

**Review of Southern Ocean, South Atlantic and Subantarctic Island earthworms updated from
Lee (1994)**

by

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Summary

This review is based on Lee (1994) with updates from the author's studies and the References cited below. In the current checklist Acanthodrilidae, Octochaetidae (including Benhamiinae), and Megascolecidae are all given separate family status after Blakemore (2000, 2005). Islands are shown in Figs. 1-3. In the South Atlantic only Tristan da Cunha, Inaccessible, Nightingale and Gough Islands (of the St Helena Island groups) are located in the cold southern zone and are included as they appear zoogeographically (if not historically nor politically) linked to the Subantarctic Islands (Figs. 2, 3). Both the HMS Beagle and HMS Challenger expedition visited these islands, but it is not known that they collected earthworms. Gough Island (also called Diego Alvarez) is a British possession but the South Africa's weather station site is built on leased land and treated as part of a magisterial district of Cape Town; neighboring Thompson Island was reportedly last seen in 1893 about 70 km north north-east of Norwegian Bouvet Island according to the SANAP website (<http://gough.sanap.org.za/>).

A (very incomplete at this stage) review of "non-native species" in UK overseas protectorates, including these islands, lists a couple of earthworms (see Varnham (2006)).

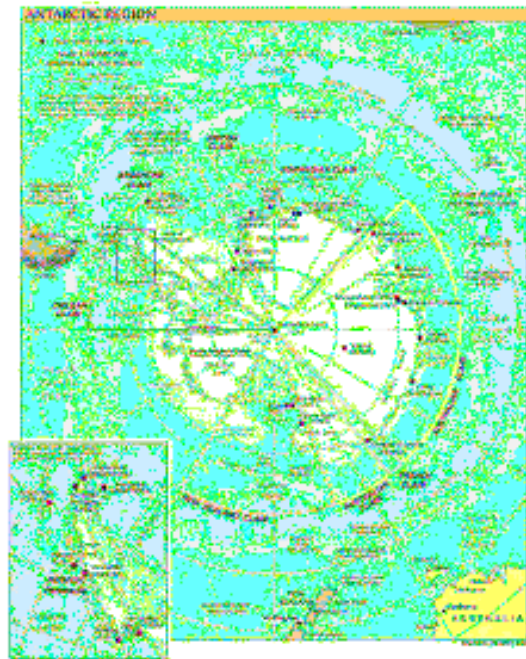


Fig. 1. Subantarctic region (political, 2005)
[www.lib.utexas.edu/maps/islands_oceans_poles/antarctic_region_2000.jpg].



Fig. 2. Southern Atlantic region (geographic).

[Maps courtesy of University of Texas at Austin, TX - <http://www.lib.utexas.edu/maps/polar.html>].

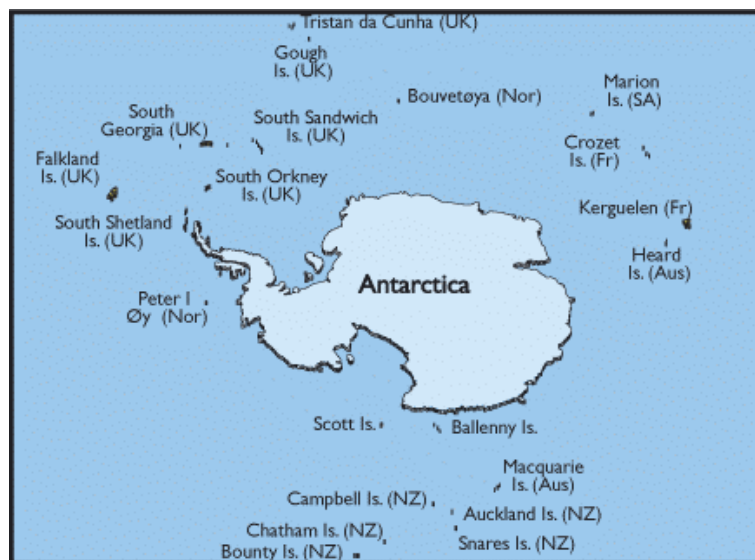


Fig. 3 Location of main Subantarctic Islands [Image courtesy of Paul Carol http://www.btinternet.com/~sa_sa/]

Taxonomic Results

Taxonomy is unresolved within the major Southern Ocean family Acanthodrilidae, and genera contending for priority (i.e. those for species that are holoic and have acanthodriline/microscolecine/balantine arrangement of male pores) are in the following order:

