

REVIEW OF THE PALEOTROPICAL
NEOGASTRINI EARTHWORMS
(OLIGOCHAETA, ACANTHODRILIDAE: BENHAMIINAE)
WITH DESCRIPTION OF TWO NEW GENERA

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The earthworm tribus Neogastrini is reviewed. On the basis of the calciferous glands' opening the two African *Pickfordia* (*Omodeoscolex*) species are separated in a new genus *Afrogaster* gen. nov. From the collection of the Natural History Museum, London a new Neogastrini species representing a new genus *Pickfordiella eudrilina* gen. et sp. n. is described. A key to the Paleotropical Neogastrini species is given.

Keywords: earthworms, Neogastrini, Africa, S America, *Afrogaster* gen. n. *Pickfordiella* gen. n.

INTRODUCTION

The tribe Neogastrini was established by CSUZDI (1996) to accommodate four closely related Benhamiinae genera characterized by their small size and paired calciferous diverticula in segments 14–15. The first genus of this group *Wegeneriella* was described by MICHAELSEN (1933) with type species *Notiodrilus valdiviae* MICHAELSEN, 1903 from Cameroon and also included the newly described *Wegeneriella beauforti* MICHAELSEN, 1933 from Suriname. The genus was characterized by the paired calciferous diverticula in segments 14–15, the unpaired ventralmedian spermathecae, and muscular gizzard occupying segment 6. Due to the somewhat macerated specimens MICHAELSEN (1933) was not able to recognize the structure of the excretory system in the type species, however, he found it meroic at *W. beauforti*.

Later ČERNOSVITOV (1934) described a new genus, *Neogaster* ČERNOSVITOV, 1934 with type species *Neogaster americanus* ČERNOSVITOV, 1934. This new genus differed from *Wegeneriella* by the paired nature of its spermathecal apparatus. The excretory system similarly to *W. beauforti* was meroic. PICKFORD (1937) revealed that the excretory system of the type species of *Wegeneriella* is holoic, but it proved to be meroic in case of the South American *W. beauforti*. Therefore she moved *valdiviae* into *Eodrilus* and *beauforti* into *Howascolex*. ČERNOSVITOV (1939) accepted placing *Notiodrilus valdiviae* MICHAELSEN, 1902 to *Eodrilus* but he did not agree with moving the South American meroic species to

Howascolex and proposed a new genus *Wegeneriona* ČERNOSVITOV 1939 to accommodate them.

Subsequently OMODEO (1955) resurrected the genus *Wegeneriella* for the African holoic species and placed *Wegeneriona* into *Wegeneriella* as a subgenus. He described two *Neogaster* species from Africa and moved the South American holoic species *Notiodrilus divergens* COGNETTI, 1905 to *Neogaster*, as well. Thus the genus *Neogaster* became inhomogeneous regarding its excretory system, containing two African and one South American holoic species and a South American meroic one, the type of the genus. It was also OMODEO (1958) who described the genus *Pickfordia* OMODEO, 1958 from Africa which differed from *Neogaster* by the presence of paired spermathecal diverticula.

RIGHI and CABALLERO (1970) suggested that it would better to place the holoic *Neogaster* species in *Pickfordia* or to establish a new genus for them because they differ from the type species of *Neogaster* not only by the holoic nephridial system but in lacking of well developed muscular gizzard, as well.

JAMIESON (1974) revised the species *Notiodrilus divergens* COGNETTI, 1905 and modified the diagnosis of the genus *Wegeneriella* to accommodate all the species which were classified in *Neogaster* by OMODEO (1955) [*N. divergens* (COGNETTI, 1905); *N. cisatlantica* OMODEO, 1955; *N. africana* OMODEO, 1955]. Although the genus *Neogaster* defined this way was homogenous regarding its nephridial system it became heterogeneous containing species with paired and also with unpaired spermathecal apparatus. Unfortunately JAMIESON (1974) did not discuss the position of the two meroic *Neogaster* species (*N. americanus* ČERNOSVITOV, 1934 and *N. gavrilovi* RIGHI et CABALLERO, 1970).

After the revision of JAMIESON (1974) two holoic species with paired spermathecae were described from South America (*Wegeneriella tocaya* RIGHI, AYRES et BITTENCOURT, 1978; *Wegeneriella divergens itapecu* RIGHI, AYRES et BITTENCOURT, 1978) and an other with unpaired spermathecal apparatus from Africa (*Wegeneriella congica* ZICSI et CSUZDI, 1989). Furthermore a South American meroic species with unpaired spermathecae (*Wegeneriona belenensis* RIGHI 1988) and two other with paired spermathecal apparatus (*Neogaster aidae* RIGHI, 1975 and *Neogaster angeloi* RIGHI, 1988) were also established.

