

## New earthworm records from several Indian Ocean islands (Clitellata, Megadrili)

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**Abstract.** Elaboration of the earthworm material collected on the Seychelles, Mauritius, Réunion, Mayotte and Sri Lanka islands resulted in recording 20 species altogether. Among them, the ocnodrilid *Maheina braueri* (Michaelsen, 1897) endemic to Mahé (Seychelles) and the megascolecid *Nellogaster bahli* (Stephenson, 1925) endemic to Sri Lanka were reported for the first time since their original description. The material also contained some enigmatic juvenile specimens from Mayotte, most resembling the genus *Diporochaeta*.

**Keywords.** Oligochaeta, Ceylon, Seychelles, Mauritius, Reunion, Mayotte.

### INTRODUCTION

The Indian Ocean is the third largest ocean on the globe bordered by Africa, Asia, Australia and Antarctica (Fatima & Jamshed 2015). It has numerous small and several larger islands of different origin from continental (*e.g.* Madagascar, Seychelles) to true oceanic ones (*e.g.* Reunion, Mauritius) (Walker *et al.* 2005). Madagascar, with the other Indian Ocean Islands, represents one of the Earth's 35 biodiversity hotspots (Mittermeier *et al.* 2011). However, except Madagascar of which the earthworm fauna has recently been intensively studied (Csuzdi *et al.* 2012, 2016, 2017a, Hong *et al.* 2018, Razafindrakoto *et al.* 2010, 2011, 2017) earthworms of the other islands of this hotspot are almost unknown. Apart from some sporadic records (Michaelsen 1897a, 1907a) there are just a few comprehensive publications from the region including the summary of the earthworms in the Seychelles Islands by Gerlach (2011) and that of Mauritius by Ljungström (1971).

Gerlach (2011) listed 11 earthworm species from the families Eudrilidae, Megascolecidae, A-

canthodrilidae and Octochaetidae. Apart from the obviously erroneous placements of the megascolecid *Lampito mauritii* Kinberg, 1866 to Octochaetidae and the glossoscolecid (now rhinodrilid) *Pontoscolex corethrurus* (Müller, 1857) to Acanthodrilidae he also listed several strange lumbricid species (with 20–25, 25–33 and 10–15 setae per bundle (*sic!*)). The native *Maheina braueri* (Michaelsen, 1897) described from Mahé Island was listed in Acanthodrilidae but have not been re-collected during the collections conducted in the early 1970s and 2000s.

Ljungström's (1971) checklist of the earthworms of Mauritius lists ten species; all are well-known peregrine ones with *Amyntas* species prevailing (listed in the genus *Pheretima*).

Sri Lanka, with its some 65,000 km<sup>2</sup> territory represents the second largest island in the region after Madagascar. It is a continental island lying on the Indian Plate and, together with the Western Ghats represents an independent biodiversity hotspot in the Indian Ocean region (Katz 2000, Mittermeier *et al.* 2011). Due to the works of Michaelsen (1897b, 1903, 1907b, 1908, 1910) and Stephenson (1913, 1915, 1923, 1925) its earth-

worm fauna is quite well studied recording 63 earthworm species for the island including 48 endemics.

Here we provide new earthworm records collected in the early 2000's years in Mauritius, Mayotte, Reunion, Seychelles and Sri Lanka. A small collection by the USSR Zoological Expedition to Seychelles was also elaborated.

## MATERIAL AND METHODS

Earthworms were collected with the diluted formalin method (Raw 1959) supplemented by digging and searching under stones, barks of fallen logs and mosses. The specimens collected were killed in 75% ethanol, fixed in 4% formalin and after several days transferred into 75% ethanol. The gathered specimens are deposited in the earthworm collection of the Hungarian Natural History Museum (HNHM).

## TAXONOMY

### Family Acanthodrilidae Claus, 1880

#### *Dichogaster (Diplotheodrilus) annae* (Horst, 1893)

*Benhamia annae* Horst, 1893: 32.

*Dichogaster (Diplotheodrilus) annae*: Csuzdi 2010: 191. (for complete synonymy)

*Material examined.* HNHM/AF5171 5 ex., Mayotte, Grande Terre, along River Bandrani, S12°42'26" E45°05'36", 160 m, 07.10.2005, leg. T. Pavlíček. HNHM/AF5177 2 ex., Mayotte, Grande Terre, along Longoni River, S12°44' E45°10', 95 m, 05.10.2005, leg. T. Pavlíček. HNHM/AF5735 2 ex., Seychelles, Mahé, Copolia, the beginning of the road, under bark, 16.06.2000, leg. Cs. Csuzdi.

