Census of Antarctic Marine Life
SCAR-Marine Biodiversity Information Network

# BIOGEOGRAPHIC ATLAS OF THE SOUTHERN OCEAN

## CHAPTER 5.3. ANTARCTIC FREE-LIVING MARINE NEMATODES.

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# THE BIOGEOGRAPHIC ATLAS OF THE SOUTHERN OCEAN

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# 5.3. Antarctic free-living marine nematodes

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## 1. Introduction

Nematodes or roundworms are the most pervasive metazoans on the planet (i.e. 80% of all living terrestrial metazoans and >90% in deep-sea ecosystems; Danovaro 2012) and have successfully exploited nearly every imaginable habitat. They can be found from high mountains down to the deepest depths in the oceans; they have even been recovered from the deep subsurface biosphere at 3.5 km depth where they are able to exploit the available resources (Borgonie *et al.* 2011); and can live as parasites in many organisms. Nematodes come in different sizes, from minute worms in sediments a few tenths of millimeters in length, to large parasitical forms which may be a few meters long. Most nematodes, however, don't exceed a few millimeters in length. About 16,000 nematode species have been described as parasites causing numerous diseases in vertebrate organisms and plants, and these have been studied intensively in the context of socio-economical and medical interests (e.g. Chan 1997, Chitwood 2003). The free-living nematodes, on the other hand, are perhaps less known despite their ubiquity and high levels of biodiversity. Free-living nematodes are amongst the most speciose marine benthic organisms in the world (Snelgrove 1999), with nearly 7000 recognised marine species and many more undescribed or undiscovered (Appeltans *et al*. 2012). Estimates for marine nematode diversity may range from 10,000 to 1,000,000, depending on the source and how 'conservative' or 'liberal' the estimate itself was (Lambshead 1993, Mokievsky & Azovsky 2002, Snelgrove 1999). More recently, Appeltans and co-authors (2012) showed that about 50,000 species is a more accurate estimate of total expected nematode diversity, meaning that nearly 90% of nematode species remains undescribed. Recent investigations indicated that there are 638 valid species that have been recovered from deep-sea samples worldwide (Miljutin *et al*. 2010), but as for some other under-explored habitats, many deep-sea samples contain numerous unknown species. A study by Xu *et al.* (2013) showed that no fewer than 155 nematode species were described in the journal Zootaxa alone in the period 2007–2012, many of which are marine, and showing that nematode taxonomy is currently a rather active field of research, although much remains to be described.


**Photo 1** *Desmodora campbelli* (Allgén, 1932), South Georgia (Polarstern, ANT-XXVII/3, stn. 214-4, 255 m). Image © F. Hauquier, University of Ghent.

With 10,000s to 1,000,000s of individuals per square meter of seafloor, marine free-living nematodes are the most abundant metazoan life form in marine sediments and often represent 70–90 % of metazoan meiofaunal organisms (organisms ranging 32–1000 µm in size). Despite their ubiquity and high abundance, we are only beginning to understand the role of nematodes in benthic communities. They have been identified as key contributors to different ecosystem functions in marine environments. Nematodes are characterised by a wide range of morphological features which can be used to infer their ecological roles. The size and morphology of their buccal cavities can serve to identify their feeding strategies (Moens & Vincx 1997). They can feed on microbiota such as bacteria, cyanobacteria, and algae; they may be fungivorous or feed on small detrital particles freely available or attached to sediment grains; and even prey on small organisms, including other nematodes (Heip *et al.* 1982). The intermediate position they take in marine sediment food webs identifies them as important links, transferring energy available in sediments under the form of dissolved organic matter, detritus, microbes and other organisms to higher trophic levels (Bongers & Ferris 1999). Moreover, nematodes play an important role in decomposition processes and nutrient cycling in sediments. They are also known to interact with microbiota and other metazoan organisms (Heip *et al.* 1982), and may have an important role to play in bioturbating the sediments they live in. Moreover, nematode diversity has been linked to ecosystem functioning which may suggest an important functional role in sediments (Danovaro *et al.* 2008).

Given their small size and limited mobility, and the fact that they have a conservative reproductive method and lack an active dispersal phase in their life history, we might expect that species should have geographically limited distributions. Consequently, the species turnover between areas should be high compared to larger organisms which have a better chance of long-distance dispersal via pelagic larval phases (Lambshead 1993), leading to higher global species diversity. However, recently, Bik *et al.* (2010) provided molecular evidence of low endemism, continued shallow-deep water exchanges, and cosmopolitan species complexes within marine nematodes. Although these molecular analyses do not necessarily pertain to the species level, posing the question of the 'meiofauna paradox' is inevitable, i.e. how is it possible that meiofaunal organisms with limited active dispersal capacities are able to become cosmopolitan? The most likely answer to this question relies on the fact that it is their small size that makes them susceptible to entrainment by currents impinging the sediment surface, causing passive dispersal (Boeckner *et al.* 2009). Consequently, transport over larger distances by currents is likely to be more widespread than thought previously.

## 2. Methods

### 2.1. Data collection and geographical scope

The data used for this review on Antarctic nematode species distribution stems from different sources and was gathered and collated by the authors. Many nematode species data originated from studies conducted at the Marine Biology research group of Ghent University and data records available on the NeMys database (Deprez *et al.* 2005). In addition, historic literature was gathered based mainly on species lists in Gerlach & Riemann (1973). Subsequently, original descriptions were studied to obtain geographical locations, i.e. Antarctic and sub-Antarctic species records were extracted and added to the database. Taxonomic literature until 2012 was included in the database. For a more complete overview of the data sources used, we refer to the marked literature sources.

