

SUMMARY OF MACQUARIE ISLAND OLIGOCHAETA

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[Update with figures of draft edited by RJB from Dr Penny Greenslade, 9th May, 2003 including Enchytraeid section compiled by Dr Adrian Pinder of CALM, W.A.. Additional spp records and ecology found in Selkirk *et al.* (1990), Greenslade's refs., Frenot *et al.* (2005), and Anon (2005)].

SUMMARY

Globally oligochaetes number ca. 10,000 described species in 38 families comprising smaller aquatic worms (microdriles) and ca. 5,900 spp of the 'true' terrestrial earthworms (megadriles), some of which are semi-aquatic or littoral (Blakemore, 2006; [2007](#)).

Six families of Oligochaeta are reported from Macquarie Island: the larger terrestrial Acanthodrilidae and Lumbricidae and the smaller, thinner, mainly aquatic Enchytraeidae, Naididae, Tubificidae and Phreodrilidae. In total fifteen or sixteen taxa are represented: three are considered native or "neo-endemic" species, five are clearly exotics, and the remainder have uncertain status; a recent review is by Dartnall *et al.* ([2005](#)). Data on Heard Island Oligochaeta are on a Government website (AAD, [2005](#)).

Adult Oligochaeta may be distinguished by the presence of a clitellum or saddle, which is a band of thickened tissue often of a different colour to the rest of the body found ten segments or more segments behind the mouth. The clitellum secretes the cocoon into which the fertilised eggs are deposited. This group lacks parapodia (lateral appendages) of the Polychaeta and suckers of the Hirudinea (leeches) but possesses a maximum of four bundles of setae (bristles) distributed around each segment (only in the groups considered here, other megadrile groups have multiple setae per segment). All species are hermaphrodite in that each organism carries both female and male genital organs simultaneously, and usually there is cross-fertilization by coupling, but parthenogenesis or self-fertilization are common for the peregrine exotics (Gates, 1972 quoted in Blakemore, 2002; 2006 and pers. obs.).

Two species of exotic, predatory, terrestrial planarian flatworms were first collected in 1997 by the current author (RJB; - see Blakemore, 1998) from two localities at Lusitania Bay above the penguin rookeries on southeast Macquarie Island. Species later identified as *Kontikia andersoni* Jones, 1981 and *Arthurdendyus vegrandis* Winsor & Stevens, 2005 (see also Winsor, 2001: 9) appeared to have locally eliminated the megadriles as no adults were found in the area although their cocoon shells were found.

The fascination with Ecological work on Macquarie Island is that the links in the food web are relatively simple and thus can throw light on biological behavioural interactions and energetics. Parasites are not yet recorded from the Oligochaeta.

Key to Macquarie Island Oligochaeta families

[After Dr Adrian Pinder's key - see also Pinder & Brinkhurst (1994), Blakemore (2005)]

- | | |
|--|-----------------|
| 1. Setae more than two per bundle | 2 |
| Setae paired (or two per bundle) | 4 |
| 2. Same number of setae per bundle, no hair setae (ventral setae variable in shape: simple-pointed, straight or sigmoid); spermathecae open near 4/5; male pores on 12 | |
| | Enchytraeidae |
| Number of setae differs between bundles, hair setae may be present, ventral setae sigmoid in shape | 3 |
| 3. Small white worms | Naididae |
| Slightly larger, brownish worms | Tubificidae |
| 4. Hair setae present in dorsal bundles | Phreodrilidae |
| No hair setae, sigmoid setae 4 pairs per segment | 5 |
| 5. Clitellum beginning after 18 th segment; male pores large on segment 13 (<i>Eiseniella tetraedra</i>) or more usually on 15 | Lumbricidae |
| Clitellum beginning before 14 th segment; male pores on 18 with prostatic pores on 17 and 19 | Acanthodrilidae |

Family ACANTHODRILIDAE Claus, 1880

Acanthodrilidae sensu Blakemore (2000) (i.e. excluding *Pontodrilus*, *Plutellus*, etc. that belong in the Megascolecidae s. strict. ; and *Exxus* etc. that belong in Exxidae) have male pores on segment 17 or 18 separate from pores of tubular prostates (non tubular in Exxidae) in 17 and/or 19 (i.e., these pores are not united on 18 as in Megascolecidae s. stricto); the clitellum begins close to the head end and either is annular forming a complete ring or is saddle-shaped where interrupted by markings and pores. Setae are four pairs per segment. Nephridia holoic (cf. meroic in Octochaetidae and Exxidae). This family is most widespread throughout the southern hemisphere, in South Africa, South America, Australasia, Oceania, islands of the Southern Ocean (and presumably Antarctica in past geological times) and is also endemic in parts of central and northern America (cf. Diplocardiinae). A few species are widely distributed around the world mainly due to human transportation (Blakemore, 2002; 2006).