1. ***Hegesipyle*** Kinberg, 1867: 97, 101, type *H. hanno* Kinberg, 1867: 101, from Durban South Africa with types in Stockholm (Nr. 1943); listed as *Genus dubium et species dubium* by Michaelsen (1900: 418) although he also notes that Perrier (1886: 876) moved it to *Acanthodrilus*, whereas he though it belonged in either *Notiodrilus* or *Chilota* sensu Michaelsen (1900). [For this species Michaelsen (1899: 432) says: “the only specimen left in jar Nr. 12 cannot be identified”; and until at least March 2006 loans will be unavailable from Stockholm Museum due to renovations – Karin Sindemark Kronstedt SMNH pers. comm. 22/8/05].
2. ***Mandane*** Kinberg, 1867: 97, 101, type *M. patagonica* Kinberg, 1867: 100, from Chile with types in Stockholm (Nr. 156); listed as junior homonym of *Mandane* Kinberg, 1865: 253 (Polychaeta), thus genus name unavailable; cf. *Chilota* Michaelsen, 1899.
3. ***Acanthodrilus*** Perrier, 1872 with type *A. unguatus* Perrier, 1872 (syn. *A. layardi* Beddard, 1886); mainly from New Caledonia and adjacent islands; after Pickford (1937) shown to differ from other genera by its J-shaped nephridial vesicles, testis sacs, gizzard and, at least typically, presence of penial setae with prostatic pores in 17 & 19.
4. ***Microscolex*** Rosa, 1887 (February), type *M. modestus* Rosa, 1887 (= *M. phosphoreus*) originating from South America/Southern Ocean, acanthodriline/microscolecine, distinguished by its weak gizzard, presence of (non J-shaped) nephridial bladders, often a setal convergence around male pores (as first noted by Michaelsen, 1900), and erstwhile presence of penial setae.
5. ***Neodrilus*** Beddard, 1887: 157 from New Zealand, microscolecine with alternating nephridiopores and just 8 setae.
6. ***Photodrilus*** Giard, 1887 (November), same type as *Microscolex* therefore synonymous.
7. ***Diplocardia*** Garman, 1888 with type *D. communis* Garman, 1888, from eastern and southwestern USA into Baja California and Mexico, is avesiculate (like *Diplorema* and *Notiodrilus*) and differs in having duplicated gizzards in two (or three) segments, albeit sometimes fused or united; James (1995: 33) misinforms there is but a single gizzard!
8. ***Rhododrilus*** Beddard, 1889 with type *R. minutus* Beddard, 1889 mainly New Zealand / Australia, differs from *Microscolex* by its more developed gizzard extending though one or two segments, secondarily its microscolecine reduction (male and prostatic pores in 17, as

- have some *Microscolex* spp.), 8 setae, nephridial bladders present or absent.
9. ***Plagiochaeta*** Benham, 1891/2 from New Zealand, acanthodriline with alternating nephridiopores and >8 setae.
 10. ***Deltania*** Eisen, 1893, type *D. elegans* Eisen, 1893, supposedly same as *Microscolex* according to Michaelsen (1900: 139).
 11. ***Geodrilus*** Ude, 1893, type *G. singularis* Ude, 1893, same as *Diplocardia* according to Michaelsen (1900: 324).
 12. ***Aleodrilus*** Eisen, 1896, type *A. keyesi* Eisen, 1896, same as *Diplocardia* according to Michaelsen (1900: 324).
 13. ***Maoridrilus*** Michaelsen, 1899: 234 with type *M. dissimilis* (Beddard, 1885), mainly from New Zealand, acanthodriline with alternating nephridiopores and just 8 setae.
 14. ***Chilota*** Michaelsen, 1899: 237, type *Mandane littoralis* Kinberg, 1867: 100 (et *littoralis* = *Mandane patagonica* Kinberg, 1867, syn. *Chilota corralensis balgicae* Cernovitov, 1934; note *Mandane picta* Michaelsen, 1889 recently restored, as *C. picta*, from synonymy by Csuzdi & Zicsi, 2001) from South America and Southern Ocean; (Michaelsen (1900: 122) separated it from *Yagansia* by its two pairs of prostates rather than one pair; it has large gizzard(s) in 5-6 and differs from *Parachilota* by its nephridial bladders. Recently reviewed by Zicsi (1993).
 15. ***Maheina*** Michaelsen, 1899: 237, type *Acanthodrilus braueri* Michaelsen, 1897 (type in Hamburg, 7262) from Mahé, Seychelles; Michaelsen (1900: 122) separated it from *Chilota* and *Yagansia* by its metandry against their proandry; its gizzard is in 6. Beddard (1912: 78) thought it a possible senior synonym of *Notiodrilus*.
 16. ***Yagansia*** Michaelsen, 1899: 237, type *Cryptodrilus? spatulifer* Michaelsen, 1889 from South America; (Michaelsen (1900: 122) separated it from *Chilota* by its one pair of prostates (and one pair of spermathecae), rather than two pairs typical of this other genus; its gizzard is in 6. Recently reviewed by Zicsi (1989).
 17. ***Notiodrilus*** Michaelsen, 1899: 239 with type *Acanthodrilus georgianus* Michaelsen, 1888, from Southern Ocean; Michaelsen (1900: 122) separated it from *Microscolex* and/or *Rhododrilus* by its two pairs of prostates, rather than a single pair typical of these other genera; but it was later found (by Michaelsen, 1905; and by Pickford, 1937) that this difference was unreliable, so *Notiodrilus* entered synonymy of *Microscolex*.
 18. ***Diplotrema*** Spencer, 1900 with type *D. fragilis* Spencer, 1900 from Australia/N.Z. is distinguished by its lack of nephridial bladders, its strong single gizzard, and typically the presence of genital and/or penial setae although these may also be absent (especially in N.Z. worms). Species from other regions variously placed in *Diplotrema* and/or its junior synonym *Eodrilus* probably require re-evaluation.