The species distribution maps presented in this Chapter include both true Antarctic and sub-Antarctic data, with a circum-Antarctic scope. Latitudinal range of included nematode species extends from roughly 46°S in the Kerguelen Islands region to approximately 78°S in Discovery Inlet.

### 2.2. Limitations of coverage and taxonomic resolution

Unfortunately, the geographical coverage of (sub-)Antarctic data on free-living nematode species is fragmental and is mostly based on taxonomical works for which the locations were recovered. This brings the limitation inherent to undersampling, and causes limited scope for biogeographical interpretation on the species level. Much more data is available on the genus level, the focus of many Antarctic nematode studies that address ecological questions. Whilst such data suffers from lack of species information, it is unlikely that information on genera occurrences in the Southern Ocean is useful to infer biogeographical patterns. Nematode genera in general are not limited to particular areas and most common genera are found all over the globe in marine environments, a phenomenon often referred to as the 'meiofauna paradox'. Nematode genera abundances are often thought to be associated with particular environmental conditions and so their occurrence is often studied in an ecological rather than a taxonomical or biogeographical context. Nevertheless, there are rare genera that seem limited in distribution, but this is often the result of limited sampling effort. To illustrate, a recent study showed that a newly described and relatively rare genus, *Dystomanema*, was recovered from both the Antarctic and North Atlantic (Bezerra *et al*. 2013).

## 3. Biodiversity

Nematodes are widespread in the Antarctic. On land, they are the most diverse and abundant invertebrate phylum (43 species; Wharton 2003). Antarctic nematode species numbers in the marine environment are much higher than for their terrestrial counterparts, and until recently limited at nearly 400 accepted marine species. In the framework of the present Atlas, a taxonomic revision was performed of all nematode species records, historical and recent (until 2012) from marine Antarctic sediments (Appendix 1, at the end of volume). According to the latest literature sources and data records in our dataset 524 species are considered valid (see Map 1 for an overview of number of species per sector; see data reference list for literature sources). Nematode systematics has been shrouded in uncertainty because of their minute size (making identification more labor-intensive), taxonomic difficulties, and the relatively slow advent of molecular studies on nematodes. In addition, a huge number of nematode species were described in the first half of the 20th century following early Antarctic expeditions which yielded a large number of new taxa. The first descriptions of marine nematodes from (sub-) Antarctic regions date back to 1891, when von Linstow (1891) described a number of nematode species from South Georgia. Since then and with much disagreement between authors, many poor descriptions of Antarctic marine nematode species have appeared, resulting in confused taxonomy and contradicting descriptions. Some descriptive efforts following the Antarctic expeditions resulted in large numbers of species being described in a short space of time, leading to several synonymies. Scientists such as Cobb, De Man, von Linstow, and Ditlevsen, amongst others, described tens of species from the marine Antarctic and sub-Antarctic regions. Undoubtedly one of the most prolific nematode taxonomists working on Antarctic samples was Carl Allgén; in his report on free-living marine nematodes from the Swedish Antarctic Expedition in 1901–1903 (Allgén 1959), no less than 343 species were described, 200 of which were new to science. His work strongly influenced later developments in nematode taxonomy, not merely because he contributed significantly to our knowledge on the diversity of Antarctic marine nematodes, but also because the limited descriptive and illustrative material and sometimes doubtful diagnoses that he provided, causing species to be synonymised or considered "species inquirendae" or "incertae sedis" in many later instances — the result of inadequate descriptions. After several other collations of species lists, "The Bremerhaven Checklist of Aquatic Nematodes" provided an exhaustive list of all hitherto known nematodes worldwide (Gerlach & Riemann 1973). Since then, several studies have added new species to the list and several genera and family reviews have been conducted. The dataset presented here is an updated account of valid Antarctic and sub-Antarctic marine free-living nematodes ("sp. inq." and "sp. inc. sedis". are excluded from this list). This data is partially based on the NeMys database (Deprez *et al.* 2005) and has been updated with geographical location data (coordinates and water depth, when available) and taxonomical information contained within the original descriptive and ecological literature. The data is available through SCAR-MarBIN (http://www.scarmarbin.be) and further details on the methods can be found in the previous section "Methods".

## 4. Biogeography of Antarctic and sub-Antarctic nematodes

Because most observations of nematode species have been conducted as part of taxonomic works, geographical information on Antarctic marine nematodes is limited to the occurrences reported in species descriptions. In addition, studies focusing on the ecology of nematodes reported many valuable distribution data, but are generally restricted to the genus level – species are often not considered. Notwithstanding the over 2200 records of nematode species in the (sub-)Antarctic, there are only a handful of studies which have reported on the biogeography of selected groups of marine free-living nematodes.