Genus *Microscolex* Rosa, 1887

The genus originated from southern South America (Lee, 1968; 1994) and is mostly restricted to the southern hemisphere although *Microscolex dubius* (Fletcher, 1887) and a similar species, *M. phosphoreus* (Dugès, 1837), both also introduced into Australia, are now widely distributed in the Northern Hemisphere. *Microscolex macquariensis* (Beddard, 1896) is confined to Macquarie Island where it is considered neo-endemic (Blakemore, 1999; 2000; 2002; 2005) it has about a dozen congeners described from other sub-Antarctic islands, and would have had to undergone speciation in the 11,000 years since the Macquarie Island emerged (or become extinct or as yet undiscovered elsewhere). One other species recorded from Australian territories, is *Microscolex kerguelarum* (Grube, 1877) [regarded as a senior synonym of *Acanthodrilus kerguelenensis* Lankester, 1879 by Lee, 1965, that itself is senior synonym of *A. kerguelensis* Michaelsen, 1891 according to Michaelsen (1900: 130) that appears to have been overlooked by Reynolds & Cook (1979)] originally described from Kerguelen Island, but also found on volcanic Heard Island (part of Australia's Heard and McDonald Island territory).

Species descriptions:

Microscoclex macquariensis (Beddard, 1896)

Acanthodrilus macquariensis Beddard, 1896; Benham, 1901

Notiodrilus macquariensis : Michaelsen, 1900; Benham, 1903; Benham, 1909

Microscoclex macquariensis : Michaelsen, 1907; Lee 1959; Blakemore, 2000

Fig. 1 *M. macquariensis* (Beddard, 1896) on Macquarie Island from whence it was recently re-sampled by the current author.

Beddard's (1896) description was based on types now in the British Museum (BMNH 1904:10:5:873-6 - inspected by RJB). Later Benham (1922) recorded specimens collected by Hamilton in 1913 from a penguin rookery and from rock crevices on cliffs at 50m, both sites at the northern end of the island. Lee (1959) followed Benham in maintaining *M. macquariensis* as a distinct species adding to the description (his material was one specimen collected from peat, tussock grassland by J. S. Bunt in 1953) and in his 1968 publication he reported on 66 specimens that he examined, all from the northern third of the island. Sims (1971) suspected that the species was a geographical race rather than a distinct species.

Benham noted some differences of *M. macquariensis* from *M. aucklandicus* (Benham, 1903) and *M. campbellianus* (Benham 1903) in the genital apparatus. He also noted *M. macquariensis* had similarities to *M. crozetensis* (Michaelsen, 1905) and *M. kerguelarum* but again there were some differences in the genetic apparatus from these two species. Blakemore (unpub.) considers the Macquarie Island specimens close to *Microscoclex kerguelarum* (Grube, 1877), which is restricted to Kerguelen Islands, and *M. georgianus* (Michaelsen, 1888) from South Georgia; but fresh specimens of these latter species need to be collected to firmly establish differences. More recent collections undertaken in the summer of 1997/8 as part of an intensive island wide survey of Oligochaeta have been examined by Blakemore (2000). QVM collection data are:

14:3598 Crossley material "Sample # 19. Green Gorge 140 m. Short grass in small gully 20m S of 'nose' coming down off prominent bluff. *Agrostis*, *Luzula*, *Uncinia*, *Festuca* dominated". Four specimens (two matures dissected by RJB plus two immatures). Sample QVM 14:3714 collected by ".R.J. Blakemore. 3.xii.1997. East coast, north of Nuggets from under rocks on pebble beach in or above intertidal zone." Eight specimens (one mature dissected).

Lee (1959: 101) described *M. macquariensis* as a New Zealand species, but transfer of political control of Macquarie Island away from NZ adds this species to the Tasmanian list (Lee *et al.* in press; Blakemore, 2000; 2004). Lee (1968: 1994) discusses the affinities of this species with other *Microscolex* in the southern lands and possible modes of transportation. For *M. macquariensis* it is possible initial introduction was via carriage on the feet of birds (eg. *Diomedea exulans* the Wandering Albatross), although oceanic rafting is the more probable as much debris still washes up from South America, including a tree stump with its root bolus at Bauer Bay (R. Blakemore pers. obs. in 1997).