CSUZDI (1993) recognizing the chaotic situation of these genera revised the group and modified the genus diagnoses to form homogenous groups regarding the nephridial apparatus and also the spermathecae. After this revision only the newly proposed subgenus *Pickfordia* (*Omodeoscolex*) CSUZDI, 1993 remained heterogeneous at least in zoogeographical sense accommodating species from both Africa and South America. Later all of these genera were united in the tribus Neogastrini (CSUZDI 1996).

This subdivision was later supported by OMODEO (2000) as well, using the tribus name Neogastracea, however this contradicts the rule of ICZN Article 29.2 stating that the suffix of a tribe name is -ini. On the contrary, BLAKEMORE (2005) hold the position that only the holoic genera should remain in Acanthodrilidae, the meroic genera should be placed in Octochaetidae because they represent advanced grades which "...are often parts of a partially revealed continuum that we classify somewhat arbitrarily into phylogenetic groups on best available information...". However, placing all meroic forms possessing acanthodriline male apparatus in Octochaetidae would result in a polyphyletic "catch-all" family which is unsupported here.

In OMODEO (2000) another modification was introduced in the taxonomy of the group, relegating the species of subgenus *Pickfordia* (*Omodeoscolex*) to *Wegeneriella*. As a consequence the genus *Wegeneriella* became heterogeneous again in terms of muscular gizzard and spermathecae. Nevertheless the subgenus *Pickfordia* (*Omodeoscolex*) is heterogeneous consisting of biogeographically two well separated groups differing also by the oesophageal opening of the calciferous glands. Therefore the subgenus *Omodeoscolex* should be elevated to genus rank and the African species should be separated in an independent genus *Afrogaster* gen. n.

During a visit to The Natural History Museum, London in the spring of 1994, the author revised the material of the subfamily Benhamiinae. In addition to different Benhamiini species (CSUZDI 1997, 2000) a peculiar new Neogastrini species also was found. This species represents a new genus *Pickfordiella* gen. n. and is herewith described.

NEOGASTRINI CSUZDI, 1996

Neogastrini CSUZDI, 1996: 363, CSUZDI 2000: 76.
Neogastracea OMODEO 2000: 188.

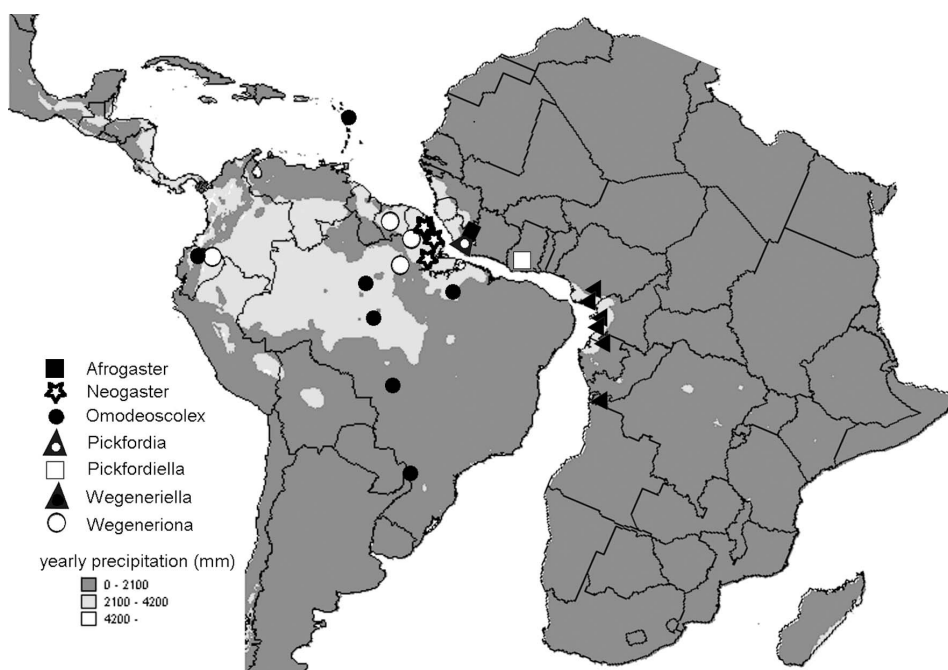
Diagnosis. Setae closely paired all ventral. Male apparatus acanthodriline, sometimes with microscolecine or balantine reduction. Excretory system holoic or meroic with caudal stomate exoic megameronephridia. Two pairs of stalked extramural calciferous glands present in segments 14–15. A single muscular gizzard in segment 6 sometimes vestigial or lacking.

Type genus – *Neogaster* ČERNOSVITOV, 1934.

Distribution – Africa, South America (Fig. 1)

Table 1. Distinguishing characters of the Neogastrini genera.