19. ***Omahania*** Eisen, 1900, type *O. verrucosa* (Ude, 1895), subgenus same as *Diplocardia* according to Michaelsen (1900: 324).
20. ***Naillenia*** Eisen, 1900, type *N. koebeli* Eisen, 1900, subgenus same as *Diplocardia* according to Michaelsen (1900: 324).
21. ***Zapotecia*** Eisen, 1900: 165, type *Z. amecamecae* Eisen, 1900 from Mexico, has 3 discrete gizzards, otherwise similar to *Diplocardia*.
22. ***Dinodriloides*** Benham, 1904, type *D. beddardi* Benham; from New Zealand microscolecine, strong gizzard in 6, with 12 setae; nephridia vesiculate.
23. ***Eodrilus*** Michaelsen, 1907, type *E. cornigravei* Michaelsen, 1907 from Western Australia; differed from *Diplostrema* by its acanthodriline male pores, and from *Notiodrilus* by the presence of genital setae near spermathecal pores, but since both these conditions are now known to characterize *Diplostrema*, it therefore entered synonymy.
24. ***Leptodrilus*** Benham, 1909, type *Rhododrilus leptomerus* Benham, 1905 (syn. *L. magneticus* Benham, 1909) supposedly same as *Rhododrilus* according to Lee (1959: 130).
25. ***Perieodrilus*** Michaelsen, 1910 from New Zealand, acanthodriline, lacking nephridial bladders and penial setae, with >8 setae.
26. ***Udeina*** Michaelsen, 1910, type *Yagansia kinbergi* Michaelsen, 1899 from South Africa; balantine with gizzard in 5 was, separated off from *Yagansia* from South America; its restoration from synonymy in *Parachilota* supported by Plisko (2004).
27. ***Wegeneriella*** Michaelsen, 1933 type *Notoscolex valdiviae* Michaelsen, 1903; from tropical west Africa, has a gizzard, unpaired spermathecal pores, 8 setae.
28. ***Parachilota*** Pickford, 1937, type *Chilota algoensis* Michaelsen, 1899, from S. Africa; balantine, nephridia without bladders, gizzard in 5-6.
29. ***Balanteodrilus*** Pickford, 1938, type *B. pearsei* Pickford, 1938 from Mexico.
30. ***Decachaetus*** Lee, 1959: 38 from New Zealand, acanthodriline with strong gizzard and 10 setae.
31. ***Eudinodriloides*** Lee, 1959: 72 from New Zealand acanthodriline, weak gizzard, with 12 setae.
32. ***Neochaeta*** Lee, 1959: 232 from New Zealand, microscolecine with alternating nephridiopores and >8 setae.
33. ***Sylvodrilus*** Lee, 1959: 181 from New Zealand semi-balantine with nephridial vesicles and anisochaetine setae (8 in anterior rising to >8 in hind segments).
34. ***Pickfordia*** Omodeo, 1958, type *P. magnisetosa* Omodeo, 1958, from tropical west Africa and south America is lumbricine, lacking a gizzard, with (*Pickfordia*) or without (*Omodeoscolex* Csuzdi, 1993) spermathecal diverticula.
35. ***Omodeona*** Sims, 1967, type *O. proboscoides* Sims, 1967.

36. *Lavello-drilus* Fragoso, 1988 from Central America, avesciculate nephridia, with single oesophageal gizzard in 5 and (after Fragoso, 1991) rarely with intestinal gizzard in 15 too; male and spermathecal pores midventral.
37. *Larsonidrilus* James, 1993 from Mexico, gizzard in 5, nephridia avesciculate.
38. *Protozapotecia* James, 1993, type *P. aquilonalis* James, 1993 from Mexico; has 2 discrete gizzards rather than the 2 continuous gizzards of *Diplocardia*.
39. *Kaxdrilus* Fragoso & Rojas, 1994: 3 accommodates all species from central America with calciferous glands in region of 7-12 formerly placed in *Diplo-trema*.
40. *Mayadrilus* Fragoso & Rojas, 1994: 8 from central America is metandric but otherwise supposedly like *Diplo-trema* or *Lavello-drilus*.
41. *Eodriloides* Zicsi, 1998.

