

New records of earthworms from Guadeloupe with description of a new species (Oligochaeta: Glossoscolecidae, Acanthodrilidae, Megascolecidae and Eudrilidae)

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Abstract. A small earthworm material from Guadeloupe Islands (French West-Indies) was studied. Altogether 14 earthworm species were collected, 12 of which are common tropical peregrine. On the other hand, two seem to be endemic in the islands. One of these native species, *Eutrigaster (Graffia) muscipila* (James, 1996) is reported for the first time after the original description, the other, *Periscolex nevoi* sp. nov. is proved to be new to science.

Earthworms are low disperser animals and due to their intolerance of salt water they were thought to be lacking from real volcanic islands (Michaelsen, 1903; Omodeo, 1963; Sims 1980), such as the Lesser Antilles including Guadeloupe. This widely held view has been challenged by James (1996) who described a quite rich earthworm fauna from Guadeloupe including nine species new to science and recently by Csuzdi (2005) recording a highly endemic earthworm fauna on São Tomé Island (Gulf of Guinea). It seems that small scale over-water dispersal could not be excluded even in the case of earthworms. This possibility is further corroborated by the present material which, apart from numerous introduced peregrine worms, contains also a *Periscolex* Cognetti, 1905 species proved to be new to science.

TAXONOMY

Family Glossoscolecidae Michaelsen, 1900

Periscolex nevoi sp. nov.

(Figs. 1–3)

Material examined. **Holotype.** Hungarian Natural History Museum (HNHM) AF/5265, Guadeloupe, Mt. Caraïbes, rain forest. Leg. T. Pavlíček & P. Cardet, 23.09.2007. **Paratype.** HNHM AF/5371, 1 ex. Guadeloupe, Mt. Caraïbes,

Etymology. The new species is dedicated in honour of Prof. Dr. Eviatar Nevo, the renowned evolutionary biologist, to mark his eightieth birthday.

Diagnosis. Length: 42–43 mm, diameter: 2.5–3 mm, setae perichaetin cca. 30 per segment. Pigmentation greenish-brown on dorsum paler on ventrum. Clitellum on *xiv–xxii*, tubercles on *xviii–xxii*. Spermathecae drop-shaped, open in 6/7, 7/8, 8/9.

Description. **Holotype:** length 43 mm, diameter just after the clitellum 3 mm. Number of segments 175. **Paratype:** 42 mm long and 2.5 mm wide. Number of segments 202. Colour greenish-brown, intensive on dorsum and pale on ventrum. Head with a small proboscis, first two segments small, the others are of normal size. Setal arrangement perichaetin with about 30 setae per segment. Nephridiopores lateral cca. ½ circumference apart. Clitellum circular on segments *xiv–xxii*. Tubercula pubertatis on segments *xviii–xxii*. Male pore minute on the tubercles in intersegmental furrow 18/19, female pores paired on the posterior rim of segment *xiv*. Spermathecal pores three pairs in 6/7, 7/8, 8/9 just above the line of nephridiopores. Genital setae lacking, normal setae smooth, sigmoid with a small nodulus, cca. 310 µm long.

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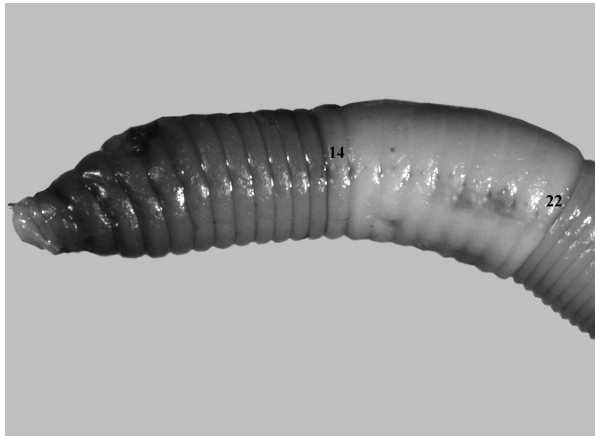


Figure 1. *Periscollex nevoi* sp. nov.