Vermeeren *et al.* (2004) discussed the distribution of species belonging to the genus *Dichromadora*, a genus that occurs regularly in the Southern Ocean over a wide range of water depths. The authors compared samples from the Indian, Pacific, Arctic and Atlantic continental margins for *Dichromadora* occurrences and noted the absence of this genus in the Indian and Pacific Oceans. A number of *Dichromadora* species were present in the Arctic and Atlantic (two and three species, respectively), but the Southern Ocean samples contained eight species in addition to one previously described by Timm (1978) (Maps 2–6). A high degree of endemism was observed, with seven of the eight species only occurring in the Southern Ocean. To be noted, however, is the fact that seven of the eight Southern Ocean species discovered in the study, as well as all Arctic and Atlantic species, were new to science. This suggests that the deep-sea nematode fauna in the Southern Ocean and possibly all other oceans are undersampled. The *Dichromadora* species exhibited either a very limited distribution (e.g. *D. antarctica, D. quadripapillata*; Maps 2–3) or they appeared across various locations in the Southern Ocean (e.g. *D. weddellensis, D. southernis, D. parva, D. polarsternis, D. polaris*; Maps 2–6), the latter indicating that nematode species may have wide ranges over regional scales in the deep sea. The species studied did not show any bathymetric limitations, at least for the depth range studied (1000–2000 m water depth). The results of Vermeeren *et al.* (2004) were complemented with results from Ingels *et al.* (2006) in that two *Dichromadora* species were recognised from the Scotia Arc at about 300 m water depth (*D. polaris*; Map 6), reinforcing the hypothesis that bathymetry per se does not seem to limit nematode distributions in the Southern Ocean, at least for the genus *Dichromadora*. This is perhaps not surprising considering the genus is also common in coastal areas, but species comparisons are needed with shallow-water samples to confirm this. A study conducted by De Mesel *et al.* (2006), on the other hand, showed a considerable degree of species turnover for the 55 putative *Acantholaimus* species identified in different parts of the Southern Ocean. In addition to high species turnover as a result of the restricted species distributions and their rarity, the number of congeneric species in assemblages was high, leading to high local and regional biodiversity levels for this genus. Fourteen species had a distribution extending from the shelf to the lower slope, pointing to a strong degree of eurybathy too. The occurrence of the otherwise typical deep-sea genus *Acantholaimus* in high densities and diversity on the continental shelf is a unique feature of the Southern Ocean. (De Mesel *et al.* 2006).

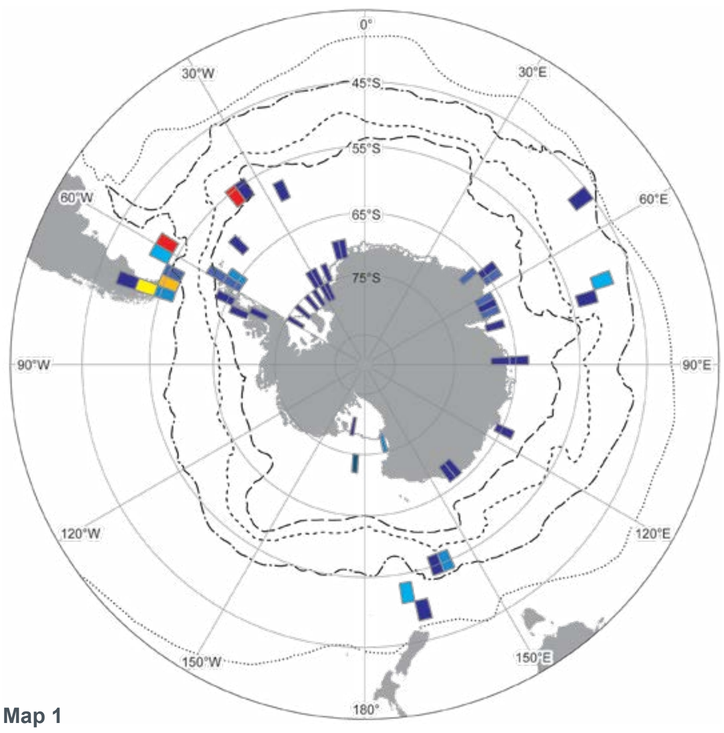
Ingels *et al.* (2006), in a biodiversity and biogeographical nematode study, focussed mainly on the genera *Desmodora* and *Desmodorella*. They found that two species, *Desmodora campbelli* and *Desmodorella* aff. *balteata* had wide geographical distributions in the Southern Ocean, while the other eight species had very limited distributions (see Maps 7–8). In contrast to Vermeeren *et al.* (2004), however, Ingels *et al.* (2006) found bathymetric restrictions for several species, indicating that shallow-water island chains such as the Scotia Arc may provide the means for species that are depth-restricted to disperse over larger geographical areas. Although the Scotia Arc islands are surrounded by deep ocean, this does not necessarily prevent strong water column currents to transport small animals between similar depth ranges of the islands' margins. Preliminary molecular results reported in the same study suggest that certain nematode species exhibit extremely slow evolution with conservation of certain species-specific genes or that hydrodynamic processes and sediment disturbance may be behind the high rates of genetic exchange observed between species populations of distant geographic locations (Ingels *et al.* 2006). Whatever the case, some species seem geographically or bathymetrically restricted, whilst others have circum-Antarctic or eurybathic distributions. If we appreciate genus-level differences along bathymetric gradients in the Antarctic, there are indications of distinct communities at different depth zones but genera are not restricted bathymetrically (Vanhove *et al.* 2004). This means that perceived bathymetric gradients are caused by changes in relative abundance of genera rather than genus composition. Noteworthy in this context is the fact of sampling intensity; while presence observations can confirm biogeographical distributions we have to be cautious on how to interpret the absence of species — absence in a sample does not mean that the species is not present, it may merely mean that the area is undersampled.