Genus	Distribution	Nephridia	Gizzard	Calciferous glands	Spermathecae
<i>Afrogaster</i> gen. n.	Africa	holoic	absent	common duct	paired, diverticulum lacking
<i>Neogaster</i> ČERNOSVITOV, 1934	S America	meroic	present	common duct	paired, diverticulum lacking
<i>Omodeoscolex</i> CSUZDI, 1993 stat. n.	S America	holoic	absent	separate	paired, diverticulum lacking
<i>Pickfordia</i> OMODEO, 1958	Africa	holoic	absent	separate	paired, diverticulum present
<i>Pickfordiella</i> gen. n.	Africa	holoic	present	common duct	paired, diverticulum present
<i>Wegeneriella</i> MICHAELSEN, 1933	Africa	holoic	present	common duct	unpaired, diverticulum lacking
<i>Wegeneriona</i> ČERNOSVITOV, 1939	S America	meroic	present	common duct	unpaired, diverticulum lacking

**Fig. 1.** Distribution of the Neogastrini genera

KEY TO THE AFRICAN SPECIES
OF THE TRIBUS NEOGASTRINI CSUZDI, 1996

- | | | |
|----|---|--|
| 1 | Spermathecal apparatus paired | 2 |
| – | Spermathecal apparatus unpaired | 8 |
| 2 | Well developed muscular gizzard in 6 | |
| | Pickfordiella eudrilina gen. et sp. n. | |
| – | Muscular gizzard vestigial or lacking | 3 |
| 3 | Spermathecae without diverticula | 4 |
| – | Spermathecae with diverticula | 5 |
| 4 | Three pairs of spermathecae in 6/7–8/9 | |
| | <i>Afrogaster africana</i> (OMODEO, 1955) | |
| – | Two pairs of spermathecae in 8/9–9/10 | |
| | <i>Afrogaster cisatlantica</i> (OMODEO, 1958) | |
| 5 | One pair of spermathecae in 7/8 | <i>Pickfordia ditheca</i> OMODEO, 1958 |
| – | Two–four pairs of spermathecae | 6 |
| 6 | Four pairs of spermathecae in 5/6–8/9 | |
| | <i>Pickfordia pseudoplanaria</i> OMODEO, 1958 | |
| – | Two pairs of spermathecae in 7/8–8/9 | 7 |
| 7 | Single pair of prostates in 19 | <i>Pickfordia hemibalantina</i> OMODEO, 1958 |
| – | Three pairs of prostates in 17, 18, 19 | |
| | <i>Pickfordia magnisetosa</i> OMODEO, 1958 | |
| 8 | Single pair of prostates in 17 | |
| | <i>Wegeneriella congica</i> ZICSI et CSUZDI, 1989 | |
| – | Two pairs of prostates in 17, 19 | 9 |
| 9 | Single spermatheca in 5/6 | <i>Wegeneriella monotheca</i> OMODEO, 1955 |
| – | Two or four spermathecae | 10 |
| 10 | Four spermathecae in 5/6–8/9 | |
| | <i>Wegeneriella valdiviae</i> (MICHAELSEN, 1903) | |
| – | Two spermathecae in 7/8–8/9 | Wegeneriella birangi sp. n. |

Afrogaster gen. n.

Neogaster: OMODEO 1955: 8 (part.), OMODEO 1958: 23 (part.)

Wegeneriella: JAMIESON 1974: 73 (part.), OMODEO 2000: 188 (part.)

Pickfordia (Omodeoscolex): CSUZDI 1993: 67 (part.), CSUZDI 1995: 117 (part.), CSUZDI 1996: 363 (part.)

Diagnosis. Setae closely paired all ventral. Female pores on 14, paired or single. Male apparatus acanthodriline. Muscular gizzards lacking. Two pairs of calciferous glands in 14–15 open in the oesophagus through a common duct. Spermathecal apparatus paired, diverticulum lacking. Excretory system holoic.

Type species – *Neogaster africana* OMODEO, 1955.

Distribution – West Africa.

Remarks. *Afrogaster* gen. n. is close to the South American *Omodeoscolex*, however differs from it in the common orifice of the two calciferous glands. It is close also to the African *Wegeneriella* but easy to distinguish by its paired spermathecal apparatus.

Afrogaster africana (OMODEO, 1955)

Neogaster africana OMODEO, 1955: 8, OMODEO 1958: 24.

Wegeneriella africana: JAMIESON 1974: 74, OMODEO 2000: 194.

Pickfordia (Omodeoscolex) africana: CSUZDI 1993: 67, CSUZDI 1995: 117, CSUZDI 1996: 362.

Diagnosis. Length: 14.5 mm, Diameter: 0.6 mm. No. segments: 80. Colour pale. Head epilobous, first dorsal pore 5/6. Spermathecal pores 6/7–8/9 a. Clitellum circular on 13–20. ♀ 14? ♂ 18. Genital field oblong, prostatic pores 17, 19.

All septa membranous. Muscular gizzard lacking. Calciferous glands 14–15, open through a common duct in 14. Last pair of hearts 12. Typhlosole vestigial. Excretory system holoic.