Thus, in essence, key genera are:

1. *Hegesipyle* Kinberg, 1867: 97, 101, type *H. hanno* Kinberg, 1867: 101, from Durban South Africa, has overall priority but since it was listed as *Genus dubium* by Michaelsen (1900: 418) it has fallen from use; notwithstanding ICZN (1999: Art. 23.9 concerning disuse after 1899 for senior synonyms), this name is yet nomenclaturally available.
2. *Acanthodrilus* Perrier, 1872 takes next priority, but, following Pickford (1937), is restricted to forms with J-shaped nephridial bladders.
3. *Microscolex* Rosa, 1887 (syns. *Photodrilus*, *Deltania*, *Notiodrilus*), the next available genus that differs from *Rhododrilus* and other genera under consideration by having a poorly developed gizzard and nephridial bladders that, however, are non J-shaped.
4. *Diplocardia* Garman, 1888 (syns. *Geodrilus*, *Aleodrilus*, *Omahania*, *Naillenia*) is a North and Meso-American genus with doubled gizzards (in Diplocardinae/-idea?).
5. *Rhododrilus* Beddard, 1889 (syns. *Leptodrilus*, *Kayarmacia*) mainly from New Zealand has microscolecine reduction, and – tentatively separating it from *Microscolex*, a single well-developed gizzard; nephridial bladders may be present or absent.
6. *Diplo-trema* Spencer, 1900 (syn. *Eodrilus*) mainly from Australian/New Zealand has a single gizzard and lacks nephridial bladders. Species from Central or South America and South Africa placed by some authors in either *Diplo-trema* or in its junior synonym *Eodrilus*, require re-evaluation. There is nothing substantial to separate the type of *Eodrilus*, *E. cornigravei*, from synonymy in *Diplo-trema*, therefore the genus name enters synonymy too and species without characteristics of '*Diplo-trema*' must be moved. So the genus name '*Eodrilus*' is no longer available but, as noted above, there are many possibilities and options for generic reallocation; pending resolution, these taxa may be placed under the earlier genus: *Microscolex*.

In a recent revision, Csuzdi (1997: 45) defined “*Eodrilus*” with acanthodriline or microscolecine male field, with or (significantly) without a gizzard, but lacking calciferous glands and nephridial bladders.

Checklist of Earthworm Species from Subantarctic and South Atlantic Islands

Family Acanthodrilidae sensu Blakemore (2000)

1. ***Chilota dalei*** (Beddard)
 - ① Falkland Islands
 - ② Magellan Straits? (Michaelsen, 1900: 155 says these records are mistaken)
2. ***Chilota montana*** Michaelsen, 1905 [originally *montanus* (sic)].
 - ① Simonstown, Cape of Good Hope, South Africa; rifle-range; German southpolar expedition
3. ***Chilota vanhoeffeni*** Michaelsen, 1905
 - ① Simonstown, Cape of Good Hope, South Africa; road to Millers Point; German southpolar expedition
4. ***Diplorema fallax*** (Benham, 1909)
 - ① Snares Island
5. ***Diplorema haplocystis*** (Benham, 1901)
 - ① Snares Island
6. ***Eodriloides drygalskii*** (Michaelsen, 1905) (originally in *Microscolex*).
 - ① German southpolar expedition – Simonstown, Cape of Good Hope, South Africa
7. ***Microscolex aquarumdulcium*** (Beddard, 1893) (originally "*aquarum-dulcium*")
 - ① Falklands
 - ② Patagonia
8. ***Microscolex aucklandicus aucklandicus*** (Benham, 1903)
 - ① Antipodes Is., Auckland Islands
 - ② Enderby Is., Auckland Islands
 - ③ Rose Is., Auckland Islands
 - ④ Auckland Is., Auckland Islands
9. ***Microscolex aucklandicus bollonsi*** (Benham, 1909)
 - ① Disappointment Is., Auckland Islands
10. ***Microscolex aucklandicus pallidus*** (Benham, 1909)
 - ① Enderby Is., Auckland Islands
11. ***Microscolex bovei*** (Rosa, 1889)
 - ① Falkland Islands

- ② Patagonia
12. *Microcolex campbellianus* (Benham, 1905)
- ① Auckland Island
- ② Campbell Island
13. * *Microcolex crozetensis albinica* (sic - as listed on ADD website, reference Joly *et al.*, 1985)
- ① Crozet Islands?
14. *Microcolex crozetensis crozetensis* Michaelsen, 1905 [originally *Microcolex (Notiodrilus) crozetensis*]
- ① Crozet Islands – type locality Possession Island, under moss and stones
15. * *Microcolex crozetensis subpallidus* (as listed on ADD website, reference Joly *et al.*, 1985)
- ① Crozet Islands?
16. * *Microcolex enzenspergeri alba* (variation) (sic - as listed on ADD website, this taxonomic name, if valid, possibly a junior homonym)
- ① Île de la Possession (Possession Island), Crozet Islands (Trehen *et al.*, 1985 cited by AAD, 2005)
17. * *Microcolex enzenspergeri bicolor* (variation) (sic - as listed on ADD website, invalid name?)
- ① Île de la Possession (Possession Island), Crozet Islands (Trehen *et al.*, 1985 cited by AAD, 2005)
18. *Microcolex enzenspergeri enzenspergeri* Michaelsen, 1905 [cited as "*Microcolex enzenspergeri typique* (variation)" in ADD (2005); sometimes misspelt "enzersbergeri"]
- ① Crozet Islands, Possession Island under moss and stones
19. * *Microcolex enzenspergeri nigra* (variation) (sic - as listed on ADD website, invalid name?)
- ① Île de la Possession (Possession Island), Crozet Islands (Trehen *et al.*, 1985 cited by AAD, 2005)
20. *Microcolex fulclandicus* (Beddard) [sic].
- ① Falkland Islands
21. *Microcolex georgianus georgianus* (Michaelsen)
- ① Falkland Islands
- ② South Georgia
22. *Microcolex georgianus laevis* (Rosa, 1904: 9) [originally *Notiodrilus laevis* – twice listed by Reynolds & Cook (1976); sometimes misdated "Rosa, 1892"; non *Typhaeus levis* Rosa, 1890: 388 (corr., originally *T. laevis*)]
- ① ?
23. *Microcolex georgianus reductus* Pickford, 1932: 277
- ① ?