Fonseca *et al.* (2006) studied the occurrence of species of the deep-sea genus *Molgolaimus* (Map 9) — a particularly species-rich genus in the deep sea — in different oceans and concluded that geographical rather than environmental clustering of morphologically similar species does not support the idea of a common origin of deep-sea species. In addition, the genus *Molgolaimus* seems to have many species with restricted distributions in the Southern Ocean (compared to the western Indian Ocean for instance), making *Molgolaimus* species suitable for distinguishing between biogeographical provinces in the Southern Ocean (Fonseca *et al.* 2007). Here, the authors propose that evolutionary history may have shaped nematode species composition at the ocean scale, while at local and regional scales ecological processes are promoting species co-existence and speciation (e.g. higher number of *Molgolaimus* species co-occurring at Peninsula tip and eastern Weddell Sea; see Map 9). Whether this is also the case for other nematode genera needs to be verified. Moreover, definite conclusions can't be drawn because of the lack of insight into the true presence or absence of species in the limited quantity of samples that are available.

Undoubtedly, the abiotic environment has a significant impact on the community structure of shallow and deep-sea nematode communities. Various environmental factors have been shown to influence benthic nematode community structure although studies rarely involve species level information. Disturbance by physical, biological or biogeochemical processes, sediment grain size, food quantity and quality, and other trophic conditions have been evoked as regulating community structure by creating conditions that are more favourable for some nematode genera whilst unfavourable for others. Food input seems to be a major determinant in the Antarctic along with the seasonality of its availability (Sebastian *et al.* 2007, Vanhove *et al.* 1998, Vanhove *et al.* 1999, Vanhove *et al.* 2000). However, despite several ecological studies positing the link between environment and nematode community structure, the role of ecology in biogeographical ranges remains unresolved.

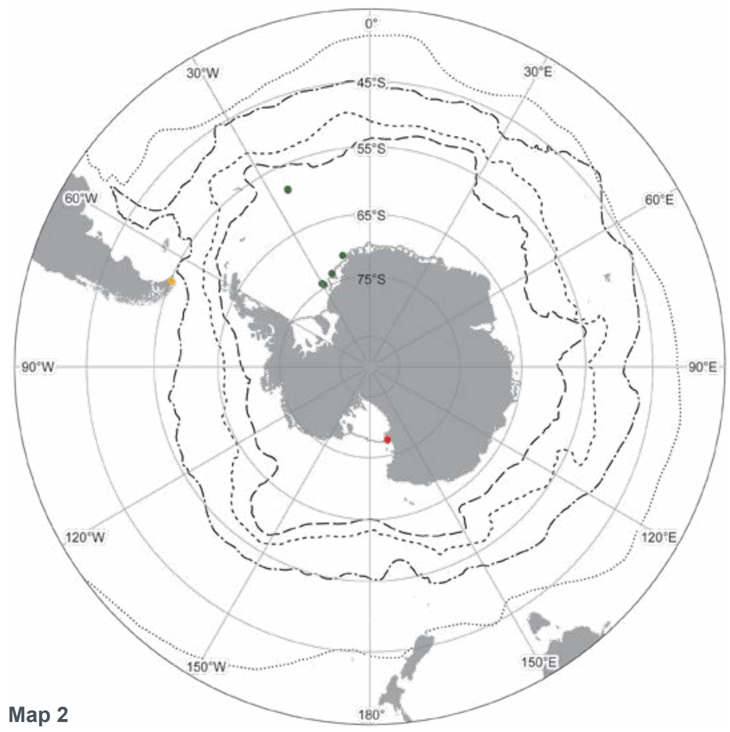
## 5. Conclusion

In this review, we give an overview of the scarce information available on nematode species distributions in the Southern Ocean. Due to taxonomic difficulties and the general lack of species information, biogeography of Antarctic and sub-Antarctic nematodes remains rather elusive. Based on the information we could find and verify, it seems that, indeed, some species might be limited to certain regions or depths in the Southern Ocean, while others may have circum-Antarctic and eurybathic distributions. Faunal connections between the southernmost South America and the Antarctic Peninsula are present for some taxa but remain to be verified for others. More taxonomic studies with distribution data at species level may help to overcome the problems of lack of knowledge and undersampling. The advent of molecular techniques is definitely something to welcome in the search of biogeographic patterns in Southern Ocean nematode diversity.