Testes 10, 11 free. Vesicles lacking. Prostates 17, 19 small. Penial setae dimorph. Larger seta *L.* 0.5 mm, *D.* 0.003 mm, tip spoon-shaped, ornamentation small teeth. Smaller seta *L.* 0.4 mm, *D.* 0.004 mm, tip spoon-shaped, ornamentation small teeth. Spermathecae sac-shaped duct short hardly detached from the ampoule, diverticulum lacking.

Distribution – Guinea.

Afrogaster cisatlantica (OMODEO, 1955)

Neogaster cisatlantica OMODEO, 1955: 12, OMODEO 1958: 25.

Wegeneriella cisatlantica: JAMIESON 1974: 74, OMODEO 2000: 194.

Pickfordia (Omodeoscolex) cisatlantica: CSUZDI 1993: 67, CSUZDI 1995: 117, CSUZDI 1996: 362.

Diagnosis. *L.* 14 mm, *D.* 1 mm. *No.* segments 69. Colour pale. Head epilobous, first dorsal pore 6/7. Spermathecal pores 8/9–9/10 *b.* Clitellum circular on 13–19. ♀ 14, single ventralmedian. ♂ 18. Genital field oblong, prostatic pores 17, 19.

All septa membranous. Muscular gizzard lacking. Calciferous glands 14–15, open through a common duct in 14. Last pair of hearts 12. Typhlosole vestigial. Excretory system holoic.

Testes 10, 11 free. Vesicles lacking. Prostates 17, 19 small. Penial setae uniform, *L.* 0.38–0.4 mm, *D.* 0.005 mm, tip spoon-shaped, ornamentation serrated bars. Spermathecae mushroom-shaped, duct short, diverticulum lacking.

Distribution – Guinea.

Pickfordia OMODEO, 1958

Pickfordia OMODEO, 1958: 29, JAMIESON 1974: 76, CSUZDI 1993: 67 (part.), CSUZDI 1995: 117 (part.), CSUZDI 1996: 363 (part.), OMODEO 2000: 194, CSUZDI *et al.* 2009: 67.

Diagnosis. Setae closely paired all ventral. Female pores on 14, paired or single. Male apparatus acanthodriline sometimes with balantine reduction or atypical positions. Muscular gizzards lacking. Two pairs of calciferous glands in 14–15 open separately. Spermathecal apparatus paired, diverticulate. Excretory system holoic.

Type species – *Pickfordia magnisetosa* OMODEO, 1958.

Distribution – West Africa

Remarks. There are some uncertainties in *Pickfordia* regarding the oesophageal openings of the calciferous glands. In case of the type species and *P. pseudoplanaria* the calciferous glands open separately into the oesophagus in 14, 15, however at the description of *P. ditheca* OMODEO (1958) writes that perhaps they open through a common duct. This character proved to be stabile in other group of Neogastrini therefore it is possible that OMODEO overlooked this character during describing the single holotype of this species.

Pickfordia ditheca OMODEO, 1958

Pickfordia ditheca OMODEO, 1958: 34, OMODEO 2000: 194.

Pickfordia (Pickfordia) ditheca: CSUZDI 1993: 67, CSUZDI 1995: 117, CSUZDI 1996: 363.

Diagnosis. *L.* 60 mm, *D.* 3 mm. *No.* segments 160. Colour pale. Head epilobous, first dorsal pore 4/5. Spermathecal pores 7/8 *ab.* Clitellum saddle-shaped on 12–21. ♀ 14, single ventralmedian. ♂? Genital field lacking, prostatic pores 19, 20.

All septa membranous. Muscular gizzard lacking. Calciferous glands 14–15, open through a common duct? Last pair of hearts 12. Typhlosole vestigial. Excretory system holoic.

Testes 10, 11 free. Vesicles 11, 12. Prostates 19, 20 small. Penial setae uniform, *L.* 0.37 mm, *D.* 0.02 mm, tip pointed, ornamentation serrated bars. Spermathecae elongated sac-shaped with thin and long duct and reclinate ampoule. Just under the ampoule a pair of globular diverticulum joins with the duct.

Distribution – Guinea, Mt. Nimba.

Pickfordia hemibalantina OMODEO, 1958

Pickfordia hemibalantina OMODEO, 1958: 36, OMODEO 2000: 194.

Pickfordia (Pickfordia) hemibalantina: CSUZDI 1993: 67, CSUZDI 1995: 117, CSUZDI 1996: 363.

Diagnosis. *L.* 12 mm, *D.* 0.8 mm. *No.* segments 98. Colour pale. Head epilobous, first dorsal pore 5/6. Spermathecal pores 7/8, 8/9 *ab.* Clitellum lacking (immature). ♀ 14, paired in between setae *a–a.* ♂? Genital field lacking, prostatic pores 19.

Septa 10/11–12/13 somewhat thickened. Muscular gizzard lacking. Calciferous glands 14–15. Last pair of hearts 12. Typhlosole vestigial. Excretory system holoic.

