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Global checklist of species of *Grania* (Clitellata: Enchytraeidae) with remarks on their geographic distribution

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Abstract. A checklist of all currently accepted species of *Grania* Southern, 1913 (Annelida, Clitellata, Enchytraeidae) is presented. The genus is widespread over the world and comprises 81 species described to date. Remarks on their geographical distribution, habitat, synonymies and museum catalogue numbers are provided.

Keywords. Species list, Annelida, marine clitellates, geographic distribution, interstitial fauna.

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Introduction

Grania Southern, 1913 is a morphologically homogeneous and easily recognizable genus of marine Enchytraeidae Vejdovský, 1879 with a worldwide distribution. The worms are typically small, only a few mm long, with a filiform, nematode-like body and a characteristic pattern of few, stout chaetae (Fig. 1). Most species live interstitially in intertidal or subtidal sands, but a few taxa are known from the deep sea.

The genus was originally established for specimens of *Grania maricola* Southern, 1913, sampled from the west coast of Ireland. Later on, Pierantoni (1915) regarded *Grania maricola* and his own species, *Enchytraeus macrochaetus* Pierantoni, 1901, at the time referred to *Michaelsena* Ude, 1896 (Pierantoni 1903), as synonyms. Stephenson (1930) instead considered them as separate species within *Michaelsena*. Nielsen & Christensen (1959) pointed out, however, that Stephenson's concept of *Michaelsena* was artificial, and they transferred both species to the genus *Enchytraeus* Henle, 1837.

Two authors independently re-established the genus *Grania* in 1966. Kennedy (1966) re-described *G. maricola* and *G. macrochaeta* and described *G. americana* Kennedy, 1966 from off the coast of Florida, while Lasserre (1966) transferred *Michaelsena postclitellochaeta* Knöllner, 1935 to *Grania*. One year later, considering the similarities among *G. maricola*, *G. macrochaeta* and *G. americana*, Lasserre (1967) proposed to divide *G. macrochaeta* into four subspecies, *G. m. macrochaeta*, *G. m. americana*, *G. m. maricola* and *G. m. roscoffensis* Lasserre, 1967. This situation lasted for about a decade, after which many additional species of *Grania* were described from different parts of the world (Erséus & Lasserre 1976; Erséus 1977, 1980, 1990; Jamieson 1977; Coates & Erséus 1985; Coates 1990; Rota & Erséus 1996, 1997; Locke & Coates 1998, 1999; De Wit & Erséus 2007; Rota *et al.* 2007; De Wit *et al.* 2009; Prantoni *et al.* 2016), bringing a better understanding of species-specific characters and raising the subspecies proposed by Lasserre (1967) back to species status (Coates 1984; De Wit 2010). More recently, Prantoni *et al.* (2016) updated the phylogeny of the genus together with the descriptions and genetic data of nine new species, for the first time including species from Africa and the east coast of South America (Brazil) (see Discussion).

The genus is morphologically and genetically well separated from other enchytraeid genera (Erséus *et al.* 2010; De Wit *et al.* 2011; Prantoni *et al.* 2016).

To provide a global taxonomic overview of *Grania*, the present checklist summarizes historical and recently published data, including all valid species described to date. Moreover, the general geographical distribution patterns of the various species are briefly discussed.

Material and methods

The checklist is arranged in chronological order and based on a bibliographic survey. All records of *Grania* from published papers and monographs were reviewed. When available, additional information on habitat, geographical distribution and museum catalogue numbers is included.



Fig. 1. Specimen of *Grania chilensis* Prantoni, De Wit & Erséus, 2016. Photograph by Pierre De Wit.

Abbreviations

AMS	=	Australian Museum, Sydney, Australia
BAMZ	=	Bermuda Aquarium, Natural History Museum and Zoo
BJ	=	Barrie G.M. Jamieson collection, Queensland, Australia
BNMH	=	Natural History Museum, London, United Kingdom
MCZR	=	Museo Civico di Zoologia di Roma, Rome, Italy
MIMB	=	A.V. Zhirmunsky Institute of Marine Biology, Far Eastern Branch of the Russian Academy of Sciences, Vladivostok, Russia
MNHM	=	Muséum national d'Histoire naturelle, Paris, France
MZUT	=	Museo e Istituto de Zoologia del'Università de Torino, Turin, Italy
NMINH	=	National Museum of Ireland (Department of Natural History), Dublin, Ireland
NTM	=	Museum and Art Gallery of the Northern Territory, Darwin, Australia
QM	=	Queensland Museum, Brisbane, Australia
QVM	=	Queen Victoria Museum, Launceston, Tasmania, Australia
ROMIZ	=	Invertebrate Zoology, Royal Ontario Museum, Toronto, Canada
SAMC	=	Iziko South African Museum, Cape Town, South Africa
SMNH	=	Swedish Museum of Natural History, Stockholm, Sweden
USNM	=	National Museum of Natural History, Washington DC, USA
WAM	=	Western Australian Museum, Perth, Australia
ZMA	=	Zoological Museum of Amsterdam, the Netherlands
ZMUB	=	Zoological Museum of the University of Bergen, Norway
ZUEC	=	Museu de Zoologia da Universidade Estadual de Campinas, Campinas, Brazil

Results

We report 81 currently accepted species of *Grania*, of which 49 are known from the Southern and 32 from the Northern Hemisphere. The only species found in both hemispheres (Atlantic Ocean) is the deep-sea *Grania atlantica* Coates & Erséus, 1985. Almost half of the known southern species (24) occur in Australia. On the other hand, 15 of the 32 species described from the Northern Hemisphere to date are European (Fig. 1).

List of all described species of Grania in the World

Phylum Annelida Lamarck, 1809
Class Clitellata Michaelsen, 1919
Order Enchytraeida Vejdovský, 1879
Family Enchytraeidae Vejdovský, 1879

Genus *Grania* Southern, 1913

1. *Grania monochaeta* (Michaelsen, 1888)

Enchytraeus monochaetus Michaelsen, 1888: 66–68, figs 6a–c.

Enchytraeus monochaetus – Beddard 1895: 339. — Michaelsen 1900: 91.

Marionina monochaeta – Nielsen & Christensen 1959: 109.

Grania monochaeta – Lasserre 1967: 279–280. — Rota & Erséus 1997: 29–34, fig. 2, tab. 1 (lectotype designation).

Hemigrania monochaeta – Lasserre 1971: 454.

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non *Michaelsena monochaeta* – Michaelsen 1921: 3. — Stephenson 1932: 263, fig. 14 (see Rota & Erséus 1997).

non *Grania monochaeta* – Erséus & Lasserre 1977: 299–300, figs 1a–d.

Type material

Lectotype

UNITED KINGDOM: South Georgia (MZUT 123.1).

Paralectotypes

UNITED KINGDOM: South Georgia (MZUT Olig. Coll. 123.2–123.4).

Other material

UNITED KINGDOM: South Georgia (SMNH 362).

Type locality

UNITED KINGDOM: South Georgia, SW Atlantic Ocean.

Habitat

Intertidal, subtidal to 20 m, shelly detritus, among the roots of seaweeds and in the canal system of sponges.

Distribution

Only known from the type locality.

2. *Grania macrochaeta* (Pierantoni, 1901)

Enchytraeus macrochaetus Pierantoni, 1901: 201–202.

Michaelsena macrochaeta – Pierantoni 1903: 409–444, figs 1–28; 1915: 48–50. — Stephenson 1930: 776–777.

Enchytraeus macrochaetus – Nielsen & Christensen 1959: 89–91, tab. 9.

Grania macrochaeta – Kennedy 1966: 403–404 (redescription). — Lasserre 1966: 312–314 (redescription). — Erséus 1974: 90–93, tab. 1. — Rota 1995: tab. 2.

Grania macrochaeta macrochaeta – Lasserre 1967: 280. — Erséus & Lasserre 1976: 122, fig. 1, tab. 1.

Type material

Not designated.

Other material

ITALY: Bay of Naples (MNHM AH 61–63). This refers to three specimens collected in June, 1967 by J. Renaud-Mornant and examined by Erséus & Lasserre (1976).

Type locality

ITALY: Bay of Naples.

Habitat

Subtidal, 4–13 m, coarse sand.

Distribution

Only known from the type locality.

3. *Grania paucispina* (Eisen, 1904)

Michaelsena paucispina Eisen, 1904: 74, fig. 43.