24. *Microscolex frenoti* Bouché, 1985 (?)
- ① Île de la Possession (Possession Island), Crozet Islands (Trehen *et al.*, 1985 cited by AAD, 2005)
25. *Microscolex kerguelarum* (Grube, 1877)
- ① Heard and McDonald Islands (sometimes misspelt "MacDonald")
 - ② Kerguelen Islands (type locality Betsy Cove; also from other island eg. Gillou)
 - ③ Marion Island (reported by Beddard, 1896: 196)
26. *Microscolex ? magellanicus* (Beddard, 1895)
- ① Elizabeth Island in Magellan Straits
27. *Microscolex luykeni* Michaelsen, 1905 [cited as "*Microscolex luykeni typique* (variation)" in ADD (2005)]
- ① Crozet Islands, Possession Island under moss and stones
28. * *Microscolex luykeni albinique* (variation) (sic - as listed on ADD website, invalid name?)
- ① Île de la Possession (Possession Island), Crozet Islands (Trehen *et al.*, 1985 cited by AAD, 2005)
29. * *Microscolex luykeni halophila* (variation) (sic - as listed on ADD website, invalid name?)
- ① Île de la Possession (Possession Island), Crozet Islands (Trehen *et al.*, 1985 cited by AAD, 2005)
30. *Microscolex macquariensis* (Beddard)
- ① Macquarie Island
31. *Perieodrilus plunketi* (Benham, 1909) (originally *Plagiochaeta plunketi*)
- ① Auckland Islands (Lee, 1994, cf. Lee, 1959)
 - ② Snares Island
32. *Rhododrilus cockaynei* (Benham, 1905) (syn. *Rhododrilus cockayni* var. *waterfieldi* Benham, 1909; corr. *cockayni*)
- ① Auckland Islands
 - ② Campbell Island
 - ③ Snares Island
33. *Rhododrilus huttoni* (Benham, 1901)
- ① Chatham Island
34. *Rhododrilus leptomerus* Benham, 1905 (syn. *Leptodrilus magneticus* Benham, 1909)
- ① Auckland Islands
 - ② Campbell Island
35. *Yagansia michaelsoni* (Beddard, 1895)
- ① Magellan Straits

Family Octochaetidae sensu Blakemore (2000)

- ① *Dichogaster (Diplothecodrilus) gatesi* Csuzdi, 1997
 - ① St Helena

Family Megascolecidae sensu Blakemore (2000)

- ① *Amyntas corticis* (Kinberg, 1867) (including *P. sanctaehelenae*)
 - ① St Helena
- ② *Amyntas loveridgei* (Gates, 1968)
 - ① St Helena
- ③ *Diporochaeta brachysoma* Benham, 1909
 - ① Auckland Islands
- ④ *Diporochaeta chathamensis* Benham, 1901
 - ① Chatham Island
- ⑤ *Diporochaeta duodecimalis* (Michaelsen, 1923)
 - ① Auckland Islands
- ⑥ *Diporochaeta heterochaeta* Benham, 1909
 - ① Snares Island
- ⑦ *Graliophilus aucklandicus* (Benham, 1909)
 - ① Adams Is., Auckland Islands
 - ② Antipodes Is., Auckland Islands (Lee, 1994, cf. Lee, 1959)
- ⑧ *Perionychella helophila* (Benham, 1909) (sic - originally *Diporochaeta helophila*)
 - ① Auckland Islands
- ⑨ *Perionychella perionychopsis* (Benham, 1909)
 - ① Auckland Islands
- ⑩ *Perionychella shoeana* (Cognetti, 1912)
 - ① Auckland Islands
- ⑪ *Pontodrilus litoralis* (Grube, 1855)
 - ① Chatham

Family Lumbricidae

- ① *Allolobophora chlorotica* (Savigny, 1826)
 - ① St Helena
 - ② Tristan da Cunha (Holdgate, 1965)