Diagnosis: Body colour is flesh pink or reddish pink, and has a greenish brown anterior 30 segments. Length is generally from 24 to 40 mm but can reach 90 mm and diameter 2.5 to 4.6 mm. The number of body segments is 82 to 85 and the clitellum occupies segment 13 to 16 or 17 but is interrupted ventrally.

Biology: *M. macquariensis* occurs in moist peat, swamp and bog soils throughout the island from the mountains to the shoreline and it is also abundant (euryhaline?) under beach pebbles just above the water level (R. Blakemore, unpublished data). The only locality from which it appeared to be absent in 1997/8 was Lusitania Creek. Significantly, this is the only locality at which R. Blakemore (7th Jan., 1998) first collected the two species of predatory flatworm - *Arthurdendyus vegrandis* Winsor & Stevens, 2005 and *Kontikia andersoni* Jones 1981 (Platyhelminthes: Tricladida: Terricola). Oligochaeta were earlier found to be widespread and common by Davies & Melbourne (1999) in their survey but were not collected nor identified to species and so the same collection sites were resurveyed by Blakemore (1997/8, currently unpublished).

Family MEGASCOLECIDAE Rosa, 1891

Megascolecidae sensu Blakemore (2000) have combined male and prostatic pores on 18. One species has global distribution on shorelines around the world: *Pontodrilus litoralis* (Grube, 1855) and there is another species recorded from a Tasmanian beach, *Pontodrilus primoris* Blakemore, 2000. However, there have been no reports from the Southern Ocean and fine 2mm sieving and sifting of several cubic metres of beach sand at Bauer Bay by R. Blakemore in 1997 failed to secure any worms.

Family LUMBRICIDAE Rafinesque-Schmaltz, 1815

This large Palaearctic family of >600 species (Blakemore, 2005, 2007) is widespread in the northern hemisphere and is endemic from Vancouver Island to Japan. A number of species have been transported and are now found in southern regions where they flourish in modified agricultural and horticultural soils. Usually terrestrial in habit, some species are semi-aquatic. One or two species have colonised Macquarie Island.

Diagnosis: Setae are in four pairs dorsolaterally and latero-ventrally. The body cross-section may be cylindrical, quadrangular, octagonal or trapezoid. Male pores are on 13 or more usually on 15. Ovaries are small, discoidal with oocytes in a single egg string.

Genus *Dendrodrilus* Omodeo, 1956

Dendrodrilus rubidus species-complex sensu Blakemore (2002)

[Fig. 2.](#) *Dendrobaena rubidus* from Biggles Track, Brothers Point to Green Gorge, Macquarie Island (Collected 20.x.1997 by R.J.B.); (sketch shows nephridial bladder opening in b lines on 14; gut from calciferous gland to gizzard; and setal ratio on 20).

Taxonomic notes: following Easton (1981: 40), *Bimastus* was corrected to its original orthography as *Bimastos*, and *B. tenuis* was placed within the synonymy of *D. rubidus*, which itself was transferred from *Dendrobaena* to *Dendrodrilus*. A morph lacking genital markings and spermathecae named *Allolobophora constricta* Rosa, 1884 and included by some authors as a part of *Bimastos parvus* (= *Allolobophora parva*), is now (eg. Easton, 1983) included in the synonymy of *D. rubidus rubidus*.

Although Sims & Gerard (1985; 1999) provisionally combined all four, Easton (1983: 479-480) lists separately the subspecies of *Dendrodrilus rubidus*, viz.:

Dendrodrilus rubidus rubidus (Savigny, 1826) (syns. *xanthurus* Templeton, 1836; *puter* Hoffmeister, 1845; *valdiviensis* Blanchard, 1849; *pieter* Udekem, 1865; *havaicus* Kinberg, 1867; *victoris* Perrier, 1872; *arborea* Eisen, 1874; *fraissei* Örley, 1881; *constricta* Rosa, 1884; *darwini* Ribaucourt, 1896; *putris suburbicunda* var. *helvetica* Ribaucourt, 1896; *subrubicunda papillosa* Pop, 1938; *magnesa* Tzelepe, 1943

D. rubidus norvegicus (Eisen, 1874);

D. rubidus subrubicundus (Eisen, 1874) [syns. *putris dieppi* Ribaucourt, 1901; ?*arborea pygmaea* Friend, 1923; *rivulicola* Chandebois, 1958];

D. rubidus tenuis (Eisen, 1874).

This latter taxon, ***D. rubidus tenuis*** (Eisen, 1874), was listed by Lee (1968: 159) as *Bimastus tenuis* (Eisen) from Macquarie Island, with collection data: Station 81, at the north of the island 3.vii.1930, B.A.N.Z.A.R.E., (four clitellate specimens).