Michaelsena paucispina – Michaelsen 1907: 130.

Marionina paucispina – Nielsen & Christensen 1959: 109. — Lasserre 1971: 454.

Grania paucispina – Erséus & Lasserre 1976: 127. — Coates & Erséus 1980: 1037–1038, fig. 1. — Coates & Ellis 1981: 2134.

Type material

Typus perditus — *specimen dissolutus*. According to Coates & Erséus (1980), the type material deposited in the California Academy of Science in San Francisco was destroyed during the earthquake and fire in 1906.

Other material

UNITED STATES: California (USNM 58906–58907).

CANADA: British Columbia (USNM 58907).

Type locality

UNITED STATES: Santa Barbara, California.

Habitat

In muddy sand, 2–6 m, with much organic material, brackish water.

Distribution

California, USA and British Columbia, Canada.

4. *Grania principissae* (Michaelsen, 1907)

Michaelsena principissae Michaelsen, 1907: 129–131, pl. 1, figs 1–2.

Hemigrania principissae – Lasserre 1971: 454.

Grania principissae – Erséus & Lasserre 1976: 128. — Coates 1990: 28–30, figs 2, 8.

Type material

Typus amissus.

Other material

AUSTRALIA: Western Australia, Princess Royal Harbour (WAM 69–89, ROMIZ 11277).

Type locality

AUSTRALIA: Princess Royal Harbour, Albany area, Western Australia.

Habitat

Intertidal, sand with organic debris accumulated in mussel bed.

Distribution

Only known from the type locality.

5. *Grania maricola* Southern, 1913

Grania maricola Southern, 1913: 14, figs 1–7.

Michaelsena macrochaeta – Pierantoni 1915 (part): 48–50.

Michaelsena maricola – Stephenson 1930: 776–777.

Enchytraeus maricolus – Nielsen & Christensen 1959: 89–91, tab. 9.

Grania maricola – Kennedy 1966: 400–402, fig. 2 (redescription). — Lasserre 1966: 312–314 (redescription). — Erséus 1974: 90–93; 1976: 35, tab. 3. — Erséus & Lasserre 1976: 124–125, figs 4–5, tab. 1. — Bonomi & Erséus 1984: 209, tab. 1. — Coates 1984: 40, fig. 7a, tab. 1. — Rodriguez 1986: 82–83, fig. 2. — Rota 1995: tab. 2. — Locke & Coates 1998: 1111–1112, tab. 1. — De Wit 2006: 25. — van Haaren 2016: 140–141, figs 20, 56.

Grania macrochaeta maricola – Lasserre 1967: 280.

Type material

Holotype

IRELAND: County Kerry (NMINH 1913.415).

Paratypes

IRELAND: County Kerry (NMINH 1909.151, NMINH 1914.313).

Type locality

IRELAND: County Kerry.

Habitat

Subtidal, 8–80 m, coarse shell sand and shell gravel.

Distribution

Ireland, Iberian Peninsula, Italy, the Netherlands, Norway and Sweden.

6. *Grania postclitellochaeta* (Knöllner, 1935)

Michaelsena postclitellochaeta Knöllner, 1935: 449–455, figs 19–25, tab. 1.

Michaelsena postclitellochaeta – Hagen 1954: 12–13.

Marionina postclitellochaeta – Nielsen & Christensen 1959: 109–110, tab. 11.

Grania postclitellochaeta postclitellochaeta – Lasserre 1966: 299–300, 312–314, tabs 1–2. — Erséus 1976: 35, tab. 3. — Erséus & Lasserre 1976: 124, tab. 1.

Hemigrania postclitellochaeta – Lasserre 1971: 454–456, fig. 3c.

Grania postclitellochaeta – Kossmagk-Stephan 1983: 598. — Rota & Erséus 2003: 232–234, figs 10c–d. — van Haaren 2016: 141–143, figs 21, 23, 25–26, 57.

Type material

Not designated.

Other material

FRANCE: Bassin d’Arcachon (SMNH 45646–45651, MCZR Oligochaeta 0116–0117); Gulf of Biscay (MNHM AH 66–68; see Erséus & Lasserre 1976).

NORTH SEA: SMNH 45652–45654, MCZR Oligochaeta 0118.

ICELAND: Hafnafjörðdur (SMNH 45655–45660, MCZR Oligochaeta 0119; see Rota & Erséus 2003).

NORWAY: Tromsø (SMNH 45661–45665, MCZR Oligochaeta 0120; see Rota & Erséus 2003); Bergen (SMNH 107746–107749; see De Wit & Erséus 2010).

SWEDEN: Koster Islands (SMNH 107730, 107736, 107738–107745, 108220; see De Wit & Erséus 2010).

Type locality

GERMANY: Kiel Bay.

Habitat

Intertidal, subtidal, 20–100 m in coarse shell sand, shell gravel, sometimes in brackish water (Baltic Sea), tolerating a wide range of salinity (11–35 ppt).

Distribution

Baltic Sea, Iceland (see Rota & Erséus 2003), North Sea (Germany, the Netherlands and Belgium), France, Norway and Sweden.

Remarks

According to van Haaren (2016), it is not possible to distinguish *Grania postclitellochaeta* from *G. occulta* De Wit & Erséus, 2010 and *G. ovitheca* Erséus, 1977 on morphological grounds only.

7. *Grania americana* Kennedy, 1966

Grania americana Kennedy, 1966: 404–405, fig. 3.

Grania macrochaeta americana — Lasserre 1967: 78–280.

Grania americana – Erséus 1974: 90–93, tab. 1. — Healy & Coates 1999: 111, 114, tab. 1. — Locke & Coates 1999: 598–623, figs 16–20 (redescription); 2000: 619–620, 625–626, figs 4a, 5. — Locke 2000: 83–93, figs 1–14.

Grania americana – Erséus & Lasserre 1976: p. 123 (*nomen dubium*, see Erséus & Lasserre 1976; Locke & Coates 1999).

Type material

Holotype

BAHAMAS: North Bimini (USNM 33005).

Paratype

BAHAMAS: North Bimini (USNM 33039).

Other material

BAHAMAS: Pearl Island (BMAZ 1999 180 009).

BERMUDA: Ferry Reach (USNM 185957).

UNITED STATES: Hutchinson Island (USNM 185958).

BELIZE: Carrie Bow Cay (USNM 185959–185960).

Type locality

BAHAMAS: North Bimini.

Habitat

Intertidal, subtidal to 10 m, fine to coarse sand.

Distribution

Belize, Bermuda, Bahamas, Florida.

8. *Grania roscoffensis* Lasserre, 1967

Grania macrochaeta roscoffensis Lasserre, 1967: 277–280.

Grania roscoffensis – Erséus 1974: 90–93, tab. 1. — Erséus & Lasserre 1976: 125, fig. 6, tab. 1 (amended). — Coates 1984: 49. — Rota & Erséus 2003: 218–221, figs 3a–c, 4.
non *Grania roscoffensis* — Erséus 1977: 294, tab. 1 (see Rota & Erséus 2003).

Type material

Holotype

FRANCE: Roscoff, harbour (MNHM AH 64).

Paratype

The originally designated paratype AH 65 belongs to another species (see Rota & Erséus 2003).

Other material

FRANCE: Roscoff, harbour (SMNH 45614).

SPAIN: Canary Islands (SMNH 45615, ZMAV.OL 9345).

Type locality

FRANCE: Roscoff, harbour.

Habitat

Intertidal, coarse sand and gravel.

Distribution

France, Sweden and Canary Islands.

9. *Grania pusilla* Erséus, 1974

Grania pusilla Erséus, 1974: 87–94, figs 1–6, tab. 1.

Grania pusilla – Erséus 1976: 34, tab. 3. — De Wit *et al.* 2011: 513, figs 1–5, tab. 1.

Grania macrochaeta pusilla – Erséus & Lasserre 1976: 122, fig. 2. — Erséus 1977: 294, tab. 1. — Coates 1984: 49. — Kossmagk–Stephan 1985: 77–78.

non *Grania pusilla* – Locke & Coates 1998: 1107–1112, figs 6–12 (see Rota & Erséus 2003).

Type material

Holotype

NORWAY: Vågegrunnen (ZMUB 55050).

Paratype

NORWAY: Vågegrunnen (ZMUB 55051).