- ② *Allolobophoridella eiseni* (Levinsen, 1884)
- ① St Helena
 - ② Tristan da Cunha (Holdgate, 1965)
 - ③ Nightingale Island (Tristan da Cunha group) (Reynolds & Hänel, 2005)
 - ④ Gough Island (Reynolds *et al.*, 2002; Reynolds & Hänel, 2005)
- ③ *Aporrectodea caliginosa* (Savigny, 1826) (syns. include ?*Lumbricus helenae* Kinberg, 1867 and ?*L. hortensiae* Kinberg 1867 both from St Helena, and *Allolobophora turgida* Eisen, 1873)
- ① St Helena
 - ② Tristan da Cunha (Pickford, 1932)
 - ③ Gough Island? (Reynolds *et al.*, 2002; Reynolds & Hänel, 2005)
- ④ *Aporrectodea rosea* (Savigny, 1826) (many syns. - see Blakemore, 2002)
- ① Tristan da Cunha (Pickford, 1932)
- ⑤ *Aporrectodea trapezoides* (Dugès, 1828)
- ① St Helena
- ⑥ *Bimastos parvus* (Eisen, 1874)
- ① St Helena
- ⑦ *Dendrodrilus rubidus norvegicus* (Eisen, 1874) (?non *Helodrilus norvegicus* Friend)
- ① Kerguelen Islands (from Frenot *et al.*, 2005)
- ⑧ *Dendrodrilus rubidus rubidus* (Savigny, 1826)
- ① Campbell Island
 - ② Marion Island (from London NHM:1976.13.669-720 coll. by Van Zinderen, det. by E.G. Easton, pers. obs. R.J.B. 16.11.1998)
 - ③ Gough (Reynolds *et al.*, 2002)
 - ④ Inaccessible Island, part of Tristan da Cunha group (Reynolds *et al.*, 2002)
 - ⑤ Tristan da Cunha (Reynolds & Hänel, 2005)
- ⑨ *Dendrodrilus rubidus subrubicundus* (Eisen, 1874)
- ① Falkland Islands
- ⑩ *Dendrodrilus rubidus tenuis* (Eisen, 1874) [some place in synonym of *D. rubidus* - see below]
- ① Auckland Islands
 - ② Crozet (from Frenot *et al.*, 2005)
 - ③ Heard Island
 - ④ Kerguelen Islands (eg. Gillou)
 - ⑤ Macquarie Island
 - ⑥ Marion Island (from Frenot *et al.*, 2005)

- ⑦ Tristan da Cunha (Pickford, 1932)
- ⑪ *Eisenia fetida* (Savigny, 1826) (syns. include *Lumbricus rubrofasciatus* Baird, 1873 from St. Helena).
 - ① St Helena
- ⑫ *Eiseniella tetraedra tetraedra* (Savigny, 1826)
 - ① Macquarie Island
 - ② Kerguelen Islands
 - ③ St Helena (Gates, 1972: 109)
 - ④ Tristan da Cunha (Pickford, 1932; Gates, 1972: 109)
- ⑬ *Lumbricus castaneus* (Savigny, 1826)
 - ① St Helena
- ⑭ *Lumbricus rubellus rubellus* Hoffmeister, 1843 (syns. include *L. rubellus tristani* Pickford, 1932)
 - ① Tristan da Cunha (Pickford, 1932)
 - ② Gough Island (Reynolds *et al.*, 2002; Reynolds & Hänel, 2005)
- ⑮ *Lumbricus terrestris* Linnaeus, 1758
 - ① Falkland Islands

Family Glossoscolecidae

- ① *Pontoscolex corethrurus* (Müller, 1857) [generally a subtropical taxon].
 - ① St Helena

Family Eudrilidae

- ① *Eudrilus eugeniae* (Kinberg, 1867) [generally a subtropical taxon].
 - ① St Helena

* A new name published after 1960 expressly as the name of a "variety" or "form" is deemed to be infra-subspecific and as such is not regulated by the Code (ICZN, 1999: Art. 15.2), i.e., it is an invalid name that may, however, be validated by subsequent usage under certain rather complex requirements.

Taxonomic notes and synonymies

Synonyms of *Dendrodrilus spp.* (modified from Blakemore, 2002; 2006):

Dendrodrilus rubidus rubidus (Savigny, 1826) [*xanthurus* Templeton, 1836; *puter* Hoffmeister, 1845; *pieter* Udekem, 1865; *havaicus* Kinberg, 1867 (sometimes misspelt *Hypogaeon "havaicum"*); *victoris* Perrier, 1872; *arborea* Eisen, 1874 - Reynolds & Cook (1976: 71) miscite a reference to this taxon as *A. putris arborea* by Michaelsen (1890: 49) as a different species; *constricta* Rosa,

1884; *darwini* Ribaucourt, 1896; *putris subrubicunda* var. *helvetica* Ribaucourt, 1896; *magnesa* Tzelepe, 1943]. [Omodeo & Rota (2004: 250) suggest reservation of the "name" *D. rubidus constrictus* "to the forms devoid of spermathecae" even though after 1960 "forms" are deemed of infrasubspecific rank and are thereby excluded from the taxonomic code of ICZN (1999)].