### Family Eudrilidae Calus, 1880

#### *Eudrilus eugeniae* (Kinberg, 1867)

*Lumbricus eugeniae* Kinberg, 1867: 98.

*Eudrilus eugeniae*: Blakemore 2008a: 452 (for complete synonymy).

*Material examined.* HNHM/AF5192 3 ex., Mayotte, Grande Terre, along the river above the Gîtes de Kwalé, S12°48'30" E45°09'40", 185 m, 06.10.2005, leg. T. Pavlíček.

### Family Lumbricidae Rafinesque-Schmaltz, 1815

#### *Aporrectodea caliginosa* (Savigny, 1826)

*Enterion caliginosum* Savigny, 1826: 180.

*Aporrectodea caliginosa*: Csuzdi & Zicsi 2003: 75 (for complete synonymy).

*Material examined.* HNHM/17515 2 ex., Réunion, Piton des Neiges, ca. 2000 m asl., 16.09.2002.

#### *Bimastos rubidus* (Savigny, 1826)

*Enterion rubidum* Savigny, 1826: 182.

*Bimastos rubidus*: Csuzdi *et al.* 2017b: 20.

*Material examined.* HNHM/17516 2 ex., Réunion, Piton des Neiges, ca. 2000 m asl., 16.09.2002.

### Family Megascolecidae Rosa, 1891

#### *Amyntas corticis* (Kinberg, 1867)

*Perichaeta corticis* Kinberg, 1867: 102.

*Amyntas corticis*: Blakemore 2008a: 272 (for complete synonymy).

*Material examined.* HNHM/AF5717 1 ex., Réunion, the bottom of the moss forest, ca. 1000 m, 22.06.2000, leg. Cs. Csuzdi. HNHM/AF5720 2 ex., Réunion, Forêt de Bébour, 1310 m, moss forest, 22.06.2000, leg. Cs. Csuzdi.

#### *Amyntas gracilis* (Kinberg, 1867)

*Nitocris gracilis* Kinberg, 1867: 102.

*Amyntas gracilis*: Blakemore 2008a: 284 (for complete synonymy).

*Material examined.* HNHM/AF5723 3 ex., Mauritius, Petrin, Brise Fer, forest reserve, behind the Gerald Durrell Endemic Wildlife Sanctuary, 625 m, S20°22'1" E57°26'5", 26.06.2000, leg. Cs. Csuzdi.

***Amyntas minimus* (Horst, 1893)**

*Perichaeta minima* Horst, 1893: 66.

*Amyntas minimus*: Blakemore 2008a: 302 (for complete synonymy).

*Material examined.* HNHM/AF5713 9 ex., Mauritius, Montagne Cocotte, moss forest, under moss, 750 m, S20°26'5" E57°28'3", 26.06.2000, leg. Cs. Csuzdi. HNHM/AF5721 1 ex., Mauritius, Petrin, Brise Fer, forest reserve, behind the Gerald Durrell Endemic Wildlife Sanctuary, 625 m, S20°22'1" E57°26'5", 26.06.2000, leg. Cs. Csuzdi. HNHM/AF5751 1 ex., Seychelles, Silhouette, 23.08.1984, USSR Zoological Expedition.

***Amyntas rodericensis* (Grube, 1879)**

*Perichaeta rodericensis* Grube, 1879: 554.

*Amyntas rodericensis*: Blakemore 2008a: 319 (for complete synonymy).

*Material examined.* HNHM/AF5169 1 ex., Mayotte, Grande Terre, along River Bandrani, S12°42'26" E45°05'36", 160 m, 07.10.2005, leg. T. Pavlíček. HNHM/AF5179 4 ex., Mayotte, Grande Terre, along Longoni River, S12°44' E45°10', 95 m, 05.10.2005, leg. T. Pavlíček. HNHM/AF5185 2 ex., Mayotte, Grande Terre, near Longoni, S12°43'43" E45°07'46", 35 m, around mangrove forest, 04.10.2005, leg. T. Pavlíček. HNHM/AF5712 1 ex., Mauritius, Montagne Cocotte, moss forest, under moss, 750 m, S20°26'5" E57°28'3", 26.06.2000, leg. Cs. Csuzdi. HNHM/AF5718 2 ex., HNHM/AF5716 1 ex., Réunion, the bottom of the moss forest, ca. 1000 m, 22.06.2000, leg. Cs. Csuzdi. HNHM/AF5722 3 ex., Mauritius, Petrin, Brise Fer, forest reserve, behind the Gerald Durrell Endemic Wildlife Sanctuary, 625 m, S20°22'1" E57°26'5", 26.06.2000, leg. Cs. Csuzdi. HNHM/AF5728 3 ex., Mauritius, Black River Peak, 600–700 m, 27.06.2000, leg. Cs. Csuzdi.