Internal characteristics: All septa membranous, muscular gizzard large in *vi*. Calciferous glands large with small ventral heads in segment *vii*. The structure of the glands simple with several small trabecules and a large central lumen (“Leistentaschen”). Intestine begins in 16/17, typhlosole large lamellar. Testes and funnels paired in segments *x–xi*, enclosed in oesophageal testis sacs. These sacs unite on both sides and continue in a pair of long seminal vesicles stretching back to segment *xxv–xxviii*. Three pairs of small drop-shaped spermathecae in segment 7–9.

Remarks. The new species resembles *Periscollex yuya* Righi & Römbke, 1987 by having perichaetin setae and three pairs of spermathecae, but differs from it in the position of the tubercles, in the shape of spermathecae and in lacking the hairy ornamentation of the normal setae.

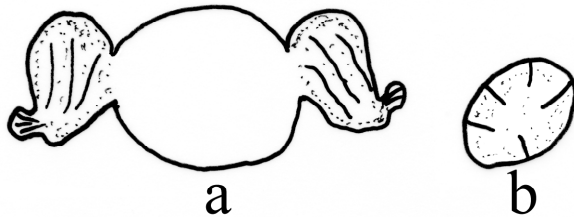


Figure 2. *Periscollex nevoi* sp. nov. a = calciferous glands in segment 7; b = cross section of a calciferous gland

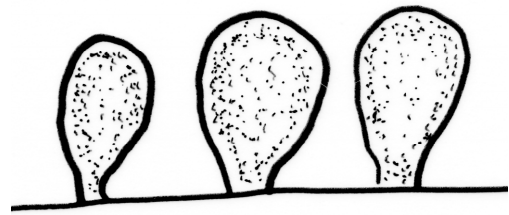


Figure 3. *Periscollex nevoi* sp. nov. Spermathecae

***Pontoscollex (Pontoscollex) corethrurus* (Müller, 1857)**

- Lumbricus corethrurus* Müller, 1857: 113.
- Urochaeta hystrix* Perrier, 1872: 142.
- Urochaeta dubia* Horst, 1885: 7.
- Urochaeta australiensis* Beddard, 1891: 278.
- Pontoscollex corethrurus*: Beddard 1892b: 127.
- Pontoscollex hawaiiensis* Beddard, 1895: 660.
- Pontoscollex corethrurus*: Michaelsen 1918: 234.
- Pontoscollex (Pontoscollex) corethrurus*: Righi 1984: 163.
- Pontoscollex corethrurus*: Blakemore 2002: 238. (for complete synonymy)

Material examined. HNHM AF/5285, 1 ex. Guadeloupe, Basse Terre, La Soufrière. Leg. T. Pavlíček & P. Cardet, 16.10.2007., HNHM AF/5264, 3 ex. Guadeloupe, Mt. Caraïbes, rain forest. Leg. T. Pavlíček & P. Cardet, 23.09.2007., HNHM AF/5271, 1 ex. Guadeloupe, Marie-Galante island, Grand-Bourg forest grazing area. Leg. T. Pavlíček & P. Cardet, 19.10.2007. HNHM AF/5277, 4 ex. Guadeloupe, Basse-Terre, Lézarde River, waterfall. Leg. T. Pavlíček & P. Cardet, 20.10.2007., HNHM AF/5280, 1 ex. Guadeloupe, Grande-Terre, Les Grands-Fonds, forest. Leg. T. Pavlíček & P. Cardet, 19.10.2007., HNHM AF/5283, 4 ex. Guadeloupe, Grande-Terre, near of Baillargent river. Leg. T. Pavlíček & P. Cardet, 17.10.2007., HNHM AF/5285, 3 ex. Guadeloupe, Grande-Terre, Les Grands-Fonds, forest. Leg. T. Pavlíček & P. Cardet, 19.10.2007., HNHM AF/5288, 1 ex. Guadeloupe, Basse-Terre, Lézarde River, waterfall. Leg. T. Pavlíček & P. Cardet, 20.10.2007., HNHM AF/5291, 2 ex. Guadeloupe, Basse-Terre, Grand Étang, forest. Leg. T. Pavlíček & P. Cardet, 15.10.2007., HNHM AF/5293, 2 ex. Guadeloupe, Basse-Terre, Vieux-Bourg, mangrove. Leg. T. Pavlíček & P. Cardet, 27.09.2007.

Remarks. This is the most widely distributed peregrine glossoscolecoid species. It occurred almost in every sample in the present material as well.