Other material

SWEDEN: Koster Islands (SMNH 107775–107788).

NORWAY: Bergen (SMNH 107789–107796).

Type locality

NORWAY: Vågegrunnen, Hjeltefjorden.

Habitat

Subtidal, 35–500 m, fine to coarse shelly sand.

Distribution

West coasts of Norway and Sweden, Morocco.

10. *Grania bermudensis* Erséus & Lasserre, 1976

Grania macrochaeta bermudensis Erséus & Lasserre, 1976: 122–124, fig. 3 tab. 1.

Grania macrochaeta bermudensis – Erséus & Lasserre 1976: 453. — Coates 1984: 49, fig. 8a.

Grania bermudensis – Locke & Coates 1999: 609–614, figs 6, 12–15, tab. 1; 2000: 619–621, 626, fig. 6c.

Type material

Holotype

BERMUDA: Castle Island (USNM 53202).

Paratype

BERMUDA: Castle Island (USNM 53203).

Type locality

BERMUDA: Castle Island.

Habitat

Subtidal, 8–15 m, medium to coarse coral sand and gravel.

Distribution

Only known from Bermuda.

11. *Grania longiducta* Erséus & Lasserre, 1976

Grania postclitellochaeta longiducta Erséus & Lasserre, 1976: 127, fig. 7, tab. 1.

Hemigrania postclitellochaeta – Lasserre 1971: 454–456, fig 3a–b, d .

Grania postclitellochaeta longiducta – Erséus 1977: 296–297. — Coates 1984: 49.

Grania longiducta – Coates & Erséus 1985: 113–114, fig. 8. — Diaz *et al.* 1987: tab. 1, 3. — Locke & Coates 2000: 619, 625.

Type material

Holotype

UNITED STATES: Massachusetts, Cape Cod Bay (USNM 43482).

Paratype

UNITED STATES: Massachusetts, Cape Cod Bay (USNM 53201).

Type locality

UNITED STATES: Cape Cod Bay, Massachusetts.

Habitat

Subtidal, 42–78 m, medium to coarse sand.

Distribution

Cape Cod Bay, Massachusetts, Georges Bank (SE of Massachusetts), off the coast of New Jersey, Delaware and Maryland, USA.

12. *Grania monospermatheca* Erséus & Lasserre, 1976

Grania monospermatheca Erséus & Lasserre, 1976: 127, fig. 9, tab. 1.

Grania monospermatheca – Coates 1984: 49, fig. 8b. — Coates & Erséus 1985: 114–115, fig. 9. — Diaz *et al.* 1987: tab. 1–3. — Locke & Coates 2000: 619, 626–628.

Type material

Holotype

UNITED STATES: Massachusetts, Cape Cod Bay (USNM 53204).

Paratype

UNITED STATES: Massachusetts, Cape Cod Bay (USNM 53205).

Type locality

UNITED STATES: Cape Cod Bay, Massachusetts.

Habitat

Subtidal, 3–48 m, fine to coarse well-sorted sands and sand mixed with shell or shell gravel.

Distribution

Along North American Atlantic coast, from Cape Cod Bay, Massachusetts to Biscayne Bay, Florida, USA.

13. *Grania variochaeta* Erséus & Lasserre, 1976

Grania variochaeta Erséus & Lasserre, 1976: 125–126, figs 10–11, tab. 1.

Grania variochaeta – Erséus 1976: 35, tab. 3; 1977: 297–298, tab. 1. — Coates 1984: 46, fig. 6. — Rota & Erséus 2003: 211, 234–235, fig. 11. — van Haaren 2016: 143–144, fig. 58.

Type material

Holotype

SWEDEN: Kosterfjorden (SMNH 3132).

Paratypes

SWEDEN: Kosterfjorden (SMNH 3133–3136).

Type locality

SWEDEN: Kosterfjorden, Bohuslän.

Habitat

Subtidal, 20–140 m, heterogeneous sand.

Distribution

West coast of Norway and Sweden, the Netherlands.

14. *Grania ovitheca* Erséus, 1977

Grania ovitheca Erséus, 1977: 125, figs 5–7.

Grania ovitheca – Bonomi & Erséus 1984: 209, tab. 1. — Rota 1995: tab. 2. — Rota & Erséus 2003: 230–233, figs 10a–b. — De Wit & Erséus 2010: 286–291.

Type material

Holotype

SWEDEN: Kosterfjorden (SMNH 3071).

Paratypes

SWEDEN: Kosterfjorden (SMNH 3072–3073).

Other material

SWEDEN: off Gullmar Fjord (SMNH 107753, 107755–107758, 107760–107768).

Type locality

SWEDEN: Kosterfjorden, Bohuslän.

Habitat

Subtidal, 15–30 m, shell sand with gravel and pebbles or coarse sand with stones, pebbles and shells.

Distribution

West coasts of Norway and Sweden, Italy.

15. *Grania trichaeta* Jamieson, 1977

Grania macrochaeta trichaeta Jamieson, 1977: 345–347, fig. 5, pl. 1g.

Grania macrochaeta trichaeta – Coates 1984: 46, fig. 5a.

Grania trichaeta – De Wit *et al.* 2009: 28–30, figs 8–9, 10a–e (redescription).

Type material

Holotype

AUSTRALIA: Queensland, Wistari Reef (QM 8863).

Paratypes

AUSTRALIA: Queensland, Wistari Reef (QM 8866, BNMH 1976.1.21–23, BJ 1975.7.76–78); Queensland, Heron Reef (BJ 1975.7.74–75, BJ 1975.7.84).

Other material

AUSTRALIA: Queensland, Lizard Island (AMS W.35554–W.35559, SMNH 105540–105559); Queensland, Heron Island (SMNH 105560–105584).

Type locality

AUSTRALIA: Wistari Reef, Great Barrier Reef, Queensland.

Habitat

Intertidal, subtidal to 7 m, fine to medium heterogeneous sand.

Distribution

Lizard Island, Heron Island and Wistari Reef, Great Barrier Reef, Queensland, Australia.

16. *Grania pacifica* Shurova, 1979

Grania pacifica Shurova, 1979: 84–86, fig. 6.

Type material

Holotype

RUSSIA: Iturup Island, Sea of Okhotsk (MIMB 16017).

Type locality

RUSSIA: Sea of Okhotsk, Iturup Island.

Habitat

Subtidal, 15–20 m, gravelly sediment.

Distribution

Only known from the type locality.

17. *Grania incerta* Coates & Erséus, 1980

Grania incerta Coates & Erséus, 1980: 1038–1040, fig. 2.

Grania incerta – Coates & Ellis 1981: 2134–2135. — Coates 1984: 46, fig. 4.

Type material

Holotype

UNITED STATES: California, Santa Barbara (USNM 58908).

Paratypes

UNITED STATES: California, Santa Barbara (USNM 58909).

CANADA: British Columbia, Rennison Island (USNM 58910).

Type locality

UNITED STATES: Santa Barbara, California.

Habitat

Subtidal, 3–17 m, well-sorted fine sand.

Distribution

California, USA and British Columbia, Canada.

18. *Grania parvitheca* Erséus, 1980

Grania parvitheca Erséus, 1980: 27–28, fig. 1.

Type material

Holotype

UNITED KINGDOM: Ascension Island (USNM 58738).

Paratype

UNITED KINGDOM: Ascension Island (USNM 58739).

Type locality

UNITED KINGDOM: Ascension Island, S Atlantic Ocean.

Habitat

Intertidal, among rocks and clumps of tubes of Sabellariidae.

Distribution

Only known from the type locality.

19. *Grania atlantica* Coates & Erséus, 1985

Grania atlantica Coates & Erséus, 1985: 112–113, fig. 7.

Grania atlantica – Diaz *et al.* 1987: 222–224, tabs 1, 3–4. — Locke & Coates 2000: 619, 626. — Rota & Erséus 1996: 182; 2003: 210–211, 235–237, fig. 10e. — Erséus & Rota 2003: 898, tab. 1.

Type material

Holotype

UNITED STATES: off Massachusetts (USNM 96503).

Paratypes

UNITED STATES: off Massachusetts (USNM 96504–96508).

Type locality

UNITED STATES: off Massachusetts.

Habitat

Continental slope, 744–1796 m, fine ooze to silty deep-sea sediments.