***Amyntas robustus* (Perrier, 1872)**

*Perichaeta robusta* Perrier, 1872: 112.

*Amyntas robustus*: Blakemore 2008a: 315 (for complete synonymy).

*Material examined.* HNHM/AF5711 3 ex., Mauritius, Montagne Cocotte, moss forest, under moss, 750 m, S20°26'5" E57°28'3", 26.06.2000, leg. Cs. Csuzdi. HNHM/AF5716 1 ex., Réunion, the bottom of the moss forest, ca. 1000 m, 22.06.2000, leg. Cs. Csuzdi. HNHM/AF5727 1 ex., Mauritius, Black River Peak, 600–700 m, 27.06.2000, leg. Cs. Csuzdi.

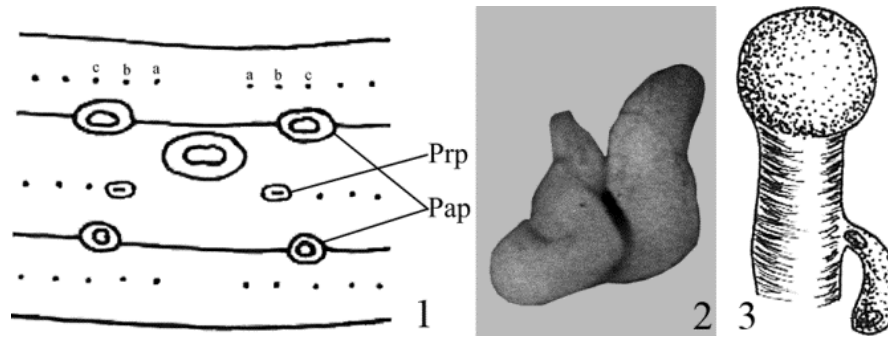
**?*Diporochaeta* sp.**

(Figures 1–3)

*Material examined.* HNHM/AF5172 4 ex., Mayotte, Grande Terre, along River Mro, NE of Dzoumonyé, S12°41'58" E45°05'22", 200 m, natural forest, 08.10.2005, leg. T. Pavlíček. HNHM/AF5193 1 ex., Mayotte, Grande Terre, along the river above the Gîtes de Kwalé, S12°48'30" E45°09'40", 185 m, 06.10.2005, leg. T. Pavlíček.

*Description. External characters.* All specimens juvenile. Length around 60 mm, diameter 2.5 mm. Colour alive unknown, conserved pale. Prostomium epilobic, dorsal pores lacking. Segments simple, setae perichaetin in irregular rows with ventral and dorsal interruption, aa = 1.5 zz. Setal number on segment III = 22, VI = 26, X = 22, XIII = 20, XVII = 16, XXVI = 14. Spermathecal pores paired small slits in the intersegmental furrows VII/VIII, VIII/IX in setal line *b*. Clitellum lacking. Female pores in XIV, pre-setal before setae *a*. One pair of combined male and prostatic pores on XVIII in setal line *b*. Paired genital markings on XVIII outside of the prostatic pores and in XVII/XVIII and XVIII/XIX in setal line *b*, furthermore a single midventral papilla in XVIII between the prostatic pores (Fig. 1).

*Internal characters.* No septa notably thickened. Muscular gizzard lacking. Dorsal vessel single throughout, the last pair of hearts in XIII. Excretory system holoic, avesculate. Calciferous glands lacking. Intestine begins in XVI, typhlosole lacking. Holandric. Two pairs of testes and iridescent male funnels in X, XI. Seminal vesicles two pairs in XI, XII. One pair of ovaries in XIII. One pair of small tubular prostates in XVIII,



Figures 1–3. *Diporochoera* sp. 1 = male field; 2 = prostate gland; 3 = spermatheca. *Prp* = prostatic pore, *Pap* = papillae.

slightly coiled and confined to its own segment (Fig. 2). Penial setae lacking. Two pairs of spermathecae in VIII and IX. Ampulla elongated sac-shaped, duct wide, *ca.* 1/3 as long as the ampoule. A small, unilocular, finger-shaped diverticulum joins to the ental part of the duct. (Fig. 3).

*Remarks.* We have several juvenile specimens from this interesting species. With its non-lumbricine setal arrangement, holoic avesculate excretory system and tubular prostates, these specimens seem to be most close to the Australian genus *Diporochoeta* Beddard, 1890. However, our specimens do not fit clearly to *Diporochoeta* because they lack muscular gizzard. To clear the position of this interesting species further clitellate material is needed.