Currently unregistered material lodged at QVM were "Biggles track, Brothers Point to Green Gorge, Macquarie Island, 20.xi.1997, R.J. Blakemore", (several specimens, identified as ***D. rubidus tenuis*** because spermathecae and seminal vesicles in 9 were lacking); other specimens 14:3599, from "Site 13. Overland track to Bauer Bay, Macquarie Island, 30.xii.1996, C. Crossley, B. Kemp", (one of several specimen dissected by R.J.B. appears to be either ***D. rubidus subrubicundus*** (Eisen, 1874) or ***D. r. tenuis*** (Eisen, 1874), (correct determination is pending as *tenuis* is sometimes still combined in *rubidus*). It appears therefore that there could be two subspecies present on the island. Three of the subspecies are known from Australia and New Zealand (Blakemore, 1999; 2002) and a further subspecies ***D. r. norvegicus*** Eisen, 1874) has been reported from Kerguelen Islands (Bouché, 1982; Frenot, 1992).

Diagnosis: A small to medium sized worm, length 20-100 mm and diameter 1.25 to 5 mm. The number of segments varies from 38 to 120. Variable, dark red dorsum, pale ventrum or pale with yellow tip to tail. Body usually cylindrical. The clitellum is saddle-shaped, bulky and yellowish and is positioned from segments 25 to 32.

Biology: *Dendrodrilus rubidus* is found at shallow depths and feeds in leaf litter, dung and may be found in compost heaps, also in caves, under stones, and rotting wood and other damp habitats. In Argentina the species was found at high altitudes, up to 2000 m. It appears to be an opportunistic species and its preferred habitat there appeared to be cow dung where the pH is low but it does tolerate extreme climatic conditions where temperatures may drop below zero and fairly dry sites at high altitude. *D. rubidus* is facultatively parthenogenetic and different morphs can be encountered (Mischis and Herrera, 1995). In a study in England of earthworms in metal polluted soils Langdon et al. (2001) found that *D. rubidus* was much more tolerant of arsenic than the other worm present, *Lumbricus rubellus* Hoffmeister, 1843 and that it indicated an ability to adapt to heavy metal pollution.

Genus *Eiseniella* Michaelsen, 1900

Eiseniella tetraedra (Savigny, 1826)

Enterion tetraedrum Savigny, 1826

Lumbricus tetraedrus : Dugès, 1837

Allurus tetraedrus : Eisen, 1874

Eiseniella intermedius Jackson, 1931

Eiseniella tetraedra (typica) : Michaelsen, 1900

Eisenia tetraedra (Sav.) forma *typica* : Michaelsen, 1935 (syn. *intermedia*)

Eiseniella tetraedra tetraedra : Easton, 1983: 481 (syn. *quadrangularis* Risso, 1826; *amphisbaenus* Dugès, 1828; *agilis* Hoffmeister, 1843; *tetraedrus luteus* Eisen, 1871; *dubius* Michaelsen, 1890; *tetragonurus* Friend, 1892; *macrurus* Friend, 1893; *flavus* Friend, 1893; *tetraedrus bernensis* Ribaucourt, 1896; *tetraedrus novis* Ribaucourt, 1896; *tetraedrus infinitesimalis* Ribaucourt, 1896; *tetraedra hammoniensis* Michaelsen, 1900; *mollis* Friend, 1911; *intermedia* Jackson, 1931; *tetraedra popi* Zicsi, 1960).

Fig. 3. *Eiseniella tetraedra* Tasmanian specimen ventral view with (dorsal) spermathecae, dorsal view of prostomium.

Diagnosis: Length 20-65 mm. Dark brownish green often with reddish brown or golden yellow hues. Body cylindrical anterior, quadrangular after clitellum. Prostomium epilobous. Clitellum 22,23-26,27. Male pores usually on 13, infrequently 11 or 15. Rampant parthenogenetic polymorphism characterizes *E. tetraedra*; spermatophores are sometimes produced.

Distribution: Western Palaearctic (possibly endemic in north Balkans), Scandinavia to Pri-urals; Adriatic and Mediterranean; now introduced into mainly temperate regions including northern Nearctic, also the Lavent; southern South America; Azores; Canary Islands; Cape Verde; St Helena; Tristan de Cunha; Mexico; South Africa; Morocco; Libya; Iran, Afghanistan, Tajikistan; etc. India; New Zealand and Australia: infrequently reported from south-western WA [*Eiseniella intermedius (sic)* Jackson, 1931 synonymised by Michaelsen, 1935; Easton, 1983], NSW, Brownhill Creek in SA (J. Buckerfield, pers. com.), Macquarie Island and New Zealand, (Lee, 1959: 364), but not recorded from Qld.