Distribution

Widely distributed in the Atlantic Ocean from 48°35.4' N to 09°05' S in the east and from 39°51.2' N to 70°40.8' S in the west.

20. *Grania levis* Coates & Erséus, 1985

Grania levis Coates & Erséus, 1985: 111–112, fig. 6.

Grania levis – Diaz *et al.* 1987: tabs 1, 4. — Locke & Coates 2000: 626.

?*Grania cf. levis* – Prantoni *et al.* 2016: 502.

Type material

Holotype

UNITED STATES: Georges Bank (USNM 96509).

Paratypes

UNITED STATES: Georges Bank (USNM 96510); off New Jersey (USNM 96511).

Other material

UNITED STATES: off North Carolina (USNM 1283176; immature specimen, see Prantoni *et al.* 2016).

Type locality

UNITED STATES: Georges Bank, SE of Massachusetts, NW Atlantic Ocean.

Habitat

Intertidal, subtidal to 79 m (probably to 492 m, see Prantoni *et al.* 2016), medium to coarse sand.

Distribution

Georges Bank SE of Massachusetts, on the continental shelf (and slope?) off New Jersey and North Carolina, USA.

21. *Grania reducta* Coates & Erséus, 1985

Grania reducta Coates & Erséus, 1985: 110–111, fig. 5.

Grania reducta – Diaz *et al.* 1987: tabs 3–4. — Locke & Coates 2000: 626, 628.

Type material

Holotype

UNITED STATES: off Maryland (USNM 96512).

Paratype

UNITED STATES: off Maryland (USNM 96513).

Type locality

UNITED STATES: off Maryland.

Habitat

Intertidal, subtidal to 65 m, medium to coarse sand.

Distribution

Continental shelf off New Jersey, Maryland and Delaware, USA.

22. *Grania ascophora* Coates, 1990

Grania ascophora Coates, 1990: 23–25, fig. 5.

Type material

Holotype

AUSTRALIA: Western Australia, Baker Bay (WAM 69.89).

Paratype

AUSTRALIA: Western Australia, Baker Bay (ROMIZ I2880).

Type locality

AUSTRALIA: Baker Bay, King George Sound, Western Australia.

Habitat

Subtidal, 4 m, fine sand with shells and seagrass.

Distribution

Barker Bay and Princess Royal Harbour, Albany area, Western Australia.

23. *Grania bykane* Coates, 1990

Grania bykane Coates, 1990: 21–23, figs 2, 4a–d.

Grania bykane – Rota *et al.* 2007: 1001–1004, figs 1a–g, 2a.

Type material

Holotype

AUSTRALIA: Western Australia, Princess Royal Harbour (WAM 55.8).

Paratype

AUSTRALIA: Western Australia, Princess Royal Harbour (WAM 56.89).

Type locality

AUSTRALIA: Princess Royal Harbour, Albany area, Western Australia.

Habitat

Intertidal, subtidal to at least 6 m, fine to coarse sand and in sediments under boulders and in seagrass beds.

Distribution

Southern coast of Western Australia (Albany and Esperance areas), Australia.

24. *Grania crassiducta* Coates, 1990

Grania crassiducta Coates, 1990: 20–21, figs 2, 3a–d.

Grania crassiducta – Coates & Stacey 1993: 404–406, fig. 9a–f. — Rota *et al.* 2007: 1004–1006, figs 2b, 3a–f.

Type material

Holotype

AUSTRALIA: Western Australia, Princess Royal Harbour (WAM 51.89).

Paratypes

AUSTRALIA: Western Australia, Princess Royal Harbour (WAM 53.89, ROMIZ I1279).

Type locality

AUSTRALIA: Princess Royal Harbour, Albany area, Western Australia.

Habitat

Intertidal, muddy coarse sand, gravel and mixed sand with pebbles and coral.

Distribution

Southern (Albany and Esperance areas) and western (Rottnest Island) coasts of Western Australia.

25. *Grania ersei* Coates, 1990

Grania ersei Coates, 1990: 17–20, figs 1a–d, 2.

Grania ersei – Coates & Stacey 1993: 406–408, figs 10a–f. — Rota *et al.* 2007: 1008–1011, figs 4d–g, 5a.

Type material

Holotype

AUSTRALIA: Western Australia, Princess Royal Harbour (WAM 61.89).

Paratypes

AUSTRALIA: Western Australia, Princess Royal Harbour (WAM 62.68–68.89, ROMIZ I1273–I1276).

Type locality

AUSTRALIA: Princess Royal Harbour, Albany area, Western Australia.

Habitat

Intertidal, subtidal to 26 m, sand among boulders and pebbles, and with algal debris.

Distribution

South (Albany, Esperance) and west (Rottnest Island) coasts of Western Australia.

26. *Grania hastula* Coates, 1990

Grania hastula Coates, 1990: 26–28, fig. 7.

Type material

Holotype

AUSTRALIA: Western Australia, Middleton Beach (USNM 120714).

Type locality

AUSTRALIA: Middleton Beach, Albany area, Western Australia.

Habitat

Intertidal, sand among rocks in algal wash.

Distribution

Only known from the type locality.

27. *Grania hyperoadenia* Coates, 1990

Grania hyperoadenia Coates, 1990: 25–26, fig. 6.

Grania hyperoadenia – De Wit *et al.* 2009: 30–31, fig. 9.

Type material

Holotype

AUSTRALIA: Western Australia, Baker Bay (WAM 54.85).

Other material

AUSTRALIA: Queensland, Lizard Island (AMS W.35560).

Type locality

AUSTRALIA: Baker Bay, King George Sound, Western Australia.

Habitat

Subtidal, 1.5–4 m in sand.

Distribution

Albany area, Western Australia and Lizard Island, Great Barrier Reef, Queensland, Australia.

28. *Grania hongkongensis* Erséus, 1990

Grania hongkongensis Erséus, 1990: 311–12, fig. 22.

Type material

Holotype

CHINA: Hong Kong (New Territories), Crooked Island (BMNH 1987.3.39).

Paratypes

CHINA: Hong Kong (New Territories), Crooked Island (BMNH 1987.3.40, SMNH 3717).

Type locality

CHINA: Mirs Bay, Crooked Island, Hong Kong (New Territories).

Habitat

Intertidal, subtidal to 15 m, shelly sand.

Distribution

Only known from the type locality.

29. *Grania inermis* Erséus, 1990

Grania inermis Erséus, 1990: 314–315, fig. 24.

Type material

Holotype

CHINA: Hong Kong (New Territories), Crooked Island (BMNH 1987.3.42).

Paratypes

CHINA: Hong Kong (New Territories), Crooked Island (BMNH 1987.3.43, SMNH 3719).

Type locality

CHINA: Mirs Bay, Crooked Island, Hong Kong (New Territories).

Habitat

Shelly sand, 7–14 m.

Distribution

Only known from the type locality.

30. *Grania stilifera* Erséus, 1990

Grania stilifera Erséus, 1990: 312–314, fig. 23.

Type material

Holotype

CHINA: Hong Kong (New Territories), Crooked Island (BMNH 1987.3.41).

Paratype

CHINA: Hong Kong (New Territories), Crooked Island (SMNH 3718).

Type locality

CHINA: Mirs Bay, Crooked Island, Hong Kong (New Territories).

Habitat

Subtidal, 5–8 m, shelly sand.

Distribution

Only known from the type locality.

31. *Grania alliata* Coates & Stacey, 1993

Grania alliata Coates & Stacey, 1993: 397–399, figs 3–4.

Type material

Holotype

AUSTRALIA: Western Australia, Rottnest Island (WAM 192-92).

Type locality

AUSTRALIA: Rottnest Island, Western Australia.

Habitat

Intertidal, gravelly sand.

Distribution

Only known from the type locality.

32. *Grania conjuncta* Coates & Stacey, 1993

Grania conjuncta Coates & Stacey, 1993: 402–404, figs 7–8.

Type material

Holotype

AUSTRALIA: Western Australia, Rottnest Island (WAM 193-92).

Type locality

AUSTRALIA: Rottnest Island, Western Australia.

Habitat

Subtidal, 2 m, medium to coarse sand.

Distribution

Only known from the type locality.

33. *Grania longistyla* Coates & Stacey, 1993

Grania longistyla Coates & Stacey, 1993: 394–397, figs 1–2.