***Lampito mauritii* Kinberg, 1867**

*Lampito mauritii* Kinberg, 1867: 103, Blakemore 2008a: 238 (for complete synonymy).

*Material examined.* HNHM/AF5748 3 ex., Sri Lanka, Colombo district, Dehiwala-Mount Lavinia, moist area, 09.03.2000, leg. S. Mahunka, L. Mahunka-Papp. HNHM/AF5749 1 ex., Amiran-tes, Poivre Atoll, coconut plantation, 05–09.08.1984, USSR Zoological Expedition.

***Megascolex insignis* Michaelsen, 1910**

*Megascolex insignis* Michaelsen, 1910: 78, Stephenson 1923: 250.

*Material examined.* HNHM/AF5737 7 ex., Sri Lanka, Kalutara district, Matugama, stream bank

near the city, 12.03.2000, S. Mahunka, L. Mahunka-Papp. HNHM/AF5741 2 ex., Sri Lanka, Kalutara district, Wadduwa, moist meadow near the city, 11.03.2000, leg. S. Mahunka, L. Mahunka-Papp. HNHM/AF5745 6 ex., Sri Lanka, Kalutara district, Moratuwa, near the shore of Bolgoda Lake, 10.03.2000, leg. S. Mahunka, L. Mahunka-Papp.

***Metaphire bahli* (Gates, 1945)**

*Pheretima bahli* Gates, 1945: 85.

*Metaphire bahli*: Blakemore 2008a: 338.

*Material examined.* HNHM/AF5740 2 ex., Sri Lanka, Kalutara district, Wadduwa, a moist meadow near the city, 11.03.2000, leg. S. Mahunka, L. Mahunka-Papp. HNHM/AF5743 1 ex., Sri Lanka, Kalutara district, Kalutara, bare, weedy area at the edge of the city, from cow droppings and soil, 06.03.2000, leg. S. Mahunka, L. Mahunka-Papp. HNHM/AF5746 1 ex., Sri Lanka, Colombo district, Dehiwala-Mount Lavinia, moist area, 09.03.2000, leg. S. Mahunka, L. Mahunka-Papp.

***Metaphire californica* (Kinberg, 1867)**

*Pheretima californica* Kinberg, 1867: 102.

*Metaphire californica*: Blakemore 2008a: 343 (for complete synonymy).

*Material examined.* HNHM/AF5719 1 ex., Réunion, the bottom of the moss forest, *ca.* 1000 m, 22.06.2000, leg. Cs. Csuzdi

***Nellogaster bahli* (Stephenson, 1925)**

*Woodwardiella bahli* Stephenson, 1925: 888.

*Nellogaster bahli*: Gates, 1938: 428, 1945: 75.

*Material examined.* HNHM/AF5739 2 ex., Sri Lanka, Kalutara, 08.03.2000, leg. S. Mahunka, L. Mahunka-Papp.

*Remarks.* Gates (1938) separated *Woodwardiella bahli* Stephenson, 1925, into a new genus *Nellogaster* due to its lumbricine setal arrangement and presence of open enteric megameronephridia in the postclitellar segments. Blakemore (2007) places this species into *Notoscolex* Fletcher, 1886 characterized by lumbricine setae and open exoc megameronephridia. Until a thorough revision of the Indian megascolecids is done we retain Gates' (1938) combination.

#### ***Pithemera bicincta* (Perrier, 1875)**

*Perichaeta bicincta* Perrier, 1875: 1044.

*Pithemera bicincta*: Blakemore 2008a: 419 (for complete synonymy).

*Material examined.* HNHM/AF5167 1 ex., Mayotte, Grande Terre, along River Bandrani, S12°42'26" E45°05'36", 160 m, 07.10.2005, leg. T. Pavlíček. HNHM/AF5173 1 ex., Mayotte, Grande Terre, along River Mro, NE of Dzoumonyé, S12°41'58" E45°05'22", 200 m, natural forest, 08.10.2005, leg. T. Pavlíček. HNHM/AF5181 6 ex., Mayotte, Grande Terre, along River Mro, NE of Dzoumonyé, S12°42'55" E45°06'06", 115 m, natural forest, 11.10.2005, leg. T. Pavlíček. HNHM/AF5184 2 ex., Mayotte, Grande Terre, near Longoni, S12°43'43" E45°07'46", 35 m, around mangrove forest, 04.10.2005, leg. T. Pavlíček. HNHM/AF5732 5 ex., Réunion, lowland rain forest, 24.06.2000, leg. Cs. Csuzdi.