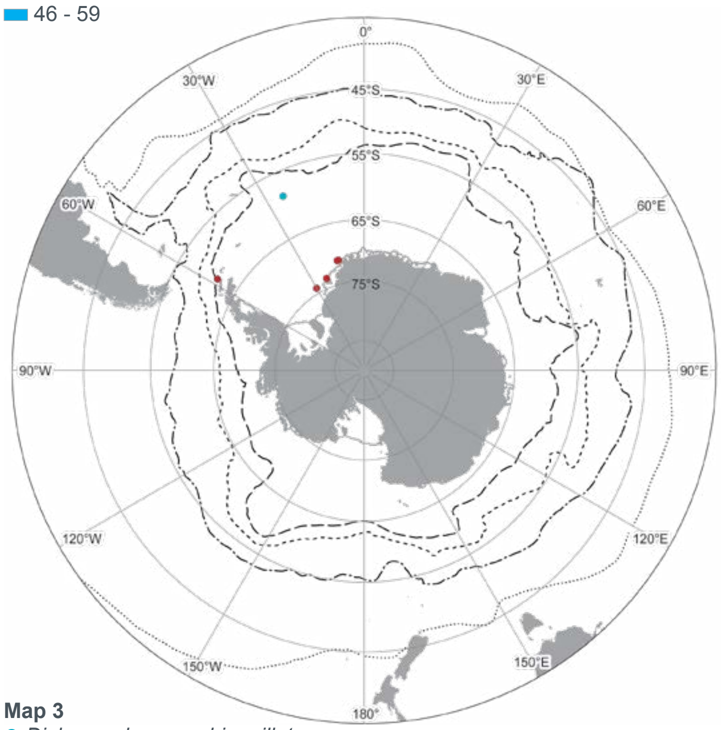



**Map 1**
Nematode species count per sector

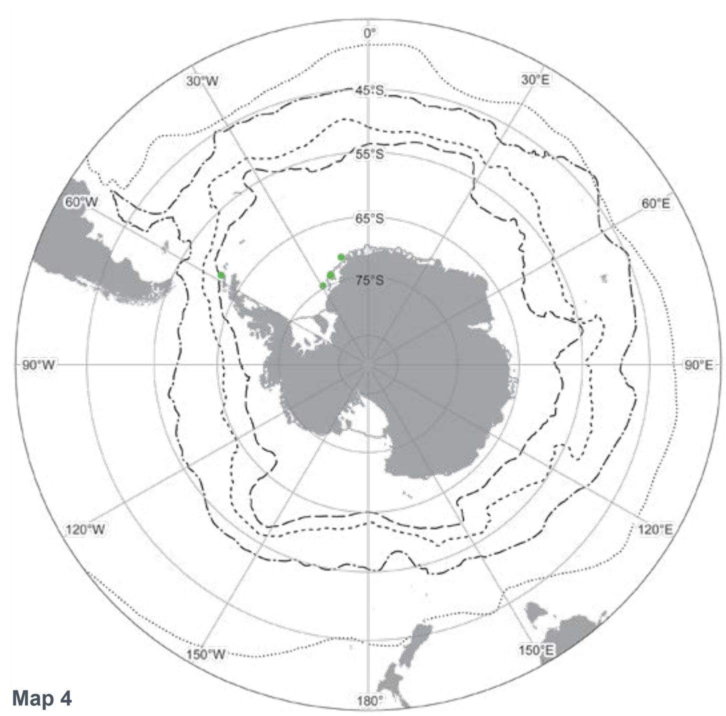
- 1 - 16
- 17 - 30
- 31 - 45
- 46 - 59
- 60 - 74
- 75 - 89
- 90 - 103
- 104 - 118
- 119 - 132
- 133 - 147