Type material

Holotype

AUSTRALIA: Western Australia, Rottnest Island (WAM 194-92).

Paratype

AUSTRALIA: Western Australia, Rottnest Island (WAM 195-92).

Type locality

AUSTRALIA: Rottnest Island, Western Australia.

Habitat

Intertidal, gravelly sand.

Distribution

Only known from the type locality.

34. *Grania vacivasa* Coates & Stacey, 1993

Grania vacivasa Coates & Stacey, 1993: 400–402, figs 5–6.

Grania vacivasa – Rota *et al.* 2007: 1018–1020, figs 8c, 9a–e.

Type material

Holotype

AUSTRALIA: Western Australia, Rottnest Island (WAM 196-92).

Paratype

AUSTRALIA: Western Australia, Rottnest Island (WAM 197-92).

Type locality

AUSTRALIA: Rottnest Island, Western Australia.

Habitat

Subtidal, 1 m, in coarse sand.

Distribution

South (Esperance) and west (Rottnest Island) coasts of Western Australia.

35. *Grania acanthochaeta* Rota & Erséus, 1996

Grania acanthochaeta Rota & Erséus, 1996: 174–175, fig. 4, tab. 1.

Type material

Holotype

ANTARCTICA: Ross Island (USNM 172142).

Paratype

ANTARCTICA: Ross Island (USNM 172193).

Other material

ANTARCTICA: Ross Island (USNM 172194–172397).

Type locality

ANTARCTICA: Ross Island.

Habitat

Subtidal, 38 m, greyish brown gravelly mud with sponge spicules and valves of *Limatula*.

Distribution

Only known from the type locality.

36. *Grania algida* Rota & Erséus, 1996

Grania algida Rota & Erséus, 1996: 179–181, fig. 8, tab. 1.

Type material

Holotype

ANTARCTICA: Ross Island (USNM 172398).

Paratype

ANTARCTICA: Ross Island (MZR Oligochaeta 0065).

Type locality

ANTARCTICA: Ross Island.

Habitat

Subtidal, 14–40 m, volcanic gravel and cobble.

Distribution

Only known from the type locality.

37. *Grania angustinasus* Rota & Erséus, 1996

Grania angustinasus Rota & Erséus, 1996: 177–178, figs 3b, 6, tab. 1.

Type material

Holotype

ANTARCTICA: Ross Island (MCZR Oligochaeta 0059).

Paratypes

ANTARCTICA: Ross Island (MCZR 0060–0063, SMNH 4759–4761).

Type locality

ANTARCTICA: Ross Island.

Habitat

Subtidal, 35–126 m, fine sand.

Distribution

Only known from the type locality.

38. *Grania antarctica* Rota & Erséus, 1996

Grania antarctica Rota & Erséus, 1996: 178–179, figs 3c, 7, tab. 1.

Type material

Holotype

ANTARCTICA: Ross Island (USNM 172400).

Paratype

ANTARCTICA: Ross Island (USNM 172402, MCZR Oligochaeta 0059).

Type locality

ANTARCTICA: Ross Island.

Habitat

Subtidal, 14–31 m, volcanic gravel and cobble.

Distribution

Only known from the type locality.

39. *Grania carchinii* Rota & Erséus, 1996

Grania carchinii Rota & Erséus, 1996: 175–177, fig. 5, tab. 1.

Type material

Holotype

ANTARCTICA: Ross Island (MCZR Oligochaeta 0057).

Paratype

ANTARCTICA: Ross Island (MCZR Oligochaeta 0058).

Type locality

ANTARCTICA: Ross Island.

Habitat

Subtidal, 35 m, fine sand with mica shale, shell debris and some pebbles.

Distribution

Only known from the type locality.

40. *Grania hirsuticauda* Rota & Erséus, 1996

Grania hirsuticauda Rota & Erséus, 1996: 175–177, fig. 5, tab. 1.

Type material

Holotype

ANTARCTICA: Ross Island (USNM 172136).

Paratypes

ANTARCTICA: Ross Island (USNM 172137–172138).

Type locality

ANTARCTICA: Ross Island.

Habitat

Subtidal, 5–585 m, volcanic gravel, sandy mud, small rocks, ectoproct and sponge debris.

Distribution

Only known from the type locality.

41. *Grania darwinensis* (Coates & Stacey, 1997)

Randidrilus darwinensis Coates & Stacey, 1997: 70–72, fig. 1.

Grania darwinensis – Rota *et al.* 2003: 504–509, fig. 3.

Type material

Holotype

AUSTRALIA: Northern Territory, Darwin (NTM Wo 0084).

Paratypes

AUSTRALIA: Northern Territory, Darwin (NTM Wo 0085–0087, ROMIZ I2457–I2458).

Type locality

AUSTRALIA: Darwin, Northern Territory.

Habitat

Intertidal, subtidal to 16 m, medium to coarse sand, clay or silty sediments.

Distribution

Northern Territory and Western Australia.

42. *Grania eurystila* Coates & Stacey, 1997

Grania eurystila Coates & Stacey, 1997: 73–74, fig. 2.

Type material

Holotype

AUSTRALIA: Northern Territory, Darwin (NTM Wo 0081).

Paratypes

AUSTRALIA: Northern Territory, Darwin (NTM Wo 0082–0083, ROMIZ I2479).

Type locality

AUSTRALIA: Darwin, Northern Territory.

Habitat

Intertidal rockpool.

Distribution

Only known from two locations in the inner part of Darwin Harbour, Northern Territory, Australia.

43. *Grania integra* Coates & Stacey, 1997

Grania integra Coates & Stacey, 1997: 74–76, fig. 3.

Grania integra – Rota *et al.* 2003: 499–501, fig. 1.

Type material

Holotype

AUSTRALIA: Northern Territory, Darwin (NTM Wo 0079).

Paratype

AUSTRALIA: Northern Territory, Darwin (NTM Wo 0080).

Type locality

AUSTRALIA: Darwin, Northern Territory.

Habitat

Intertidal crevices with sand gravel, pebbles and heterogeneous sediments.

Distribution

Darwin Harbour, Northern Territory and Nickol Bay, Dampier area, Western Australia.

44. *Grania lasserrei* Rota & Erséus, 1997

Grania lasserrei Rota & Erséus, 1997: 34–37, fig. 3, tab.1.

Enchytraeus monochaetus – Michaelsen 1888: 66, figs 6A–C; part., pl. 2.

Michaelsena monochaeta – Michaelsen 1921: 3, part.

Grania monochaeta – Erséus & Lasserre 1977: 299–300, figs 1A–D.

Type material

Holotype

UNITED KINGDOM: South Georgia (SMNH 4803).

Paratypes

UNITED KINGDOM: South Georgia (SMNH 48044806, MZUT 1078, BMNH 1996:916).

Type locality

UNITED KINGDOM: South Georgia, SW Atlantic Ocean.

Habitat

Intertidal, subtidal to 20 m.

Distribution

Only known from the type locality.

45. *Grania stephensoniana* Rota & Erséus, 1997

Grania stephensoniana Rota & Erséus, 1997: 37–39, figs 4–5, tab. 1.

Michaelsena monochaeta – Stephenson 1932: 263, fig. 14.

Type material

Holotype

UNITED KINGDOM: South Georgia (BMNH 1931.6.23.78).

Paratypes

UNITED KINGDOM: South Georgia (BMNH 1933.2.23.946–1933.2.23.948).

Type locality

UNITED KINGDOM: South Georgia, SW Atlantic Ocean.

Habitat

60 m, rocky bottom.

Distribution

Only known from the type locality.

46. *Grania mira* Locke & Coates, 1998

Grania mira Locke & Coates, 1998: 1103–1107, figs 1–5.

Grania sp. – Healy 1996a: 53, 56–57, fig. 1, tabs 1–2; 1996b: 1287.

Type material

Holotype

IRELAND: Carnsore Point (NMI 4.1998).

Paratypes

IRELAND: Carnsore Point (NMI 5.1998–6.1998).

Type locality

IRELAND: Carnsore Point, County Wexford.

Habitat

Intertidal, sediments trapped in dense turf of *Corallina officinalis* on horizontal or gently sloping rock.

Distribution

Only known from the type locality.

47. *Grania hylae* Locke & Coates, 1999

Grania hylae Locke & Coates, 1999: 605–609, figs 6–7, 11, tab. 1.