#### ***Polypheretima elongata* (Perrier, 1872)**

*Perichaeta elongata* Perrier, 1872: 124.

*Polypheretima elongata*: Blakemore 2008a: 428 (for complete synonymy).

*Material examined.* HNHM/AF5160 2 ex., Mayotte, Grande Terre, along River Mroni Bé, N of Dapani, S15°57'57" E45°09'28", 40 m, 08.10.

2005, leg. T. Pavlíček. HNHM/AF5162 5 ex., AF5163 3 ex., Mayotte, Grande Terre, Tsimkoura, fruit plantation, S12°55'50" E45°07'25", 16.10.2005, leg. T. Pavlíček. HNHM/AF5164 1 ex., Mayotte, Grande Terre, Kwalé, S12°47'42" E45°09'57", 330 m, 20.10.2005, leg. T. Pavlíček. HNHM/AF5168 3 ex., Mayotte, Grande Terre, along River Bandrani, S12°42'26" E45°05'36", 160 m, 07.10.2005, leg. T. Pavlíček. HNHM/AF5174 2 ex., Mayotte, Grande Terre, along River Mro, NE of Dzoumonyé, S12°41'58" E45°05'22", 200 m, natural forest, 08.10.2005, leg. T. Pavlíček. HNHM/AF5178 3 ex., Mayotte, Grande Terre, along Longoni River, S12°44' E45°10', 95 m, 05.10.2005, leg. T. Pavlíček. HNHM/AF5180 6 ex., Mayotte, Grande Terre, Dembéni, CIRAD station, 12.10.2005, leg. T. Pavlíček. HNHM/AF5182 2 ex., AF5183 2 ex., Mayotte, Grande Terre, along River Mro, NE of Dzoumonyé, S12°42'55" E45°06'06", 115 m, natural forest, 11.10.2005, leg. T. Pavlíček. HNHM/AF5186 1 ex., Mayotte, Grande Terre, near Longoni, S12°43'43" E45°07'46", 35 m, around mangrove forest, 04.10.2005, leg. T. Pavlíček. HNHM/AF5189 5 ex., Mayotte, Grande Terre, along Longoni River, S12°44' E45°10', 40 m, 05.10.2005, leg. T. Pavlíček. HNHM/AF5191 1 ex., Mayotte, Grande Terre, along the river above the Gîtes de Kwalé, S12°48'30" E45°09'40", 185 m, 06.10.2005, leg. T. Pavlíček. HNHM/AF5715 2 ex., Mauritius, Yemen Grosse Roche, 270 m, grassy meadow, stream bank, 28.06.2000, leg. Cs. Csuzdi.

#### ***Polypheretima taprobanae* (Beddard, 1892)**

*Perichaeta taprobanae* Beddard, 1892: 163.

*Polypheretima taprobanae*: Blakemore 2008a: 435 (for complete synonymy).

*Material examined.* HNHM/AF5738 1 ex., Sri Lanka, Kalutara district, Matugama, stream bank near the city, 12.03.2000, S. Mahunka, L. Mahunka-Papp. HNHM/AF5752 1 ex., Seychelles, tropical mist forest, on a ridge, above La Passe, 540-590 m, 23.08.1984, USSR Zoological Expedition.

**Family Ocnerodrilidae Beddard, 1891**

***Maheina braueri* (Michaelsen, 1897)**

(Figures 4–6)

*Acanthodrilus braueri* Michaelsen, 1897a: 22.

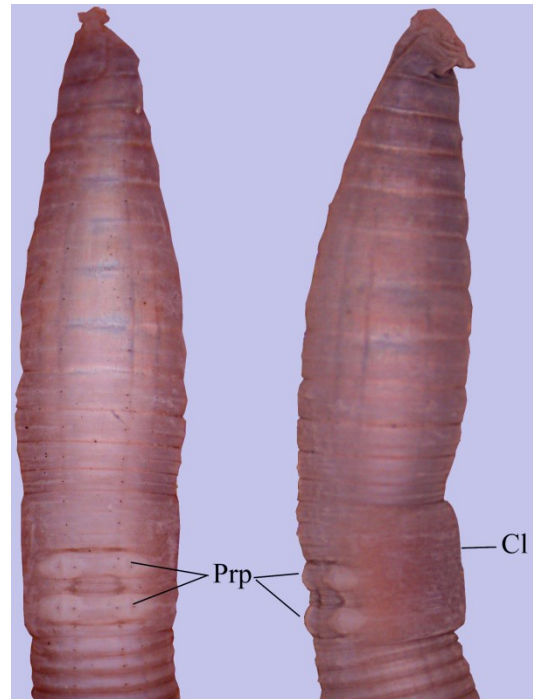
*Maheina braueri*: Michaelsen 1899: 237.