Current specimens were found in Victoria and Tasmania, Australia and Taiwan (all new records by RJB).

The Macquarie Island report by Lee (1959: 364) was based on a single specimen collected by M. L. Laird, 1947. If still present, it presumably has low occurrence on the Island. Not re-located on Macquarie Island subsequently nor during survey in 1997/98.

Habitats: Wells, springs, underground waters, mountain torrents, banks of rills, ditches, brooks, streams, canals, rivers, pools, ponds, swamps, marshes and lakes (60 cm deep in Peruvian mountain lakes); under stones or moss and in moist or alkaline soils; caves; peaty to organic soils also in sewage, sand and gravels (pH 4.6-8.5); in "nearly saline" meadows (Virginia), alkaline chernozems, forests, steppes, taiga (Russia); in marshes of the Hebrides, the dominant species. Its food at one locality was found to be diatoms (Gates, 1972).

Family ENCHYTRAEIDAE (potworms)

Species are marine, fresh water or soil living. The family is cosmopolitan in distribution. No systematic survey of terrestrial enchytraeids has been undertaken on Macquarie Island (cf. Dartnall *et al.*, [2005](#)) so the species list may be incomplete and very little is known of the ecology of the group. The most widespread and frequently recorded invertebrates in stream samples of Marchant & Lillywhite (1994) were enchytraeids: they recorded three species of as identified by Kathy Coates (unpublished data).

Enchytraeids from sub-antarctic islands are described by Lee (1968), who notes that Commonwealth Bay slightly south of the Antarctic Circle is the southernmost record for *Oligochaeta*. Blakemore (unpublished) identified from Macquarie Island *Marionina werthi* Michaelsen, 1905 and *Lumbricillus macquariensis* Benham, 1915 collected from Bishop Island, Macquarie and published by Davis *et al.* (1997). Specimens are lodged in ANIC.

Diagnosis: Members of this family have no eye spots or probosces. Ventral and dorsal setae start from segment 2 and are usually two to several per bundle. The setae are simple-pointed and either straight or sigmoid in shape. The testes and ovaries are in segments 11 and 12 respectively, with the male pores in segment 12 and paired spermathecae in segment 5.

Distribution: All four of the genera represented have a widespread distribution. About a dozen Macquarie Isl. species are known although not all are named. Two species are cosmopolitan in distribution and three are restricted to subantarctic islands.

Cernosvitoviella Nielsen & Christensen, 1959

Cernosvitoviella sp.

Recorded as enchytraeid sp.2 in Marchant & Lillywhite (1994) from every freshwater site sampled but two, as identified by K. Coates (unpublished data).

Cognettia Nielsen & Christensen, 1959

Cognettia antipodum (Benham, 1905)

Enchytraeus antipodum Benham, 1905: 294 (sic). Types AM 975, 978.

Marionina antipodum : Brescher, date?; Block, [2009](#) (sic).

Benham (1922) recorded this species abundantly in fresh water streams, 'peat bog' and from algae above the high water mark, also on top of hill. It was originally recorded in large numbers from the Antipodes Island but is not known from Campbell or Auckland Islands and was not recorded by Lee (1968). The species perhaps belongs more comfortably in *Marionina* as *Marionina antipodum* (Benham, 1905), according to Dr. Ruediger M. Schmelz (pers. comm.) and this removes the genus *Cognettia* from the list.

Diagnosis: Mature worms are about 15 mm in length and have about 40 segments. The oesophagus and intestine are covered with dark yellow to brown granules that give a pigmented appearance to the animals (Benham, 1922).

Enchytraeus Henle, 1837

Enchytraeus albidus Henle, 1837

Commonly called the "Whiteworm", this species has a worldwide distribution and is also found on Kerguelen and Crozet Islands (these records overlooked by Frenot *et al.* (2005). It is one of the largest Enchytraeidae known with individuals recorded up to 35mm long. It is widely cultivated as food for aquarium fish, used as a test species in ecotoxicology and may play a role in sewage treatment (Nakamura, 1984). It is found in marine, freshwater and terrestrial habitats mainly in association with decaying vegetation.