Testes 10, 11 free. Vesicles 11, 12. Prostates 19. Penial setae uniform, *L.* 0.78 mm, *D.* 0.018 mm, tip slightly bent, ornamentation serrated bars. Spermathecae elongated sac-shaped with a reclinate ampoule and a thin and long duct which bears entally a pair of digitate diverticulum.

Distribution – Guinea, Mt. Nimba.

Pickfordia magnisetosa OMODEO, 1958

Pickfordia magnisetosa OMODEO, 1958: 30, OMODEO 2000: 194, CSUZDI *et al.* 2009: 67.

Pickfordia (Pickfordia) magnisetosa: CSUZDI 1993: 67, CSUZDI 1995: 117, CSUZDI 1996: 363, CSUZDI *et al.* 2009: 67.

Diagnosis. *L.* 75–90 mm, *D.* 1.5–2 mm. *No.* segments 163–190. Colour pale. Head prolobous, first dorsal pore 5/6. Spermathecal pores in 7/8, 8/9 *ab.* Clitellum saddle-shaped on ½13–19. ♀ 14, paired in between *a–a.* ♀ 18. Genital field oblong, prostatic pores 17, 18, 19.

Septa 5/6–11/12 somewhat thickened. Muscular gizzards lacking. Calciferous glands 14–15 open separately in the oesophagus. Last pair of hearts 12. Typhlosole vestigial. Excretory system holoic.

Testes 10, 11 free. Vesicles 11, 12. Prostates 17, 18, 19. Penial setae uniform, only at the prostates in 17 and 19. *L.* 0.65–0.70 mm, *D.* 0.01 mm, tip pointed, ornamentation small serrated bars. Spermathecae with bean-shaped ampoule and a long duct. A small heart-shaped diverticulum attached entally to the duct.

Remarks. According to SOMON (1995) *P. magnisetosa* has no spermathecal diverticulum, but a looping of the duct was misinterpreted by OMODEO (1958) as free spermathecal diverticulum. Our specimen agrees completely with the original description therefore we concluded that it was SOMON (1995) who misinterpreted this structure (CSUZDI *et al.* 2009).

Distribution – Guinea, Mt. Nimba.

Pickfordia pseudoplanaria OMODEO, 1958

Pickfordia pseudoplanaria OMODEO, 1958: 33, OMODEO 2000: 194.

Pickfordia (Pickfordia) pseudoplanaria: CSUZDI 1993: 67, CSUZDI 1995: 117, CSUZDI 1996: 363.

Diagnosis. *L.* 30 mm, *D.* 1 mm. *No.* segments 140. Colour brown. Head tanylobous, first dorsal pore 4/5. Spermathecal pores four pairs, 5/6–8/9 *a.* Clitellum saddle-shaped on 13–19. ♀ 14, paired before setae *a–a.* ♂ 18. Genital field lacking, prostatic pores 17, 19.

All septa membranous. Muscular gizzard lacking. Calciferous glands 14–15 open separately in the oesophagus. Last pair of hearts 12. Typhlosole vestigial. Excretory system holoic.

Testes 10, 11 free. Vesicles 9–12. Prostates 17, 19. Penial setae uniform, *L.* 0.65 mm, *D.* 0.01 mm, tip slightly bent, ornamentation serrated bars. Spermathecae

sac-shaped with an oval ampoule and a short duct which bears entally a small club-shaped diverticulum.

Distribution – Guinea, Mt. Nimba.

Pickfordiella gen. n.

Diagnosis. Setae closely paired all ventral. Female pores on 14, paired or single. Male apparatus acanthodriline with balantine reduction. Prostatic and male ducts open through a copulatory chamber in 19. Penial setae lacking. Spermathecal apparatus paired, diverticulum present. Muscular gizzard in 6. Two pairs of calciferous glands in 14–15 open in the oesophagus through a common duct. Excretory system holoic.

Type species – *Pickfordiella eudrilina* sp. n.

Distribution – West Africa.

Remarks. *Pickfordiella* gen. n. is close to the African *Pickfordia*, however differs from it in several important characters such as the common orifice of the two calciferous glands, the presence of a muscular gizzard in 6 and possessing a pair of copulatory chambers in 19.

Pickfordiella eudrilina sp. n.

(Fig. 2A–C.)

Holotype: BMHN 1997.1270, Ghana, Kumasi, UST Campus. Leg. J.J. NILES, 10. IV. 1968.

Paratype: HNHM AF/ 5128, 1 ex. Locality and date same as that of the Holotype.

Etymology. The specific epithet refers to shape of the new species which resembles an eudrilid worm.

Diagnosis. *L.* 32–40 mm, *D.* 1.5–1.8 mm. *No.* segments 88–92. Colour pale. Head epilobous, first dorsal pore 6/7. Spermathecal pores 7/8 *ab*. Clitellum circular on 14–½18. ♀ 14, single ventralmedian. ♂ 19. Genital field lacking, prostatic pores 19 open together with the male pores through copulatory chambers.

