relevant diagnostic characters are described for this species. Nevertheless, the new records presented here suggest a wider distribution for *M. angusticeps* and *M. lohmanderi* than previously thought. Morphological similarity to the material described for these two species from the Seychelles suggests that dispersal between the island groups of the Western Indian Ocean may account at least in part for the unexpected centipede diversity of the Chagos Archipelago despite its small land area and apparent isolation.

The origins of the centipede fauna of the Chagos Archipelago seem to draw from multiple potential dispersal routes or introductions. Similarity between the morphology of *R. longipes* and populations in Sri Lanka and the similarity between *A. chagosensis, A. palnis* and *A. sculpturatus*, as well as the discovery of *Nycternyssa dekania dekania*, suggest connections to the fauna of the southern Indian subcontinent. The two species of *Mecistocephalus* present in the Chagos Archipelago are instead most closely associated with populations from the Seychelles, Mauritius and the Eastern African coast. The two species of *Lamyctes* present again indicate multiple likely origins of the Chagossian fauna, reinforcing the biotic association between the Archipelago and eastern Africa/Madagascar as well as the Indian subcontinent. Further characterisation of the centipedes from other localities from the Western Indian Ocean is a promising direction of future research for better understanding the colonisation patterns of oceanic islands by soil arthropods.

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