Acanthodrilidae Claus, 1880

Dichogaster (Diplothecondrilus) affinis (Michaelsen, 1890)

- Benhamia affinis* Michaelsen, 1890: 9.
Benhamia mexicana Rosa, 1891: 394.
Benhamia crassa Beddard, 1893: 681.
Benhamia floresiana Horst, 1893: 34.
Dichogaster affinis: Michaelsen 1900: 345.
Dichogaster sinuosa Stephenson, 1931c: 74.
Dichogaster sinica Chen, 1938: 420.
Dichogaster sinensis Chen, 1938: 421. (nomen nudum).
Dichogaster affinis: Csuzdi & Zicsi 1989: 135.
Dichogaster (Diplothecondrilus) affinis: Csuzdi 1995: 112.

Material examined. HNHM AF/5269, 1 ex. Guadeloupe, Marie-Galante island, Grand-Bourgh forest grazing area. Leg. T. Pavlíček & P. Cardet, 19.10.2007., HNHM AF/5281, 3 ex. Guadeloupe, Grande-Terre, Les Grands-Fonds, forest. Leg. T. Pavlíček & P. Cardet, 19.10.2007.

Remarks. This is a widely distributed peregrine species of East African origin. It occurs mainly in tropical and subtropical countries. Its northernmost field record is from the Dade County, Florida, USA (Csuzdi, 1997).

Dichogaster (Diplothecondrilus) annae (Horst, 1893)

- Benhamia annae* Horst, 1893: 32.
Benhamia parva Michaelsen, 1896: 31.
Benhamia travancorensis Fedarb, 1898: 433.
Dichogaster annae: Michaelsen 1900: 347.
Dichogaster curgensis Michaelsen, 1921: 54.
Dichogaster curgensis var. *unilocularis* Stephenson, 1931: 69.
Dichogaster cheranganiensis Černosvitov, 1938: 298.
Dichogaster silvestris cacaois Righi, 1968: 376.
Dichogaster servi Righi & Ayres, 1975: 311.
Dichogaster (Diplothecondrilus) annae: Csuzdi 1995a: 112.

Material examined. HNHM AF/5261, 1 ex. Guadeloupe, Mt. Caraïbes, in Bromeliads. Leg. T. Pavlíček & P. Cardet, 26.09.2007., HNHM AF/5276, 3 ex. Guadeloupe, Basse-Terre, Colas river. Leg. T. Pavlíček & P. Cardet, 14-30.09.2007.

Dichogaster (Diplothecondrilus) bolau (Michaelsen, 1891)

- Benhamia bolavi* Michaelsen, 1891: 9.
Benhamia malayana Horst, 1893: 35.
Benhamia octonephra Rosa, 1895: 137.
Benhamia palmicola Eisen, 1896: 132.
Benhamia rugosa Eisen, 1896: 136.

- Benhamia bolavi pacifica* Eisen, 1900: 209.
Dichogaster bolau: Michaelsen 1900: 340.
Dichogaster bolau decanephra Michaelsen, 1915: 191.
Benhamia lageniformis Friend, 1916: 262.
Dichogaster bolau malabaricus Stephenson, 1920: 257.
Dichogaster (Diplothecondrilus) bolau: Csuzdi 1995: 112.

Material examined. HNHM AF/5255, 1 ex. Guadeloupe, Marie-Galante island, Grand-Bourg forest. Leg. T. Pavlíček & P. Cardet, 30.09.2007., HNHM AF/5270, 1 ex. Guadeloupe, Marie-Galante island, Grand-Bourg forest grazing area. Leg. T. Pavlíček & P. Cardet, 19.10.2007., HNHM AF/5275, 3 ex. Guadeloupe, Basse-Terre, Colas river. Leg. T. Pavlíček & P. Cardet, 14-30.09.2007.

Remarks. This is the most frequent introduced peregrine *Dichogaster* species all over the tropics and subtropics. In Europe and possibly other temperate regions *D. (Dt.) bolau* occurs in greenhouses and even invades the sewer systems. This is the only known domicole earthworm species so far (Rota & Schmidt, 2006; Csuzdi *et al.*, 2008).

Eutrigaster (Graffia) muscipila (James, 1996)

Dichogaster muscipila James, 1996: 30.