Dendrodrilus rubidus subrubicundus (Eisen, 1874) [syn. *?valdiviensis* Blanchard, 1849 - questionable synonymy by Csuzdi and Zicsi (2003: 136) after Michaelsen (1900: 491), but if so this taxon would possibly compete for priority, cf. *De. r. rubidus*; *fraissei* Örley, 1881 - this synonym from Csuzdi & Zicsi (2003: 136); *putris dieppi* Ribaucourt, 1901; *?arborea pygmaea* Friend, 1923 [non *pygmaeum* Savigny, 1826] - this synonym from Easton (1983: 479) ignored by Csuzdi & Zicsi (2003); *subrubicunda* var. *papillosa* Pop, 1938 [non *Lumbricus papillosus* Friend, 1893] - this synonym from Csuzdi & Zicsi (2003: 136); *rivulicola* Chandebois, 1958. Note: Michaelsen (1891: 3) misidentified this taxon as *A. nordenskiöldii* according to Michaelsen (1900: 491) although in this latter synonymy he also includes *darwini* and *helvetica* under *rubidus subrubicundus* (cf. *De. rubidus rubidus*)].

Dendrodrilus rubidus tenuis (Eisen, 1874) is *species incertae sedis* as, for some reason, it was elevated to specific status in Qiu & Bouché (1998: 195) but listed as a subspecies of *rubidus* by Easton (1983: 480); yet was placed in synonymy of nominal subspecies in Csuzdi & Zicsi (2003: 132); cf. Omodeo & Rota (2004: 250) who suggest reserving the name *D. rubidus tenuis* for some parthenogenetic forms even though "forms" are strictly invalid under ICZN (1999) code - for details see Blakemore (2002; 2004; 2006).

Species in genera *Acanthodrilus*, *Celeriella*, *Microscolex*, *Megascolex*, *Notiodrilus* and *Octochaetus*

Microscolex kerguelarum (Grube, 1877), originally *Lumbricus kerguelarum*, regarded as a senior synonym of *Acanthodrilus kerguelenensis* Lankester, 1879 by Lee (1965) which itself was a senior synonym of *Acanthodrilus kerguelensis* Michaelsen, 1891 by Michaelsen (1900: 130) who put both latter genera in *Notiodrilus* – thus both taxa are in synonymy of *M. kerguelarum*.

Microscolex macquariensis (Beddard, 1896) is transferred from the N.Z. to the Australian list because it is known only from Macquarie Island, now claimed as Australian territory; it is classed as a "neo-endemic" taxon (see Blakemore, 2000).

Octochaetus antarcticus (Beddard, 1889), originally in *Acanthodrilus*, is a N.Z. taxon rather than Antarctic.

Celeriella antarctica (Baird, 1871), originally *Megascolex antarcticus* with synonym *Spenceriella shakespearei* (Benham, 1906) from Lee (1962), is also from New Zealand.

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References

AAD (2006). http://aadc-maps.aad.gov.au/aadc/bib/display_bib.cfm?bib_id=17191 [April, 2006].

Blakemore, R.J. (2000). Tasmanian Earthworms. CD-ROM Monograph with Review of World Families. VermEcology, Kippax 2615. Canberra, December, 2000, pp. 800 including 222 figures.

Blakemore, R.J. (2002). Cosmopolitan Earthworms – an Eco-Taxonomic Guide to the Peregrine Species of the World. VermEcology, PO BOX 414 Kippax, ACT 2615, Australia, pp. 506 including 80 figs.

Blakemore, R.J. (2004). Checklist of New Zealand Earthworms updated from Lee (1959). In: Moreno, A. G. and Borges, S. (eds.) "Avances en taxonomia de lombrices de tierra/Advances in earthworm taxonomy (Annelida: Oligochaeta)". Editorial Complutense, Universidad Complutense, Madrid, Spain. Pp. 175-185. [Published July, 2004 in English with some Spanish translation].

Blakemore, R.J. (2005). *A Series of Searchable Texts on Earthworm Biodiversity, Ecology and Systematics from Various Regions of the World*. Eds.: N. Kaneko & M.T. Ito. COE Soil Ecology Research Group, Yokohama National University, Japan. CD-ROM. [Online here <http://bio-eco.eis.ynu.ac.jp/eng/database/earthworm/>].

Blakemore, R.J. (2006). Cosmopolitan Earthworms – an Eco-Taxonomic Guide to the Peregrine Species of the World. Volume 2. (In prep.).