Septa 6/7–10/11 somewhat thickened. Muscular gizzard 6 well developed. Calciferous glands 14–15 open in the oesophagus through a common duct. Last pair of hearts 13. Typhlosole vestigial. Excretory system holoic.

Testes 10, 11 in perioesophageal testis sacs. Vesicles 9, 12. Prostates 19 large, open in hemispherical copulatory chambers. Penial setae lacking. Spermathecae sac-shaped with an elongated ampoule and a shorter duct which bears entally a hose-shaped diverticulum.

Description. Holotype. Length 32 mm, diameter 1.8 mm, number of segments 88. Paratype 40 mm in length, 1.5 mm in diameter, number of segments 92. Colour pale, pigmentation lacking. Prostomium epilobous Y-shaped. First dorsal pore in 6/7. Setae all ventral, setal arrangement after the clitellum aa:ab:bc:cd:dd = 4:1:4:1:25. Clitellum circular, extends over segments 14–½18. Male pores and prostatic pores open through a large orifice on 19, genital field lacking. Female pore single ventralmedian on 14 (Fig. 2A). Spermathecal pores paired in 7/8 in the setal lines *ab*.

Internal characters. The first visible septum 5/6, septa 6/7–10/11 somewhat thickened. Oesophageal gizzard large, in segment 6. Two pairs of calciferous glands located in segment 14–15, they are of equal size and open in the oesophagus through a common duct at 14/15. Excretory system holoic. Paired hearts are present in segments 10–13. Typhlosole vestigial.

Testes in 10 and 11 enclosed in perioesophageal testis sacs. Seminal vesicles large in 9, 12. Ovary in segment 13. Seminal ducts apparent, discharging in copulatory chambers in segment 19. A

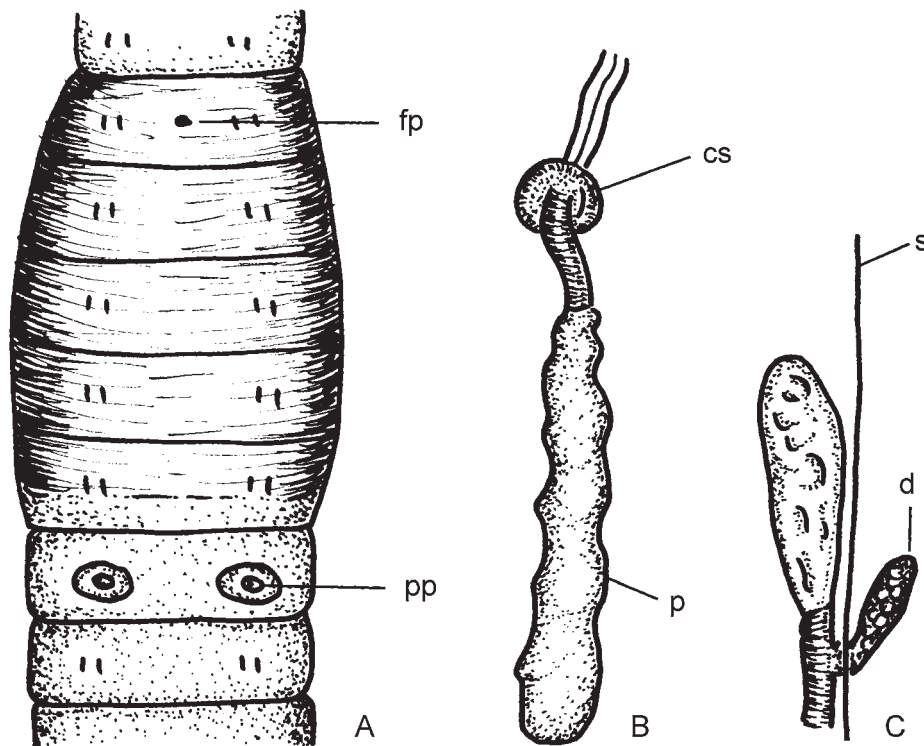


Fig. 2. *Pickfordiella eudrilina* gen et sp. n. A: ventral side of the clitellum. *fp* = female pore, *pp* = prostatic pore., B: prostate. *p* = glandular part of the prostate, *cs* = copulatory chamber., C: Spermatheca. *d* = diverticulum, *s* = septum

pair of prostatic glands present in 19, they open in the copulatory chambers as well (Fig. 2B). Spermatheca one pair in segment 8. Ampoule elongated sac-shaped, the duct somewhat shorter than the ampoule. The ental part of the duct bears a hose-shaped diverticulum which pass through the septum 7/8 and located in segment 7 (Fig. 2C).