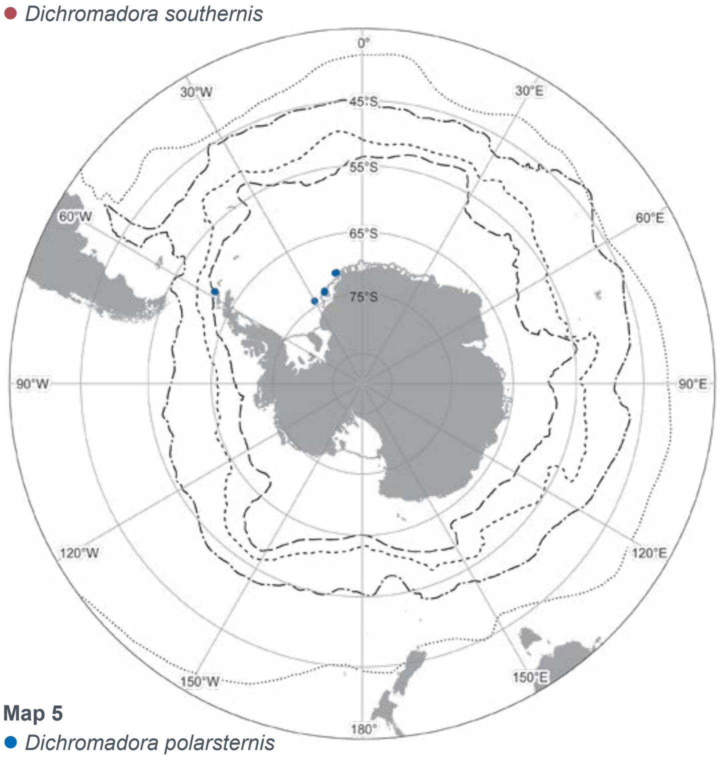

**Map 2**
- *Dichromadora antarctica*
- *Dichromadora dissipata*
- *Dichromadora weddellensis*



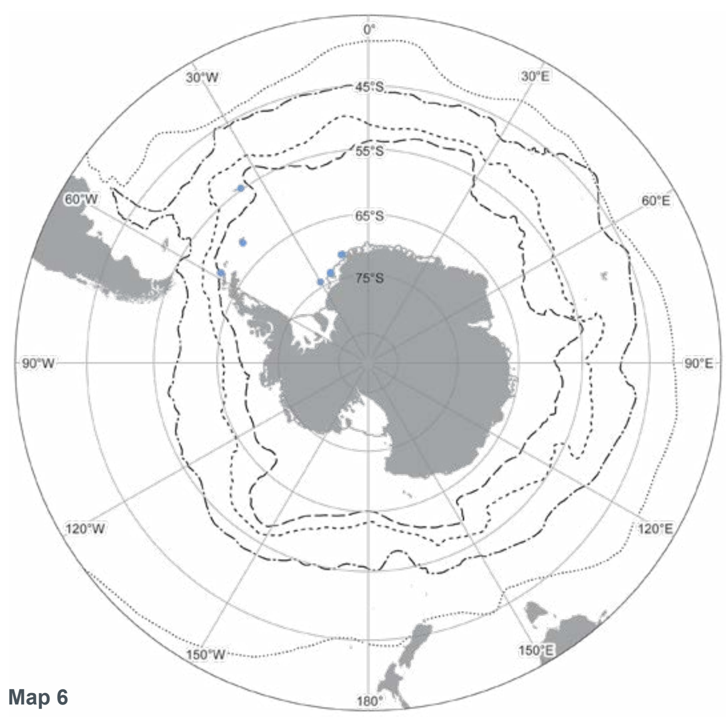

**Map 3**
- *Dichromadora quadripapillata*
- *Dichromadora southernis*




**Map 4**
- *Dichromadora parva*

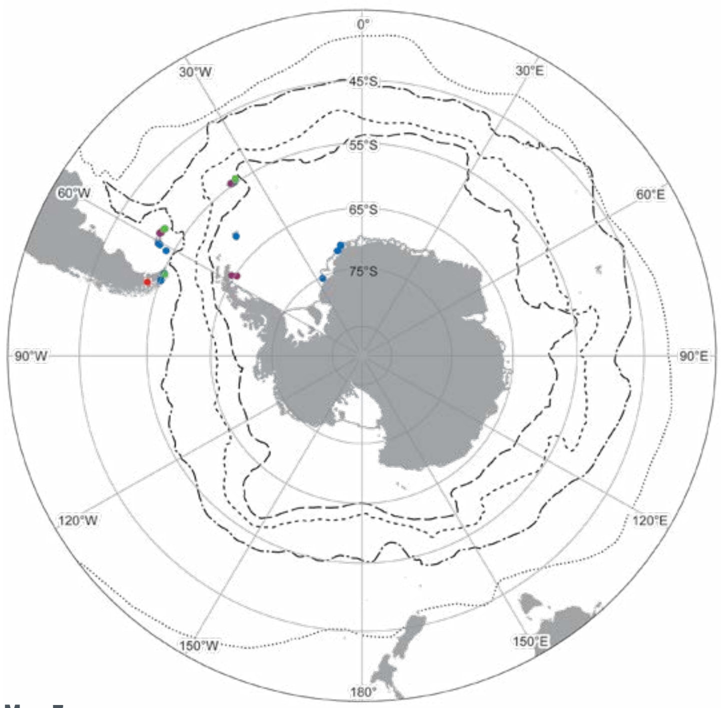



**Map 5**
- *Dichromadora polarsternis*

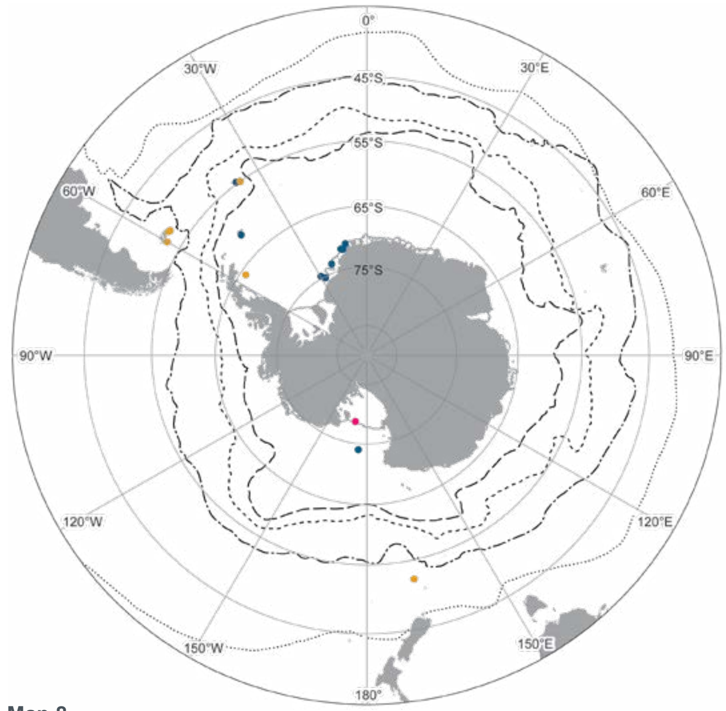



**Map 6**
- *Dichromadora polaris*

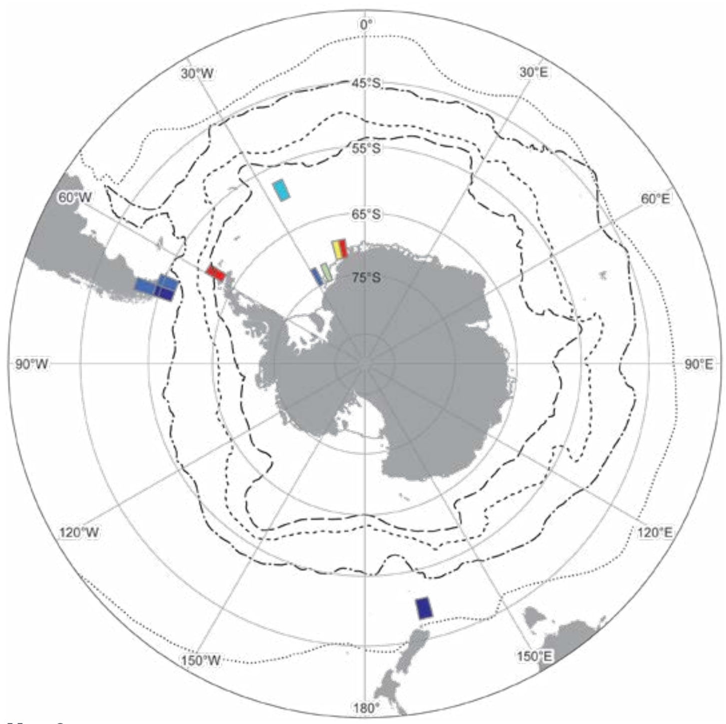
**Meiobenthos: Nematoda Map 1** Antarctic and sub-Antarctic nematode species counts per sector, based on latest valid taxonomy (until 2012); all depth ranges are included (0–4000 m) and the latitudinal range extends from roughly 46°S (Crozet Islands) to 78°S (Discovery Inlet). **Maps 3–5.** Species distribution of the genus *Dichromadora* (bathymetric range 0–2285 m). Map 2. *D. antarctica* Timm, 1978 (data: Cobb 1914), *D. dissipata* Wieser, 1954 (data: Guotong 1999) and *D. weddellensis* Vermeeren *et al*., 2004 (data: Vermeeren *et al*. 2004). Map 3. *D. southernis* Vermeeren *et al*., 2004 and *D. quadripapillata* Vermeeren *et al*., 2004 (data: Vermeeren *et al*. 2004). Map 4. *D. parva* Vermeeren *et al*., 2004 (data: Vermeeren *et al*. 2004). Map 5. *D. polarsternis* Vermeeren *et al*., 2004 (data: Vermeeren *et al*. 2004). Map 6. *D. polaris* Vermeeren *et al*., 2004 (data: Vermeeren *et al*. 2004; Ingels *et al*. 2006).




**Map 7**
- *Desmodora campbelli*
- *Desmodora microchaeta*
- *Desmodora minuta*
- *Desmodora scaldensis*




**Map 8**
- *Desmodorella abyssorum*
- *Desmodorella* aff. *balteata*
- *Desmodorella tenuispiculum*




**Map 9**
Number of *Molgolaimus* species per sector

1, 2, 3, 4, 5, 6, 7, 8, 9