Grania hylae – Locke & Coates 2000: 619–621, 626, fig. 4b.

Type material

Holotype

BERMUDA: Paget Island (USNM 185954).

Paratypes

UNITED STATES: Florida, Fowey Rocks (USNM 185955).

BERMUDA: Castle Island (USNM 185956, BAMZ 199 180 007).

Type locality

BERMUDA: Paget Island.

Habitat

Intertidal, subtidal to 17 m, medium to coarse sand with rocks.

Distribution

Rocky Hill Park, Castle Island and Paget Island, Bermuda, and Fowey Rocks, Miami, Florida, USA.

48. *Grania laxartus* Locke & Coates, 1999

Grania laxartus Locke & Coates, 1999: 602–605, figs 2–6, 11, tab. 1.

Grania laxartus – Locke & Coates 2000: 619–621, 626–627, figs 4c, 6a.

Type material

Holotype

BERMUDA: Ferry Point Bridge (USNM 185951).

Paratypes

BERMUDA: Ferry Reach (USNM 185952, BAMZ 199 180 006).

BELIZE: Carrie Bow Cay (USNM 185953).

Type locality

BERMUDA: Ferry Point Bridge.

Habitat

Intertidal pools with accumulation of sand and fine to medium-coarse calcareous sand.

Distribution

Ferry Point Bridge, Whalebone Bay, Pearl Island, Ferry Reach and Smith's Sound, Bermuda, and Carrie Bow Cay, Belize.

49. *Grania dolichura* Rota & Erséus, 2000

Grania dolichura Rota & Erséus, 2000: 249–252, fig. 3.

Grania dolichura – Rota *et al.* 2007: 1006–1008, figs 4a–c.

Type material

Holotype

AUSTRALIA: Tasmania, Little Musselroe (QVM 14: 3889).

Paratypes

AUSTRALIA: Tasmania, Little Musselroe (QVM 14:3890–14:3897, SMNH 5203–5206, MCZR Oligochaeta 0085–0088).

Type locality

AUSTRALIA: Little Musselroe, Tasmania.

Habitat

Intertidal, silt-clay sediments.

Distribution

Widespread around Tasmania, Australia.

50. *Grania tasmaniae* Rota & Erséus, 2000

Grania tasmaniae Rota & Erséus, 2000: 247–249, fig. 2.

Type material

Holotype

AUSTRALIA: Tasmania, Low Head (QVM 14: 3887).

Paratype

AUSTRALIA: Tasmania, Low Head (QVM 14: 3888).

Type locality

AUSTRALIA: Low Head, Tamar Estuary, Tasmania.

Habitat

Intertidal, silt-clay sediments.

Distribution

Only known from the type locality.

51. *Grania aquitana* Rota & Erséus, 2003

Grania aquitana Rota & Erséus, 2003: 226–229, fig. 7, tab. 1.

Type material

Holotype

FRANCE: Bassin d’Arcachon (SMNH 5729).

Paratypes

FRANCE: Bassin d’Arcachon (SMNH 5730–5733).

Type locality

FRANCE: Bassin d’Arcachon.

Habitat

Subtidal, 2–5 m, fine sand.

Distribution

Only known from the type locality.

52. *Grania canaria* Rota & Erséus, 2003

Grania canaria Rota & Erséus, 2003: 213–215, fig. 1, tab. 1.

Type material

Holotype

SPAIN: Tenerife (ZMA V.OL 9344).

Paratypes

SPAIN: Tenerife (SMNH 5710–5711).

Type locality

SPAIN: Tenerife, Canary Islands.

Habitat

Intertidal, sand and gravel.

Distribution

Only known from the type locality.

53. *Grania fortunata* Rota & Erséus, 2003

Grania fortunata Rota & Erséus, 2003: 215–218, fig. 2, tab. 1.

Type material

Holotype

SPAIN: Tenerife (SMNH 5712).

Paratype

SPAIN: Tenerife (SMNH 5713, MCZR Oligochaeta 0103–0104).

Type locality

SPAIN: Tenerife, Canary Islands.

Habitat

Subtidal, 12–17 m, fine and muddy sands associated with beds of the seagrass *Cymodocea nodosa*.

Distribution

Only known from the type locality.

54. *Grania mauretanic*a Rota & Erséus, 2003

*Grania mauretanic*a Rota & Erséus, 2003: 224–226, fig. 6, tab. 1.

Type material

Holotype

MOROCCO: off Casablanca (SMNH 5718).

Paratypes

MOROCCO: off Casablanca (SMNH 5719–5720, MCZR Oligochaeta 0107).

Type locality

MOROCCO: off Casablanca.

Habitat

Subtidal, 173 m, mud with shell debris.

Distribution

Only known from the type locality.

55. *Grania papillinusus* Rota & Erséus, 2003

Grania papillinusus Rota & Erséus, 2003: 239–240, fig. 13.

Type material

Holotype

FRANCE: Gulf of Gascogne (SMNH 5726).

Paratypes

FRANCE: Gulf of Gascogne (SMNH 5727–5728, MCZR Oligochaeta 0124–0126).

Type locality

FRANCE: Gulf of Gascogne, lower continental slope.

Habitat

Deep sea, 2630–2885 m, most likely very fine sediments.

Distribution

Gulf of Gascogne, off France and off the eastern USA (i.e., both sides of the North Atlantic) (see Erséus & Rota 2003).

56. *Grania torosa* Rota & Erséus, 2003

Grania torosa Rota & Erséus, 2003: 237–239, fig. 12.

Type material

Holotype

NE ATLANTIC OCEAN: Rockall Trough (SMNH 5721).

Paratypes

NE ATLANTIC OCEAN: Rockall Trough (SMNH 5722–5725, MCZR Oligochaeta 0123).

Type locality

NE ATLANTIC OCEAN: Rockall Trough, off Scotland.

Habitat

Continental slope, 1170–1800 m, fine sandy and hemi-pelagic ooze.

Distribution

Northern Rockall Trough, off the coast of Scotland, to near the entrance to the English Channel (NE Atlantic Ocean).

57. *Grania vikinga* Rota & Erséus, 2003

Grania vikinga Rota & Erséus, 2003: 222–224, fig. 5.

Grania roscoffensis (part) – *sensu* Erséus 1977: 294, tab. 1.

Grania vikinga – van Haaren 2016: 144–145, figs 22, 24, 27–28, 59.

Type material

Holotype

SWEDEN: Skagerrak (SMNH 5714).

Paratypes

SWEDEN: Skagerrak (SMNH 5716–5717, MCZR Oligochaeta 0105–0106).

Type locality

SWEDEN: Skagerrak, Bohuslän.

Habitat

Subtidal, 10–46 m, sand.

Distribution

West coast of Sweden, the Netherlands.

58. *Grania ocarina* Rota, Erséus & Wang, 2003

Grania ocarina Rota, Erséus & Wang, 2003: 502–504, fig. 2.

Type material

Holotype

AUSTRALIA: Western Australia, Withnell Bay (WAM V 4351).

Paratype

AUSTRALIA: Western Australia, Withnell Bay (WAM V 4352, SMNH 5868, MCZR Oligochaeta 0128).

Type locality

AUSTRALIA: Withnell Bay, Dampier Area, Western Australia.

Habitat

Barely subtidal, 0.5 m, medium to coarse sand.

Distribution

Only known from the type locality.

59. *Grania cinctura* De Wit & Erséus, 2007

Grania cinctura De Wit & Erséus, 2007: 33–36, fig. 3, tab. 1.

Type material

Holotype

FRANCE: New Caledonia, Lifou (SMNH 6559).

Paratypes

FRANCE: New Caledonia, Lifou (SMNH 6560–6564); New Caledonia, Touho (SMNH 6565–6568, 6572).

Type locality

FRANCE: Lifou, Loyalty Islands, New Caledonia.

Habitat

Intertidal, subtidal to 6 m, fine to coarse sand.

Distribution

Touho and Nouméa areas, and Loyalty Islands, New Caledonia.

60. *Grania curta* De Wit & Erséus, 2007

Grania curta De Wit & Erséus, 2007: 38–40, fig. 5, tab. 1.

Type material

Holotype

FRANCE: New Caledonia, Lifou (SMNH 6583).

Paratypes

FRANCE: New Caledonia, Lifou (SMNH 6584–6588).