Wegeneriella MICHAELSEN, 1933

Wegeneriella MICHAELSEN, 1933: 123 (part.), OMODEO 1955: 1 (part.), OMODEO 1958: 26 (part.), JAMIESON 1974: 73 (part.), ZICSI & CSUZDI 1989: 29, CSUZDI 1993: 67, CSUZDI 1995: 117, CSUZDI 1996: 364, OMODEO 2000: 194 (part).

Eodrilus: PICKFORD 1937: 79 (part).

Non *Wegeneriella*: RIGHI *et al.* 1978: 34.

Diagnosis. Setae closely paired all ventral. Female pores on 14, paired or single. Male apparatus acanthodriline sometimes with microscolecine reduction. Muscular gizzard in 6. Two pairs of calciferous glands in 14–15 open in the oesophagus through a common duct. Spermathecae single ventralmedian open between 5/6–8/9, diverticulum lacking. Excretory system holoic.

Type species – *Notiodrilus? valdiviae* MICHAELSEN, 1903 by original designation.

Distribution – West Africa.

Remarks. Together with the single spermathecae the tendency of ventralmedian displacement of the male and prostatic pores is also a characteristics of the genus *Wegeneriella*.

Wegeneriella birangi sp. n.

(Fig. 3A–B.)

Holotype. HNHM AF/ 5129, Cameroon, Akok. Leg. BIRANG à MADONG, V–VII. 1999.

Etymology. The specific epithet refers to collector Dr. BIRANG à MADONG (IRAD, Meyomes-sala, Cameroon).

Diagnosis. *L.* 19 mm, *D.* 0.7 mm. *No.* segments 79. Colour yellowish. Head retracted, first dorsal pore 5/6. Spermathecal pores 7/8–8/9 single ventralmedian. Clitellum circular on 1/213–19. ♀ 14, single ventralmedian. ♂ 18. Genital field barbell-shaped, prostatic pores 17, 19 open close together.

All septa membranous. Muscular gizzard 6. Calciferous glands 14–15 open in the oesophagus through a common duct. Last pair of hearts 12. Typhlosole vestigial. Excretory system holoic.

Testes 10, 11 free. Vesicles 12. Prostates 17, 19. Penial setae lacking. Spermathecae mushroom-shaped, diverticulum, sperm-chambers lacking.

Description. Holotype. Length 19 mm, diameter 0.7 mm, number of segments 79. Colour yellowish. Prostomium retracted with Y-shaped incision. First dorsal pore in 5/6. Setae all ventral, setal arrangement after the clitellum aa:ab:bc:cd:dd = 9:2:15:5:50. Clitellum circular, extends over segments 13–19. Male pores on 18, prostatic pores on 17, 19 close together in between setae *a*–*a*. Female pore single ventralmedian on 14 (Fig. 3A). Spermathecal pores single ventralmedian near to the intersegmental furrows 7/8, 8/9 on the rim of segments 8, 9.

Internal characters. The first visible septum 5/6, thickened septa lacking. Oesophageal gizzard moderate, in segment 6. Two pairs of calciferous glands located in segment 14–15, they are of equal size and open in the oesophagus through a common duct near of 14/15. Excretory system holoic. Paired hearts are present in segments 10–12. Typhlosole vestigial.

Testes in 10 and 11 free. Seminal vesicles large in 12. Ovary in segment 13. Seminal ducts hardly seen, discharging in segment 18. Two pairs of small prostatic glands present in 17, 19. Penial setae lacking. Spermathecae mushroom-shaped in segments 8, 9. Diverticulum and sperm-chambers lacking (Fig. 3B).