**Meiobenthos: Nematoda Maps 7–9** Map 7. Species distribution of the genus *Desmodora* (data: Allgén 1959; Ingels *et al.* 2006; bathymetric range: 0–502 m). Map 8. Species distribution of the genus *Desmodorella* (data: Allgén 1959; Ingels *et al.* 2006; bathymetric range: 0–681 m). Map 4. Species distribution, expressed as number of species per sector, of the genus *Molgolaimus* (data: Ditlevsen 1921; Guotong 1999; Fonseca *et al.* 2006; bathymetric range 79–4000 m).

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## References

*Data source references; ** Text and data sources references.

*Allen, M.W., Noffsinger, E.M., 1978. A revision of the marine nematodes of the superfamily Draconematoidea Filipjev, 1918 (Nematoda: Draconematina). *University of California Publications in Zoology*, **109**, 1–133.

*Allgén, C.A., 1928. Neue oder wenig bekannte freilebende marine Nematoden von der schwedischen Westküste. *Zoologischer Anzeiger*, **77(11/12)**, 281–307.

*Allgén, C.A., 1928. Freilebende Nematoden von den Campbell- und Staten- inseln. *Nyt Magazin for Naturvidenskaberne*, **66**, 249–309.

*Allgén, C.A., 1929. *Einige Bemerkungen zu meiner Arbeit: Freilebende marine Nematoden von den Campbell- und Staten-Inseln*. Jönköping (Privatdruck), 2 pp.

*Allgén, C.A., 1929. Über einige antarktische freilebende marine Nematoden, *Zoologischer Anzeiger*, **84**, 126–140.

*Allgén, C.A., 1929. Über einige freilebende marine Nematoden von der Macquarieinsel. *Zoologischer Anzeiger*, **84(5/6)**, 119–126.

*Allgén, C.A., 1930. Freilebende marine Nematoden von der Stateninsel (Feuerland-Archipel). I, *Zoologischer Anzeiger*, **89(7/10)**, 246–258.

*Allgén, C.A., 1930. Freilebende marine Nematoden von der Stateninsel (Feuerland-Archipel). II, *Zoologischer Anzeiger*, **90**, 27–38.

*Allgén, C.A., 1930, Über eine neue Art des Genus *Enoplolaimus* de Man. *Enoplolaimus gracilisetosus* von der Macquarieinsel. *Zoologischer Anzeiger*, **92(7/8)**, 189–191.