*Notiodrilus braueri*: Beddard, 1912: 78.

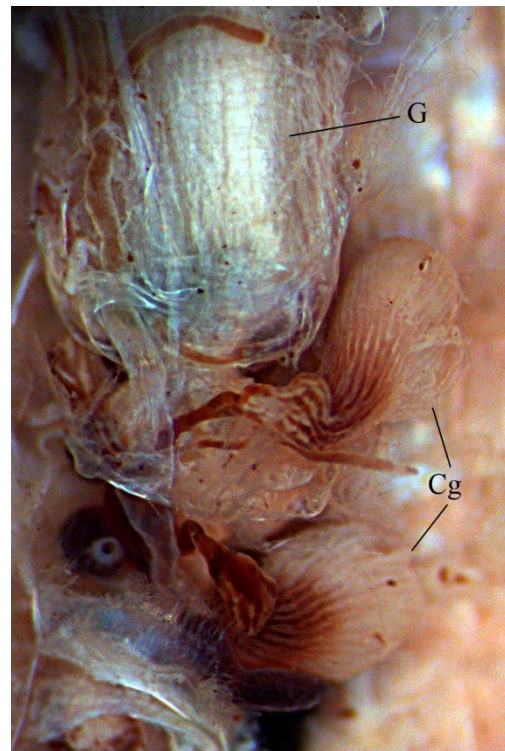
*Material examined.* HNHM/AF5710 1 clitellate adult (tail missing) 2 acitellate adult ex. and one juvenile ex., Seychelles, Mahé, Congo Rouge, moss forest, under fallen log, stones and moss, 19.06.2000, leg. Cs. Csuzdi.

*Description. External characters.* Length of the acitellate adult specimens 75–95 mm, diameter 3–3.5 mm, segment No. 215–253–192. Colour alive green, conserved reddish-grey. Prostomium epilobic, dorsal pores lacking. Segments simple, setae eight per segment in widely paired regular rows. Setal formula after clitellum  $aa:ab:bc:cd:dd = 4.5:1:3:2:5.5$ . Setae of XVII, XIX present, penial setae and genital setae lacking. Spermathecal pores paired, small slits in the intersegmental furrow VII/VIII, VIII/IX in setal line *b*. Clitellum saddle-shaped on XIV–XX. Female pores in XIV, presetal before setae *b*. Two pairs of prostatic pores on two pairs of glandular elevation in XVII, XIX just at the base of setae *b*, joined by curly braces-like seminal grooves, running in setal line *b*. Male pores minute, externally not visible on XVIII, within the seminal grooves. Genital marking are lacking (Fig. 4).

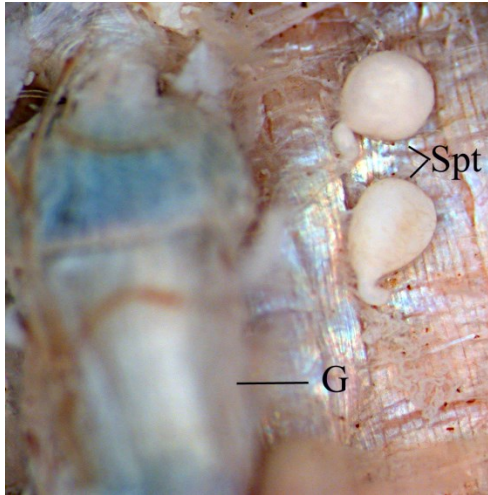
*Internal characters.* No septa notably thickened. One large oesophageal gizzard in VI. Dorsal vessel single throughout, the last pair of hearts in XI. Excretory system holoic, avesciculate. Two pairs of downward oriented, aubergine-shaped calciferous glands in IX, X (Fig. 5). Intestine begins in XIV, real typhlosole lacking, but a shallow bulging can be seen dorsally from segment XXIV. Metandric. One pair of testis and iridescent male funnel in XI. A single pair of seminal vesicles in XII. One pair of moderate-sized ovaries in XIII. Two pairs of small tubular prostates of similar size in XVII and XIX, slightly coiled and confined to their own segment. Penial



**Figure 4.** *Maheina braueri* (Michaelsen, 1897) ventral and ventro-lateral view. *Prp* = prostatic pores, *Cl* = clitellum.