Benham (1905) first recorded specimens from Macquarie Island but gave no locality or habitat. Lee (1968) listed three collections of this species from Macquarie, one from soil, one unknown and the other from the marine littoral zone. It was absent from the ANARE collections made in 1911-1915 and from the Bishop Island collections (Davies *et al.*, 2001) but found in large numbers on rotting timbers during excavations of sealers' huts at Buckles Bay by K. Townrow.

***Lumbricillus* Ørsted, 1844 (= *Pachydrilus* Claparède, 1861)**

The genus has a widespread distribution in the marine littoral. Species are identified by a set of outer and inner characters, such as absence of gut appendages, preseptal part of nephridia consisting of funnel only, etc.; most distinctive are multiple pear-shaped testis sacs; but they are not present in all species (Dr. Ruediger M. Schmelz pers. comm.). Cf. *Lumbriculus*, family Lumbriculidae that has a widespread distribution and is identified by its bifid setae (Cook, 1968).

***Lumbricillus benhami* Stephenson, 1932**

From Macquarie Island by Benham (1922) (mis-)identified as *Marionina werthi* Michaelsen, 1905 according to ABRS website [April, 2006].

***Lumbricillus lineatus* (O.F. Müller, 1774)**

[Originally in *Lumbricus*, in the past also placed in these genera *Clitellio*, *Pachydrilus*, *Saenuris*, *Tubifex*].

Common in Europe and North America in upper intertidal drift habitats however it may have been introduced to some regions. Recorded as enchytraeid sp. 3 in Marchant & Lillywhite (1994) and identified by K. Coates (unpublished data), also cited by Frenot *et al.* (2005) from Macquarie Island.

***Lumbricillus maritimus* (Ude, 1896)**

Pachydrilus maritimus Ude, 1896

Reported from Macquarie by Frenot *et al.* (2005, Table 2).

Lumbricillus macquariensis Benham, 1905

Lumbricillus macquariensis Benham, 1905: 295 [miscited as "Benham, 1915: 189 and as "macuariensis Benham, 1905: 295" (sic, laps) by Reynolds & Cook (1976: 131) who also (mistakenly?) reported type material in the Australian Museum, Sydney.

Lumbricillus intermedius Benham, 1909. Synonym.

This species was originally described by Benham from specimens collected by A. Hamilton from brackish pools together with *Siponaria* and some unidentified flatworms. Further records were from streams and supralittorally on the island by Benham (1922). Specimens identified by R. Blakemore were found in a Royal Penguin rookery on Bishop Island (Davies *et al.*, 1997). *Lumbricillus macquariensis* appears to be eurytopic inhabiting both supra littoral and fresh water environments (Benham, 1922) and its distribution also includes Heard & McDonald Islands (Lee, 1968), Auckland and Campbell Islands (Benham, 1922) and South Georgia Island.

Diagnosis: Size of larger specimens 10-12 mm and possessing 60-66 segments. Body colour yellowish or pale fawn, opaque and tetrahedral in posterior cross section. Blakemore (unpublished report, 1994) gave further morphological details of the species.

Lumbricillus maximus (Michaelsen, 1888)

Pachydriulus maximus Michaelsen, 1888

This species is also known from South Georgia, Crozet, Heard Island, the Kerguelen Islands, Antarctic Peninsula and South Orkneys (Lee, 1968; Rota, 2001). It is one of the largest enchytraeids known being up to 45 mm in length and over 1 mm in width and is similar morphologically to *L. macquariensis*. A detailed redescription is given in Rota (2001). The Macquarie Island specimens were collected from decomposing kelp (*Durvillea antarctica*) and it is predominately marine in habits but also supralittoral.

Lumbricillus werthi (Michaelsen, 1905)

Marionina werthi Michaelsen, 1905: 13.

Perhaps belongs in its original genus, or some other combination (Dr. Ruediger M. Schmelz, pers. comm.). This species was described from Kerguelen Island and recorded in large numbers from Macquarie by Benham (1922) from algae above the high water

mark as well as in fresh water streams (cf. *Lu. benhami*). Davies *et al.* (1997) recorded it from Bishop Island in a Rockhopper penguin rookery using specimens identified by R. Blakemore (unpublished). The species is also known from Crozet Island (Benham, 1922) but cf. *Lu. benhami*.

Diagnosis: The body length is 30-50 mm being posteriorly dorso-laterally flattened and tapering. It has 34-43 segments. Individuals are darkly coloured due to black subcutaneous pigment but paler yellow ventrally and intersegmentally. The thin, white clitellum is positioned between segments 10-13 where the body is wider and ventrally depressed. Details and some further description are given in Blakemore (unpublished report, 1994).