Type locality

FRANCE: Lifou, Loyalty Islands, New Caledonia.

Habitat

Barely subtidal, 0.5 m, heterogeneous sand.

Distribution

Only known from the type locality.

61. *Grania fiscellata* De Wit & Erséus, 2007

Grania fiscellata De Wit & Erséus, 2007: 45–47, fig. 9, tab. 1.

Type material

Holotype

FRANCE: New Caledonia, Touho (SMNH 6610).

Paratypes

FRANCE: New Caledonia, Touho (SMNH 6611–6613); New Caledonia, Lifou (SMNH 6617).

Type locality

FRANCE: Touho, Loyalty Islands, New Caledonia.

Habitat

Intertidal, subtidal to 3 m, heterogeneous sand.

Distribution

Touho area and Lifou (Loyalty Islands), New Caledonia.

62. *Grania fustata* De Wit & Erséus, 2007

Grania fustata De Wit & Erséus, 2007: 40–42, fig. 6, tab. 1.

Type material

Holotype

FRANCE: New Caledonia, Touho (SMNH 6589).

Paratypes

FRANCE: New Caledonia, Touho (SMNH 6590–6598).

Type locality

FRANCE: Touho, Loyalty Islands, New Caledonia.

Habitat

Intertidal and barely subtidal, coarse sand and gravel.

Distribution

Only known from the type locality.

63. *Grania galbina* De Wit & Erséus, 2007

Grania galbina De Wit & Erséus, 2007: 36–38, fig. 4, tab. 1.

Type material

Holotype

FRANCE: New Caledonia, Lifou (SMNH 6573).

Paratypes

FRANCE: New Caledonia, Lifou (SMNH 6574–6582).

Type locality

FRANCE: Lifou, Loyalty Islands, New Caledonia.

Habitat

Intertidal, subtidal to 13 m, heterogeneous sand.

Distribution

Nouméa area and Lifou (Loyalty Islands), New Caledonia.

64. *Grania novacaledonia* De Wit & Erséus, 2007

Grania novacaledonia De Wit & Erséus, 2007: 31–33, fig. 2, tab. 1.

Type material

Holotype

FRANCE: New Caledonia, Touho (SMNH 6549).

Paratypes

FRANCE: New Caledonia, Touho (SMNH 6550–6558).

Type locality

FRANCE: Touho, Loyalty Islands, New Caledonia.

Habitat

Intertidal, subtidal to 21 m, heterogeneous sand.

Distribution

Touho and Nouméa areas, New Caledonia.

65. *Grania papillata* De Wit & Erséus, 2007

Grania papillata De Wit & Erséus, 2007: 42–45, figs 7–8, tab. 1.

Type material

Holotype

FRANCE: New Caledonia, Lifou (SMNH 6599).

Paratypes

FRANCE: New Caledonia, Lifou (SMNH 6600–6602); New Caledonia, Touho (SMNH 6603–6609).

Type locality

FRANCE: Lifou, Loyalty Islands, New Caledonia.

Habitat

Intertidal, subtidal to 22 m, heterogeneous sand.

Distribution

Touho area and Lifou (Loyalty Islands), New Caledonia.

66. *Grania quaerens* Rota, Wang & Erséus, 2007

Grania quaerens Rota, Wang & Erséus, 2007: 1011–1013, figs 5b–d, 6a–i.

Type material

Holotype

AUSTRALIA: Western Australia, New Island (WAM V 7315).

Paratypes

AUSTRALIA: Western Australia, New Island (WAM V 7316–7319, SMNH 6803–6808, MCZR Oligochaeta 0146–0149).

Type locality

AUSTRALIA: New Island, Western Australia.

Habitat

Intertidal, medium to coarse sand.

Distribution

South coast of Western Australia.

67. *Grania sperantia* Rota, Wang & Erséus, 2007

Grania sperantia Rota, Wang & Erséus, 2007: 1014–1017, figs 7a–h, 8a–b.

Type material

Holotype

AUSTRALIA: Western Australia, Lucky Bay (WAM V 7320).

Paratypes

AUSTRALIA: Western Australia, Lucky Bay (WAM V 7321–7326, SMNH 6809–6817, MCZR Oligochaeta 0150–0155).

Type locality

AUSTRALIA: Lucky Bay, Western Australia.

Habitat

Barely subtidal, 0.5–2 m, medium to coarse sand.

Distribution

South coast of Western Australia.

68. *Grania breviductus* De Wit, Rota & Erséus, 2009

Grania breviductus De Wit, Rota & Erséus, 2009: 19–21, figs 2, 10a.

Type material

Holotype

AUSTRALIA: Queensland, Heron Island (AMS W.35536).

Paratypes

AUSTRALIA: Queensland, Heron Island (AMS W.35537–.35542, SMNH 7761–7766).

Type locality

AUSTRALIA: Heron Island, Great Barrier Reef, Queensland, Australia.

Habitat

Intertidal, coarse sand.

Distribution

Only known from the type locality.

69. *Grania regina* De Wit, Rota & Erséus, 2009

Grania regina De Wit, Rota & Erséus, 2009: 21–23, figs 3–4, 10b.

Type material

Holotype

AUSTRALIA: Queensland, Heron Island (AMS W.35543).

Type locality

AUSTRALIA: Heron Island, Great Barrier Reef, Queensland, Australia.

Habitat

Subtidal, 15 m, fine sand.

Distribution

Only known from the type locality.

70. *Grania homochaeta* De Wit, Rota & Erséus, 2009

Grania homochaeta De Wit, Rota & Erséus, 2009: 23–25, figs 5, 10c.

Type material

Holotype

AUSTRALIA: Queensland, Heron Island (AMS W.35544).

Paratype

AUSTRALIA: Queensland, Heron Island (MNH 7767).

Type locality

AUSTRALIA: Heron Island, Great Barrier Reef, Queensland, Australia.

Habitat

Subtidal, 18 m, gravelly fine sand.

Distribution

Only known from the type locality.

71. *Grania colorata* De Wit, Rota & Erséus, 2009

Grania colorata De Wit, Rota & Erséus, 2009: 25–27, figs 6–7, 10d.

Type material

Holotype

AUSTRALIA: Queensland, Heron Island (AMS W.35545).

Paratypes

AUSTRALIA: Queensland, Heron Island (AMS W.35546–.35553, SMNH 7768–7772).

Type locality

AUSTRALIA: Heron Island, Great Barrier Reef, Queensland, Australia.

Habitat

Subtidal, 7 m, in heterogeneous sand.

Distribution

Only known from the type locality.

72. *Grania occulta* De Wit & Erséus, 2010

Grania occulta De Wit & Erséus, 2010: 287–289, fig. 3.

Type material

Holotype

SWEDEN: Gullmar Fjord (SMNH 7844).

Type locality

SWEDEN: Gullmar Fjord, Bohuslän.

Habitat

Subtidal, 10–25 m, shell sand with some mud.

Distribution

Only known from the type locality.

73. *Grania brasiliensis* Prantoni, De Wit & Erséus, 2016

Grania brasiliensis Prantoni, De Wit & Erséus, 2016: 489–491, fig. 1.

Type material

Holotype

BRAZIL: Paraná State, Paranaguá Bay (ZUEC CLI 04).

Paratypes

BRAZIL: Paraná State, Paranaguá Bay (ZUEC CLI 05); São Paulo State, São Paulo (ZUEC CLI 06–07).

Type locality

BRAZIL: Paranaguá Bay, Paraná State.

Habitat

Intertidal, subtidal to 7 m, medium to coarse sand with some mud and lots of mollusc and barnacle shells.

Distribution

Coasts of Paraná and São Paulo States, Brazil.

74. *Grania bekkouchei* Prantoni, De Wit & Erséus, 2016

Grania bekkouchei Prantoni, De Wit & Erséus, 2016: 491–492, figs 2, 4a–c.

Type material

Holotype

SOUTH AFRICA: Western Cape (SAMC A82466).

Type locality

SOUTH AFRICA: Western Cape.

Habitat

Intertidal, coarse sand in rock crevice.

Distribution

Only known from the type locality.

75. *Grania cryptica* Prantoni, De Wit & Erséus 2016

Grania cryptica Prantoni, De Wit & Erséus, 2016: 492–493, figs 3, 4d–f.

Type material

Holotype

SOUTH AFRICA: Western Cape (SAMC A82473).