**Figure 5.** *Maheina braueri* (Michaelsen, 1897) *G* = gizzard, *Cg* = calciferous glands.



**Figure 6.** *Maheina braueri* (Michaelsen, 1897) G = gizzard, Spt = spermathecae

setae lacking. Two pairs of spermathecae in VIII and IX. Ampoule spherical, duct slightly curved, almost as long as the ampoule. Diverticulum lacking. (Fig. 6).

*Remarks.* This is the first recollection of this interesting species described as *Acanthodrilus braueri* from Mahé (Seychelles). Later (Michaelsen 1899) relegated it into a new genus *Maheina* Michaelsen, 1899 of the subfamily Megascolecidae (Acanthodrilinae). After a thorough examination of the paired calciferous glands in X, XI of *Maheina* Michaelsen (1922) proposed its close relationship to the ocnodrilid *Curgia* Michaelsen, 1921 genus (now *Curgiona* Gates, 1941) possessing unpaired calciferous glands in the very same segments, and transferred *Maheina* to the subfamily Megascolecidae (Ocnodrilinae). However, recently, the Drilobase database (<http://taxo.drilobase.org>) lists it in the family Acanthodrilidae as well as Blakemore (2008b, 2013) and Gerlach (2011). According to the vascular system (last pair hearts in XI) and the paired ocnodrilid like calciferous glands in IX, X *Maheina* Michaelsen, 1899 belongs to Ocnodrilidae and seems to be related to the metandric Southern Indian ocnodrilid genera *Aphanascus* Stephenson, 1924 and *Curgiona* Gates, 1941p.

## Family Rhinodrilidae Benham, 1890

### *Pontoscolex corethrurus* (Müller, 1857)

*Lumbricus corethrurus* Müller, 1857: 113.

*Pontoscolex corethrurus*: Blakemore 2008a: 444. (for complete synonymy)

*Material examined.* HNHM/AF5161 5 ex., Mayotte, Grande Terre, near the road between Combani and Kahani, under a mango tree, S12°48'43" E45°07'35", 16.10.2005, leg. T. Pavlíček. HNHM/AF5165 5 ex., Mayotte, Grande Terre, Kwalé, S12°47'42" E45°09'57", 330 m, 20.10.2005, leg. T. Pavlíček. HNHM/AF5166 3 ex., Mayotte, Grande Terre, near road Combani-Kwalé, S12°46'59" E45°08'52", 280 m, 20.10.2005, leg. T. Pavlíček. HNHM/AF5170 7 ex., Mayotte, Grande Terre, along River Bandrani, S12°42'26" E45°05'36", 160 m, 07.10.2005, leg. T. Pavlíček. HNHM/AF5175 4 ex., Mayotte, Grande Terre, along River Mro, NE of Dzoumonyé, S12°41'58" E45°05'22", 200 m, natural forest, 08.10.2005, leg. T. Pavlíček. HNHM/AF5176 2 ex., Mayotte, Grande Terre, lower station of the monte-charge to Mlima Combani, forest reserve, S12°48'00" E45°09'14", 440 m, 14.10.2005, leg. T. Pavlíček. HNHM/AF5187 7 ex., Mayotte, Grande Terre, near Longoni, S12°43'43" E45°07'46", 35 m, around mangrove forest, 04.10.2005, leg. T. Pavlíček. HNHM/AF5188 1 ex., Mayotte, Grande Terre, along Longoni River, S12°44' E45°10', 40 m, 05.10.2005, leg. T. Pavlíček. HNHM/AF5190 5 ex., Mayotte, Grande Terre, along river above the Gîtes de Kwalé, S12°48'30" E45°09'40", 185 m, 06.10.2005, leg. T. Pavlíček. HNHM/AF5714 7 ex., Mauritius, Montagne Cocotte, moss forest, under moss, 750 m, S20°26'5" E57°28'3", 26.06.2000, leg. Cs. Csuzdi. HNHM/AF5724 4 ex., Mauritius, Petrin, Brise Fer, forest reserve, behind the Gerald Durrell Endemic Wildlife Sanctuary, 625 m, S20°22'1" E57°26'5", 26.06.2000, leg. Cs. Csuzdi. HNHM/AF5725 2 ex., Seychelles, Mahé, N side of Le Niol, along the road, under leaf litter, 16.06.2000, leg. Cs. Csuzdi. HNHM/AF5726 1 ex., Seychelles, Mahé, cloud forest, 500 m, under *Pterocarpus indicus*,