Material examined. HNHM AF/5259, 6 ex. Guadeloupe, Basse-Terre, La Soufrière. Leg. T. Pavlíček & P. Cardet, 16.10.2007.

Remarks. Our specimens agree well with the description of James (1996), except for the dimensions of the penial setae which are the following: length 500 µm, diameter 9 µm.

Megascolecidae Rosa, 1891

Amyntas corticis (Kinberg, 1867)

- Perichaeta corticis* Kinberg, 1867: 102.
Megascolex diffringens Baird, 1869: 40.
Amyntas corticis (sic lapsus): Sims and Easton 1972: 234.
Amyntas corticis: Easton 1981: 49.
Amyntas corticis: Easton 1982: 726.
Amyntas corticis: Blakemore 2003: 6 (for complete synonymy).

Material examined. HNHM AF/5256, 4 ex. Guadeloupe, Basse-Terre, La Soufrière. Leg. T. Pavlíček & P. Cardet, 16.10.2007., HNHM AF/5292, 1 ex. Guadeloupe, Basse-Terre, Grand Étang, forest. Leg. T. Pavlíček & P. Cardet, 15.10.2007.

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

Perichaeta rodericensis Grube, 1879: 554.
Perichaeta dyeri Beddard, 1892a: 157.
Perichaeta sinensis Beddard, 1892a: 158.
Perichaeta trinitatis Beddard, 1896: 206.
Perichaeta monilicystis Michaelsen, 1892: 251.
Pheretima rodericensis: Michaelsen 1900: 299.
Amyntas rodericensis: Sims and Easton 1972: 235.
Amyntas rodericensis: Blakemore 2002: 186.

Material examined. HNHM AF/5254, 1 ex Guadeloupe, Marie-Galante island, Grand-Bourg forest. Leg. T. Pavlíček & P. Cardet, 30.09.2007., HNHM AF/5257, 1 ex. Guadeloupe, Basse-Terre, La Soufrière. Leg. T. Pavlíček & P. Cardet, 16.10.2007., HNHM AF/5260, 1 ex. Guadeloupe, Mt. Caraïbes, in Bromeliads. Leg. T. Pavlíček & P. Cardet, 26.09.2007., HNHM AF/5263, 6 ex. Guadeloupe, Mt. Caraïbes, rain forest. Leg. T. Pavlíček & P. Cardet, 23.09.2007., HNHM AF/5266, 4 ex. Guadeloupe, Basse-Terre, Colas river. Leg. T. Pavlíček & P. Cardet, 04.10.2007., HNHM AF/5264, 3 ex. Guadeloupe, Marie-Galante island, Grand-Bourg forest grazing area. Leg. T. Pavlíček & P. Cardet, 19.10.2007., HNHM AF/5273, 2 ex. Guadeloupe, Basse-Terre, Colas river. Leg. T. Pavlíček & P. Cardet, 14-30.09.2007., HNHM AF/5282, 2 ex. Guadeloupe, Grande-Terre, Les Grands-Fonds, forest. Leg. T. Pavlíček & P. Cardet, 19.10.2007., HNHM AF/5284, 3 ex. Guadeloupe, Grande-Terre, near of Baillargent river. Leg. T. Pavlíček & P. Cardet, 17.10.2007., HNHM AF/5294, 2 ex. Guadeloupe, Basse-Terre, Vieux-Bourg, mangrove. Leg. T. Pavlíček & P. Cardet, 27.09.2007.

***Metaphire houlleti* (Perrier, 1872)**

Perichaeta houlleti Perrier, 1872: 99.
Perichaeta campanulata Rosa, 1890: 115.
Perichaeta udekemi Michaelsen, 1892: 240.
Perichaeta guillelmi Michaelsen, 1895: 32.
Pheretima houlleti: Michaelsen 1900: 273.
Pheretima wimberleyana Stephenson, 1925: 62.
Pheretima houlleti tortuosa Gates, 1926: 454.
Metaphire houlleti: Sims & Easton 1972: 238.
Metaphire houlleti: Blakemore 2002: 201.

Material examined. HNHM AF/5274, 3 ex. Guadeloupe, Basse-Terre, Colas river. Leg. T. Pavlíček & P. Cardet, 14-30.09.2007., HNHM AF/5272, 1 ex. Guadeloupe, Marie-Galante island, Grand-Bourg forest grazing area. Leg. T. Pavlíček & P. Cardet, 19.10.2007.