Type locality

SOUTH AFRICA: Western Cape.

Habitat

Lower intertidal, rockpool.

Distribution

Only known from the type locality.

76. *Grania capensis* Prantoni, De Wit & Erséus, 2016

Grania capensis Prantoni, De Wit & Erséus, 2016: 493–495, fig. 5.

Type material

Holotype

SOUTH AFRICA: Western Cape (SAMC A82474).

Paratype

SOUTH AFRICA: Western Cape (SAMC A82475).

Type locality

SOUTH AFRICA: Western Cape.

Habitat

Lower intertidal, rockpool.

Distribution

Only known from the type locality.

77. *Grania simonae* Prantoni, De Wit & Erséus, 2016

Grania simonae Prantoni, De Wit & Erséus, 2016: 495–497, fig. 6.

Type material

Holotype

SOUTH AFRICA: Western Cape (SAMC A82476).

Paratypes

SOUTH AFRICA: Western Cape (SAMC 82477–82482).

Type locality

SOUTH AFRICA: Western Cape.

Habitat

Intertidal, crevice between rocks.

Distribution

Only known from the type locality.

78. *Grania hinojosai* Prantoni, De Wit & Erséus, 2016

Grania hinojosai Prantoni, De Wit & Erséus, 2016: 497–498, fig. 7.

Grania sp. Chile 1– De Wit *et al.* 2011: 513.

Type material

Holotype

CHILE: Coquimbo (ZUEC CLI 08).

Paratypes

CHILE: Coquimbo (ZUEC CLI 09–12).

Type locality

CHILE: Coquimbo, Elqui.

Habitat

Intertidal, sand among rocks.

Distribution

Puerto Aldea to Pampilla Point, Coquimbo, Elqui, Chile.

79. *Grania chilensis* Prantoni, De Wit & Erséus, 2016

Grania chilensis Prantoni, De Wit & Erséus, 2016: 498–500, fig. 8.

Grania sp. Chile 2 – De Wit *et al.* 2011: 513, 517.

Type material

Holotype

CHILE: Valdivia (ZUEC CLI 13).

Paratypes

CHILE: Valdivia (ZEUC CLI 14–19).

Type locality

CHILE: Valdivia.

Habitat

Intertidal, sand among rocks and heterogeneous sand with organic material.

Distribution

Along coast of Chile, from about 30.3° to 39.8° S.

80. *Grania unitheca* Prantoni, De Wit & Erséus, 2016

Grania unitheca Prantoni, De Wit & Erséus, 2016: 500–501, fig. 9.

Type material

Holotype

UNITED STATES: off North Carolina (USNM 1283175).

Type locality

UNITED STATES: off North Carolina.

Habitat

Subtidal, 17 m, sand.

Distribution

Only known from the type locality.

81. *Grania carolinensis* Prantoni, De Wit & Erséus, 2016

Grania carolinensis Prantoni, De Wit & Erséus, 2016: 501–502, fig. 10.

Type material

Holotype

UNITED STATES: off North Carolina (USNM 1283174).

Type locality

UNITED STATES: off North Carolina.

Habitat

Continental shelf slope, 492 m, sand.

Distribution

Only known from the type locality.

Discussion

Despite the many species of *Grania* described from the Australian continent and a few other southern regions of the globe (e.g., New Caledonia and Antarctica, see Fig. 2), taxa from the African and South American continents have been completely ignored until recently. This situation changed with the seven new species recently described from Brazil (1), Chile (2) and South Africa (4 spp.) (Prantoni *et al.* 2016).

The geographical distribution of the various species of *Grania* is strongly concordant with the phylogeny of the genus, as estimated by analyses of molecular data (De Wit *et al.* 2011; Prantoni *et al.* 2016). Most of the individual species appear to be endemic to rather small geographical areas, which suggests a limited capability of dispersion. However, as a whole, the genus is divided into at least three distinct evolutionary lineages, each with a broad, but geographically coherent distribution in the world; this is based on a sample of 28 genetically analyzed species (Prantoni *et al.* 2016). The first lineage (green numbers on Fig. 2) comprises species from the Atlantic Ocean (including a sublineage of four species from South Africa). The second (blue numbers) are species from Australia and southern Asia (Hong

Kong), and the third are species from the South Pacific and Atlantic regions (red numbers). An interesting aspect is the phylogenetic placement of *G. americana* in the North Atlantic and *G. brasiliensis* in the South Atlantic. These two species belong to an otherwise Pacific group (the third lineage), and it is suggested that they share a common ancestor that migrated from the Pacific region before the closing of the Isthmus of Panama 3 Ma (De Wit *et al.* 2011; Prantoni *et al.* 2016). However, as most Neotropical coasts remain unexplored, additional species of *Grania* from both sides of South America are needed to corroborate (or refute) this hypothesis.

In conclusion, more intense sampling efforts in many parts of the world are crucial to enable further studies of the evolutionary and biogeographical history of *Grania*. The 81 species described to date is a high number for a marine genus of Enchytraeidae, and yet, this number certainly does not represent the actual diversity of the genus *Grania*. Overall, our systematic knowledge of marine clitellates (oligochaetes and leeches) is poor, with perhaps only about 10% of the species diversity known (Appeltans *et al.* 2012). The lack of specialists around the world is evidently one of the reasons for this (Prantoni *et al.* 2014), but it is also a threat to any rapid improvement of the situation. As a partial solution, the combined efforts of taxonomists and ecologists may come as a first and necessary step towards a better understanding of the group as well as of marine clitellate species diversity as a whole.

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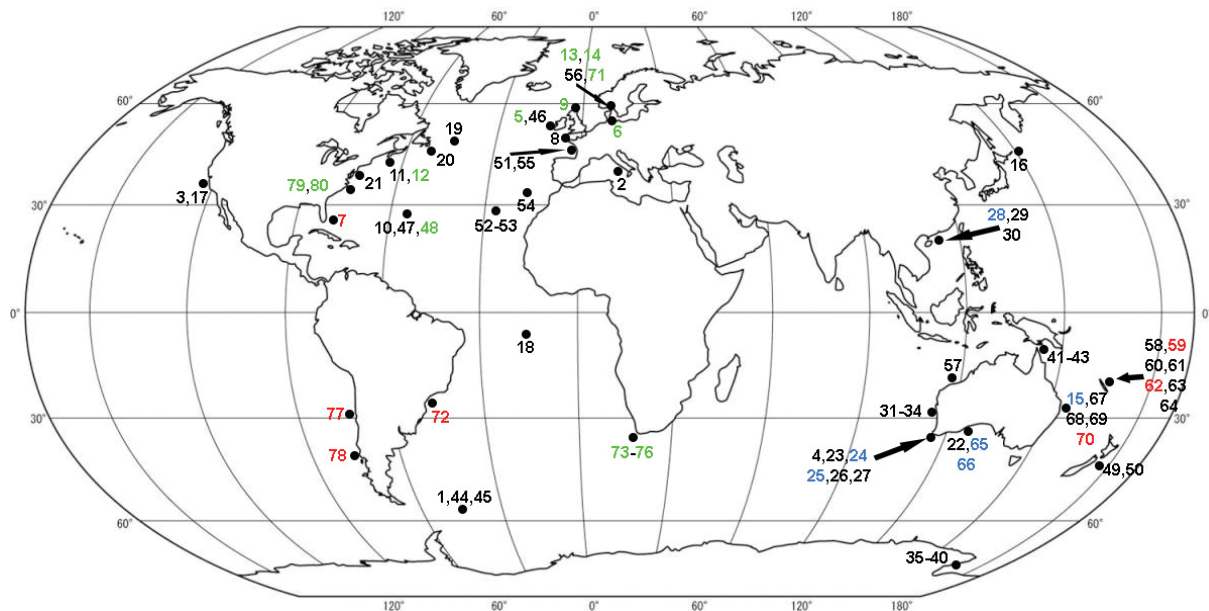


Fig. 2. World map showing the description localities, and the three evolutionary lineages (color-marked) of *Grania* spp. genetically analyzed by Prantoni *et al.* (2016: clades A, B and C). Green numbers = Atlantic species (clade A); red numbers = South Pacific and Atlantic species (clade B); blue numbers = Australian and Asian species (clade C); black numbers = species presently without molecular data, i.e., not yet allocated to any particular lineage.

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