**Table 1.** Earthworm species found on the different Indian Ocean Islands

	Mayotte	Mauritius	Reunion	Seychelles	Sri Lanka
<b>Acanthodrilidae</b>					
<i>Dichogaster (Dt.) annae</i> (Horst, 1893)	+			+	
<b>Eudrilidae</b>					
<i>Eudrilus eugeniae</i> (Kinberg, 1867)	+				
<b>Lumbricidae</b>					
<i>Aporrectodea caliginosa</i> (Savigny, 1826)			+		
<i>Bimastos rubidus</i> (Savigny, 1826)			+		
<b>Megascolecidae</b>					
<i>Amyntas corticis</i> (Kinberg, 1867)			+		
<i>Amyntas gracilis</i> (Kinberg, 1867)		+			
<i>Amyntas minimus</i> (Horst, 1893)		+		+	
<i>Amyntas rodericensis</i> (Grube, 1879)	+	+	+		
<i>Amyntas robustus</i> (Perrier, 1872)		+	+		
? <i>Diporochaeta</i> sp.	+				
<i>Lampito mauritii</i> Kinberg, 1867					+
<i>Megascolex insignis</i> Michaelsen, 1910					+
<i>Metaphire bahli</i> (Gates, 1945)					+
<i>Metaphire californica</i> (Kinberg, 1867)			+		
<i>Nellogaster bahli</i> (Stephenson, 1925)					+
<i>Pithemera bicincta</i> (Perrier, 1875)	+		+		
<i>Polypheretima elongata</i> (Perrier, 1872)	+	+			
<i>Polypheretima taprobanae</i> (Beddard, 1892)				+	+
<b>Ocerodrilidae</b>					
<i>Maheina braueri</i> (Michaelsen, 1897)				+	
<b>Rhinodrilidae</b>					
<i>Pontoscolex corethrurus</i> (Müller, 1857)	+	+	+	+	+
	7	6	8	5	6

16.06.2000, leg. Cs. Csuzdi. HNHM/af5729 1 ex., Mauritius, Black River Peak, 600-700 m, 27.06.2000, leg. Cs. Csuzdi. HNHM/5730 1 ex., Seychelles, Mahé, N side of Le Niol, along a small stream, 350 m, 16.06.2000, leg. Cs. Csuzdi. HNHM/AF5731 1 ex., Réunion, lowland rain forest, 24.06.2000, leg. Cs. Csuzdi. HNHM/AF5736 9 ex., Sri Lanka, Kalutara district, Matugama, stream bank near the city, 12.03.2000, S. Mahunka, L. Mahunka-Papp. HNHM/5742 6 ex., Sri Lanka, Kalutara district, Wadduwa, moist meadow near the city, 11.03.2000, leg. S. Mahunka, L. Mahunka-Papp. HNHM/AF5744 2 ex., Sri Lanka, Kalutara district, Moratuwa, near the shore of Bolgoda Lake, 10.03.2000, leg. S. Mahunka, L. Mahunka-Papp. HNHM/AF5747 3 ex., Sri Lanka, Colombo district, Dehiwala-Mount Lavinia, moist area, 09.03.2000, leg. S. Mahunka, L. Mahunka-Papp. HNHM/AF5750 1 ex., Seychelles, Mahé, Morne Blanc, 350 m, secondary tropical rain forest, 01.08.1984, USSR Zoological Expedition. HNHM/AF5753 1 ex., Seychelles,

Silhouette, near La Passe, 22–25.08.1984, USSR Zoological Expedition.

## DISCUSSION

This small scale survey resulted in recording 20 earthworm species on the investigated five islands (Table 1). According to our expectation, the peregrine earthworms dominated on both oceanic and continental islands. The three endemic species found were present only in the continental islands (*Maheina braueri* in Seychelles and *Megascolex insignis*, *Nellogaster bahli* in Sri Lanka) in a contrast to the oceanic ones. Among the peregrine species the well-known pantropical pheretimoids were the most frequent (10 spp.). To our surprise, the only species occurring in all the investigated islands was the rhinodrilid *Pontoscolex corethrurus*. Amazingly, at higher elevations in Réunion two peregrine lumbricid species were also collected (*Aporrectodea caliginosa* and *Bimastos rubidus*).



The present survey resulted in recording the type species of the monotypic genera *Maheina* (*M. braueri*) and *Nellogaster* (*N. bahli*) for the first time since their original description and also an enigmatic ?*Diporochoaeta* species. The genus *Diporochoaeta* is mainly distributed in Australia and New Zealand (Jamieson 2000) with two doubted records in Southern India (Blakemore 2007). However, these two *Diporochoaeta* species (*D. montanus* (Gates, 1940) and *D. pellucida* (Bourne, 1894)) differs markedly from our specimens having strong gizzard in segment V and last pair of hearts in XII (in our specimens there is no gizzard and the last pair of hearts are in XIII).

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