***Perionyx excavatus* Perrier, 1872**

Perionyx excavatus Perrier, 1872: 126.
Perionyx gruenewaldi Michaelsen, 1891: 33.
Perionyx koboensis Stephenson, 1914: 391.
Perionyx fulvus Stephenson, 1916: 322.
Perionyx turaensis Stephenson, 1920: 216.

Perionyx excavatus: Gates 1972: 141.

Material examined. HNHM AF/5287, 1 ex. Guadeloupe, Grande-Terre, Les Grands-Fonds, forest. Leg. T. Pavlíček & P. Cardet, 19.10.2007.

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

Perichaeta bicincta Perrier, 1875: 1044.
Perichaeta bicincta: Michaelsen 1900: 419.
Perichaeta violacea Beddard, 1895: 407.
Pheretima bicincta: Gates 1972: 170.
Pithemera bicincta: Sims & Easton, 1972: 202.

Material examined. HNHM AF/5278, 1 ex. Guadeloupe, Basse-Terre, Lézarde river, waterfall. Leg. T. Pavlíček & P. Cardet, 20.10.2007., HNHM AF/5289, 3 ex. Guadeloupe, Basse-Terre, Lézarde river, waterfall. Leg. T. Pavlíček & P. Cardet, 20.10.2007.

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

Perichaeta elongata Perrier, 1872: 124.
Perichaeta biserialis Perrier, 1875: 1044.
Perichaeta acystis Beddard, 1895: 423.
Pheretima elongata: Michaelsen, 1900: 265.
Metapheretima elongata: Sims & Easton, 1972: 252.
Polypheretima elongata: Easton 1979: 53.

Material examined. HNHM AF/5253, 3 ex. Guadeloupe, Marie-Galante Island, Grand-Bourg forest. Leg. T. Pavlíček & P. Cardet, 30.09.2007., HNHM AF/5267, 1 ex. Guadeloupe, Marie-Galante island, Grand Bourgh forest grazing area. Leg. T. Pavlíček & P. Cardet, 19.10.2007., HNHM AF/5286, 1 ex. Guadeloupe, Grande-Terre, Les Grands-Fonds, forest. Leg. T. Pavlíček & P. Cardet, 19.10.2007.

***Pontodrilus litoralis* (Grube, 1855)**

Lumbricus litoralis Grube, 1855: 127.
Pontodrilus litoralis: Michaelsen 1900: 180.
Pontodrilus litoralis: Blakemore 2002: 129 (for complete synonymy)
Pontodrilus litoralis: Blakemore 2007: S4.

Material examined. HNHM AF/5262, 14 ex. Guadeloupe, Vieux-Bourg, mangrove. Leg. T. Pavlíček & P. Cardet, 29.09.2007.

Remarks. This species is widely distributed in the Mediterranean and on shorelines of the tropics. Its circummundane distribution has long been disputed, recently by Blakemore (2007), who favours a dual mechanism of distribution; overwater dispersal and human transportation.

Eudrilus eugeniae (Kinberg, 1867)

Lumbricus eugeniae Kinberg, 1867: 98.

Eudrilus decipiens Perrier, 1871: 1176.

Eudrilus lacazii Perrier, 1872: 75.

Eudrilus boyeri Beddard, 1886: 302.

Eudrilus sylvicola Beddard, 1887: 372.

Eudrilus julieni Horst, 1890: 225.

Eudrilus roseus Michaelsen, 1892: 224.

Eudrilus erudiens Ude, 1893: 71.

Eudrilus eugeniae: Michaelsen, 1900: 402.

Eudrilus eugeniae: Sims 1987: 386.

Material examined. HNHM AF/5273, 1 ex. Guadeloupe, Basse-Terre, Lézarde river, waterfall. Leg. T. Pavlíček & P. Cardet, 20.10.2007., HNHM AF/5290, 6 ex. Guadeloupe, Basse-Terre, Lézarde river, waterfall. Leg. T. Pavlíček & P. Cardet, 20.10.2007.

Remarks. The presence of this African peregrine worm in Guadeloupe is not surprising. It has been introduced overall in the tropics for vermicomposting as "African nightcrawler".

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