***Lumbricillus* sp.**

An unidentified species of *Lumbricillus* was listed by Lee (1968) as *Pachydriilus* sp. in two collections from a littoral habitat on the west coast and another from Buckles Bay near the Station.

***Marionina* Michaelsen, 1889**

Type species: *Pachydriilus georgianus* Michaelsen, 1888 [= *Marionina georgiana* (Michaelsen, 1888)].

This genus includes the smallest enchytraeids. Restoration of *Marionina antipodum* (Benham, 1905) from *Cognettia* retains the record of this genus from Macquarie Island.

***Mesenchytraeus* Eisen, 1878**

This is a large genus of holarctic distribution and includes the largest species of enchytraeids known. The well studied "Ice Worm", *M. solifugus solifugus* (Emery, 1898), an inhabitant of Arctic glaciers, belongs to this genus. One species of *Mesenchytraeus* has been recorded on South Georgia but its presence there is due to human intervention.

***Mesenchytraeus* sp.**

Recorded as enchytraeid sp. 1 in Marchant & Lillywhite (1994) and identified by K. Coates (unpublished data). This was the most abundant fresh water stream invertebrate sampled by these authors, being present at every site and in nearly every sample.

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[End of Summary text of MacQuarie Island Oligochaetes; figures follow].

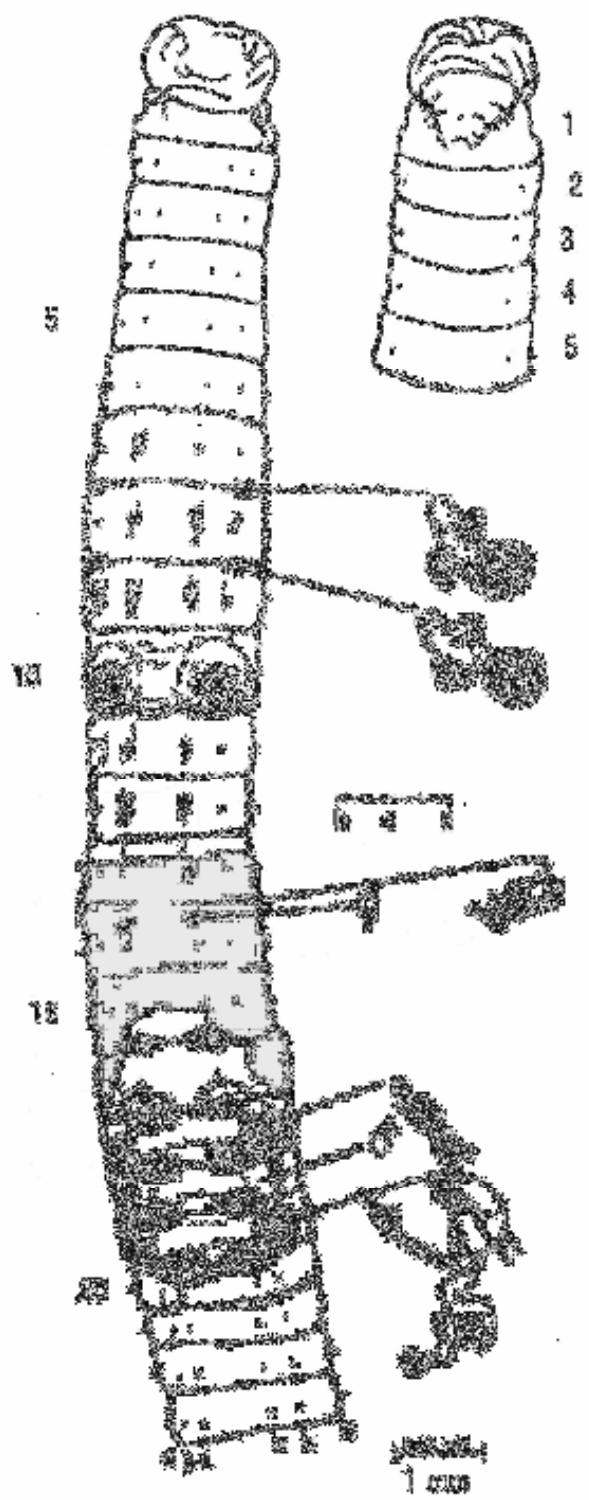


Fig. 1 *M. macquariensis* (Beddard, 1896)