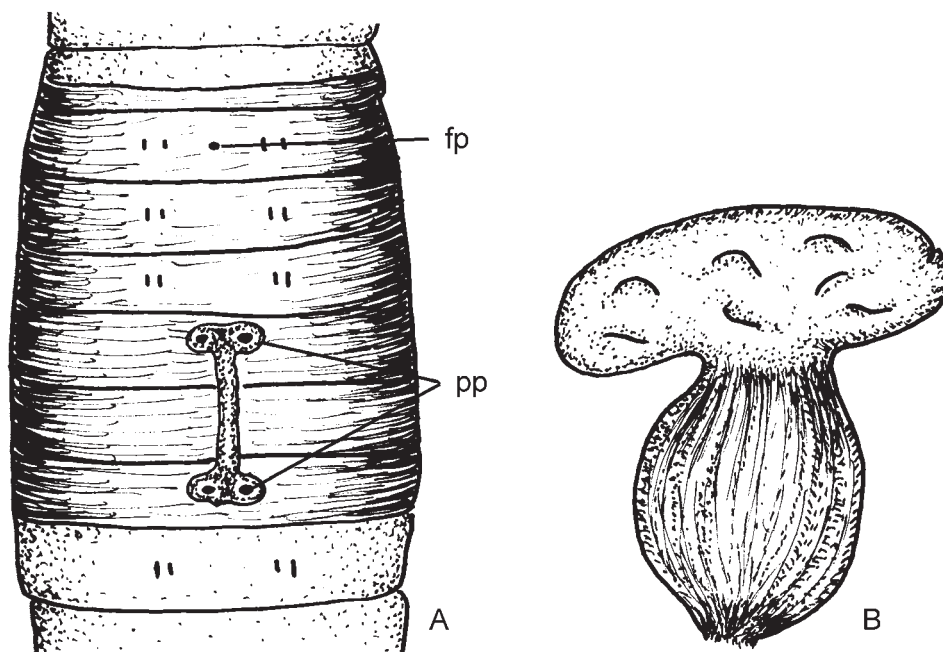


Fig. 3. *Wegeneriella birangi* sp. n. A: ventral side of the clitellum, *fp* = female pore, *pp* = prostatic pores; B: spermatheca

Remarks. The new species differs from all other species of *Wegeneriella* having two single spermathecae in 7/8, 8/9.

Wegeneriella congica ZICSI et CSUZDI, 1989

Wegeneriella congica ZICSI & CSUZDI, 1989: 29, CSUZDI 1993: 66, CSUZDI 1995: 117, CSUZDI 1996: 364. OMODEO 2000: 194.

Diagnosis. *L.* 13–15 mm, *D.* 1 mm. *No.* segments 71–83. Colour brown. Head epilobous, first dorsal pore 5/6. Spermathecal pore 8/9, single ventralmedian. Clitellum circular on 13–19, ½ 20. ♀ 14, single ventralmedian. ♂ 18. Genital field maize-kernel shaped, prostatic pores 17.

All septa membranous. Muscular gizzard 6. Calciferous glands 14–15 open in the oesophagus through a common duct. Last pair of hearts 12. Typhlosole vestigial. Excretory system holoic.

Testes 10, 11 free. Vesicles 12. Prostates 17. Penial setae lacking. Spermathecae elongated sac-shaped, duct hardly detached from the ampoule and contains several sperm-chambers.

Distribution – Republic of the Congo.

Wegeneriella monothea OMODEO, 1955

Wegeneriella (Wegeneriella) monothea OMODEO, 1955: 2, OMODEO 1958: 27.
Wegeneriella monothea: CSUZDI 1993: 66, CSUZDI 1995: 117, CSUZDI 1996: 364. OMODEO 2000: 194.

Diagnosis. *L.* 41–55 mm, *D.* 2.5–3 mm. *No.* segments 142–182. Colour pale. Head proloubous, first dorsal pore 4/5. Spermathecal pore 5/6, single ventralmedian. Clitellum not fully developed on 14–19. ♀ 14, single ventralmedian. ♂ 18. Genital field oval, prostatic pores 17, 19.

All septa membranous. Muscular gizzard 6. Calciferous glands 14–15 open in the oesophagus through a common duct. Last pair of hearts 12. Typhlosole vestigial. Excretory system holoic.

Testes 10, 11 free. Vesicles 9, 12. Prostates 17, 19. Penial setae uniform, *L.* 0.55–0.65 mm, *D.* 0.022 mm, tip spoon-shaped, ornamentation serrated bars. Spermathecae sac-shaped, duct hardly detached from the ampoule, sperm-chambers lacking.

Distribution – Guinea, Mt. Nimba.

Wegeneriella valdiviae (MICHAELSEN, 1903)

Notiodrilus (?) *valdiviae* MICHAELSEN, 1903: 146.

Microscolex (*Notiodrilus*) *valdiviae*: MICHAELSEN 1905: 23.

Wegeneriella valdiviae: MICHAELSEN 1933: 125, ZICSI & CSUZDI 1989: 29, CSUZDI 1993: 66, CSUZDI 1995: 117, CSUZDI 1996: 364. OMODEO 2000: 194, CSUZDI 2000: 76.

Eodrilus valdiviae: PICKFORD 1937: 79.

Wegeneriella (*Wegeneriella*) *valdiviae*: OMODEO 1955: 2., OMODEO 1958: 27.

Diagnosis. *L.* 60–72 mm, *D.* 2.5–3 mm. *No.* segments 100–112. Colour reddish-brown. Head epilobous, first dorsal pore 5/6. Spermathecal pore 5/6–8/9 single ventralmedian. Clitellum circular on 14–19. ♀ 14 single ventralmedian. ♂ 18. Genital field elongated oval, prostatic pores 17, 19.

Septa 6/7–8/9 slightly thickened. Muscular gizzard 6. Calciferous glands 14–15 open in the oesophagus through a common duct. Last pair of hearts 12. Typhlosole vestigial. Excretory system holoic.

Testes 10, 11 free. Vesicles 9–12. Prostates 17, 19. Penial setae uniform, *L.* 1 mm, *D.* 0.015 mm, tip spatula-shaped, ornamentation strong teeth. Spermathecae ladyfingers-shaped, duct well detached from the ampoule and contains several sperm-chambers.

Distribution – Guinea, Mt. Nimba.

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