Block, W. (1992) An annotated bibliography of Antarctic invertebrates (terrestrial and freshwater), British Antarctic Survey, Cambridge
http://aadc-db.aad.gov.au/metadata/cgi-bin/getdif.pl?format=sgml&morph_dic=dif_to_dif-display-html.dic&entry_ids=block_invertebrates&form=gcmdwww&interface=parameters

Csuzdi, Cs. (1997): Neue und bekannte Regenwürmer aus dem Naturhistorischen Museum, London (Oligochaeta: Acanthodrilidae). *Opusc. Zool. Budapest*, **29-30**: 35-47. [PDF http://www.pedozoologia.net/PDF/Regenwurmer aus de naturhistorischen museum london.pdf](http://www.pedozoologia.net/PDF/Regenwurmer%20aus%20dem%20naturhistorischen%20museum%20london.pdf)

- Csuzdi Cs. and Zicsi, A. (2001). Weitere Angaben zur Regenwurmfauna Chiles (Oligochaeta: Acanthodrilidae, Lumbricidae). *Regenwürmer aus Südamerika* 33. *Ber. nat.-med. Verein Innsbruck*. **88**: 129-140.
- Csuzdi Cs. and Zicsi, A. (2003). Earthworms of Hungary (Annelida: Oligochaeta, Lumbricidae). *Hungary Natural History Museum, Budapest*. Pp. 271. [http://cerberus.elte.hu/SystZool/Earthworms/Hungary/Hu_main.htm].
- Frenot, Y. (1992). Introduced populations of *Dendrodrilus rubidus* ssp. (Oligochaeta: Lumbricidae) at Crozet, Kerguelen and Amsterdam Islands: effect of temperature on growth patterns during the juvenile stages *Soil Biol. Biochem.* **24(5-6)**: 1433-1439.
- Frenot, Y., Chown, S.L., Whinam, J., Selkirk, P., Convey, P., Skotnicki, M. & Bergstrom, D. (2005). Biological invasions in the Antarctic: extent, impacts and implications. *Biological Reviews* **80** pp. 45-72. <http://journals.cambridge.org/bin/bladerunner?30REQEVENT=&REQAUTH=0&500001REQSUB=&REQSTR1=S1464793104006542> and AAD website: http://aadc-maps.aad.gov.au/aadc/bib/display_bib.cfm?bib_id=41149 June, 2005].
- Gates, G.E. (1977). La faune terrestre de l'île de Sainte-helene. *Zoologische Wetenschappen*. **220**: 469-491.
- Holdgate, W.M. (1965). The biological report of the Royal Society expedition to Tristan da Cunha 1962, Part III. *Philos. Trans. Roy. Soc. London Series B*. 249: 361-402.
- Joly, Y., Frenot, Y. & Vernon, P. (1987) Environmental modifications of a subantarctic peatbog by the wandering albatross (*Diomedea exulans*): a preliminary study. *Polar Biology* **8**: 61-72.
- Lee, K.E. (1959). *The Earthworm Fauna of New Zealand*. New Zealand Department of Scientific and Industrial Research, Wellington. Bulletin 130. Pp 486.
- Lee, K.E., (1994). Earthworm classification and biogeography: Michaelsen's contribution, with special reference to southern lands. *Mitteilungen aus dem Hamburg Zoologischen Museum und Institut* **89(2)**: 11-21.
- Michaelsen, W. (1900). Oligochaeta. *Das Tierreich*, 10, pp. 1-575. [In German].
- Pickford, G.E. (1932). Oligochaeta. Part II. *Discovery Reports*. **4**: 265-290.

- Plisko, D. (2004). Review of the balantine genus *Udeina* Michaelsen, 1910 with descriptions of six new species in South Africa (Oligochaeta: Acanthodrilidae: Acanthodrilinae). *African Invertebrates Journal, Natal Museum*, 2004.
- Reynolds, J.W. & Cook, D.C. (1976). Nomenclatura Oligochaetologica: A Catalogue of Names, Descriptions and Type Specimens of the Oligochaeta. University of New Brunswick, Fredericton, Canada, pp. 216.
- Reynolds, J.W., Jones, A.G., Gaston, K.J. & Chown, S.L. (2002). The earthworms (Oligochaeta: Lumbricidae) of Gough Island, South Atlantic Ocean. *Megadrilologica* 9, 5-15.
- Reynolds, J.W. & Hänel, C. (2005). The earthworms (Oligochaeta: Lumbricidae) of Tristan da Cunha and Nightengale [sic] Islands, South Atlantic Ocean. *Megadrilologica* 2005 (September): 47-56.
- Trehen, P., Bouché, M., Vernon, P. & Frenot, Y., (1985). Organization and dynamics of Oligochaeta and Diptera on Possession Island. In: Antarctic nutrient cycles and food webs, ed. W.R. Seigfried, P.R. Condy & R.M. Laws, PP. 606-613. Springer-Verlag, Berlin.
- Varnham, K. (2006). Non-native species in UK Overseas Territories: a review. JNCC Report 372 [<http://www.jncc.gov.uk/page-3634> Dec. 2006].
- Zicsi, A. (1989). Revision der Gattung *Yagansia* Michaelsen, 1899 (Oligochaeta: Acanthodrilidae). Regenwürmer aus Südamerika 11. - *Acta Zool. Hung.*, 35: 413-430.
- Zicsi, An. (1993). Revision der Gattung *Chilota* Michaelsen sowie weitere neue Angaben zur Regenwurmfauna Chiles (Oligochaeta: Acanthodrilidae, Ocnodrilidae) Regenwürmer aus Südamerika 20. - *Mitt. hamb. zool. Mus. Inst.*, 90: 151-173.

[End of SubAntarctic species checklist].