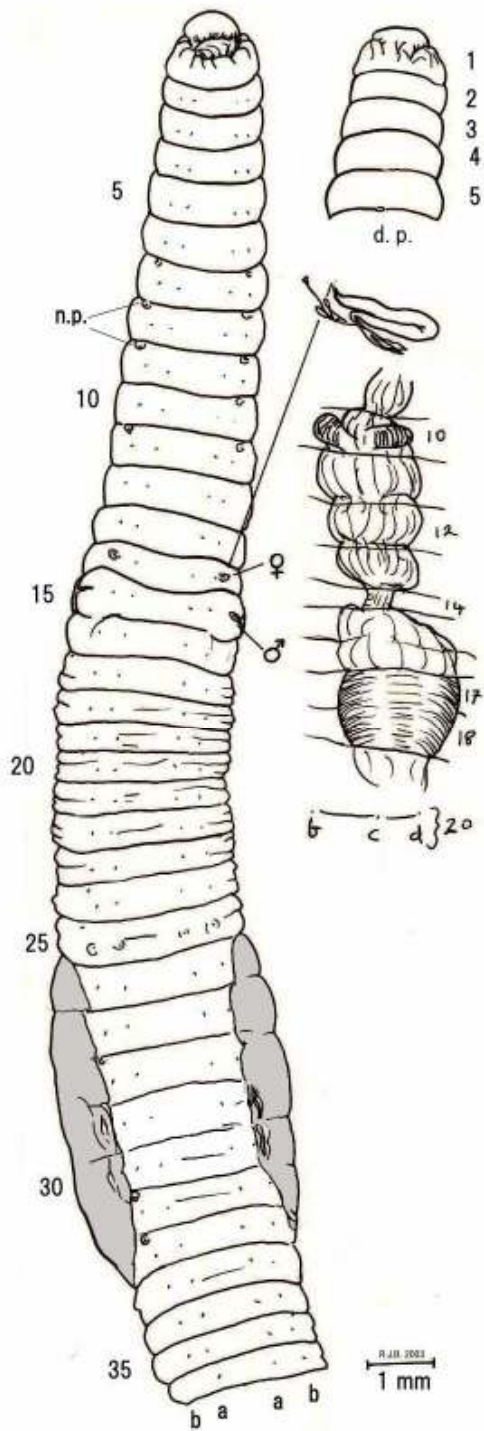


Fig. 2. *Dendrobaena rubidus* from Biggles Track, Brothers Point to Green Gorge, Macquarie Island (Collected 20.x.1997 by R.J.B.)

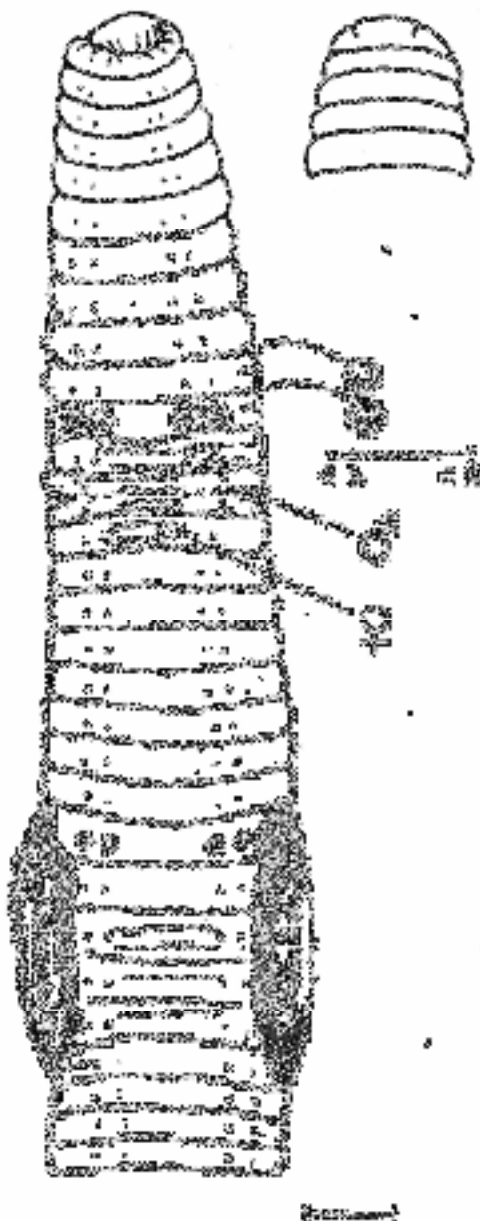


Fig. 3. *Eiseniella tetraedra* Tasmanian specimen ventral view with (dorsal) spermathecae, dorsal view of prostomium.