*Allgén, C.A., 1932. Weitere Beiträge zur Kenntnis der marinen Nematodenfauna der Campbellinsel. *Nyt Magazin for Naturvidenskaberne*, **70**, 97–198.

*Allgén, C.A., 1946. Kleinere Notizen über freilebende Nematoden, *Kungliga Fysiografiska Sällskapets i Lund Förhandlingar*, **16(15)**, 1–13.

*Allgén, C.A., 1950. Letzter Bericht über freilebende marine Nematoden von der Campbellinsel. *Zoologischer Anzeiger*, **145**, 309–316.

*Allgén, C.A., 1952. Über einige Desmoscoleciden aus den schwedischen Südpolar-Expedition 1901 bis 1903. *Zoologischer Anzeiger*, **148(3/4)**, 94–98.

*Allgén, C.A., 1953. Die Pelagonemen der Schwedischen Südpolar-Expedition (1901–1903). *Zoologischer Anzeiger*, **151(11/12)**, 316–322.

*Allgén, C.A., 1953. Über einen Fall von Hermaphroditismus in der Gattung *Desmodora* de Man (Chromadoroidea, Nematodes). *Zoologischer Anzeiger*, **151(5/6)**, 95–98.

**Allgén, C.A., 1959. Freeliving marine nematodes. In: Odhner, N.H. (ed.), *Further Zoological Results of the Swedish Antarctic Expedition 1901–1903 under the Direction of Dr. Otto Nordenskjöld, Stockholm*, **5(2)**, 1–293.

*Allgén, C.A., 1959. Über einige, meistens neue, freilebende marine Nematoden aus dem Feuerland-Archipel (Schwedische Südpolar-Expedition 1901–1903). *Zoologischer Anzeiger*, **163(7/8)**, 222–243.
*Allgén, C.A., 1960. Antarktische meistens neue freilebende marine Nematoden aus dem Graham-Land. *Zoologischer Anzeiger*, **164(11/12)**, 474–488.
Appeltans, W., Ahyong, S.T., Anderson, G., Angel, M.V., Artois, T., *et al.* 2012. The Magnitude of Global Marine Species Diversity. *Current Biology*, **22(23)**, 2189–2202.
Appeltans, W., Bouchet, P., Boxshall, G.A., De Broyer, C., de Voogd, N.J., Gordon, D.P., Hoeksema, B.W., Horton, T., Kennedy, M., Mees, J., Poore, G.C.B., Read, G., Stöhr, S., Walter, T.C., Costello, M.J., (eds.), 2012. World Register of Marine Species. http://www.marinespecies.org [accessed on 2013-08-07].
*Baylis, H.A., 1916. Some Nemertinea, free-living Nematoda and *Oligochaeta* from the Falklands. *Annals and Magazine of Natural History*, Ser. 8, **17**, 288–298.
Bezerra, T.N., Pape, E., Hauquier, F., Vanreusel, A., Ingels, J., 2013. New genus and two new species of the family Ethmolaimidae (Nematoda: Chromadorida), found in two different cold-seep environments. *Zootaxa*, **3692(1)**, 7–27. http://dx.doi.org/10.11646/zootaxa.3692.1.4.
Bik, H., Thomas, W.K., Lunt, D., Lambshead, P.J., 2010. Low endemism, continued deep-shallow interchanges, and evidence for cosmopolitan distributions in free-living marine nematodes (order Enoplida). *BMC Evolutionary Biology*, **10(1)**, 389.
*Blome, D., Schrage, M., 1985. Freilebende Nematodes aus der Antarktis. *Veröffentlichungen des Instituts für Meeresforschung in Bremerhaven*, **21**, 71–96.
Boeckner, M., Sharma, J., Proctor, H., 2009. Revisiting the meiofauna paradox: dispersal and colonization of nematodes and other meiofaunal organisms in low- and high-energy environments. *Hydrobiologia*, **624(1)**, 91–106.
Bongers, T., Ferris, H., 1999. Nematode community structure as a bioindicator in environmental monitoring. *Trends in Ecology and Evolution*, **14(6)**, 224–228.
Borgonie, G., Garcia-Moyano, A., Litthauer, D., Bert, W., Bester, A., van Heerden, E., Moller, C., Erasmus, M., Onstott, T.C., 2011. Nematoda from the terrestrial deep subsurface of South Africa. *Nature*, **474(7349)**, 79–82.
Chan, M.S., 1997. The global burden of intestinal nematode infections - fifty years on. *Parasitology Today*, **13(11)**, 438–443.
Chitwood, D.J., 2003. Research on plant-parasitic nematode biology conducted by the United States Department of Agriculture - *Agricultural Research Service. Pest Management Science*, **59**, 748–753.
*Cobb, N.A., 1914. Antarctic marine free-living nematodes of the Shackleton expedition. *Contributions to a Science of Nematology*, **1**, 1–33.
*Cobb, N.A., 1930. Marine free-living nemas. *Scientific Reports Australasian Antarctic Expedition (1911–1914), Serie C: Zoology and Botany*, **6(7)**, 1–28.
*Coomans, A.V., Raski, D.J., 1991. Observations on *Paraplectonema* Strand, 1934 and description of *Leptoplectonema fuegoensei* n.g., n.sp. (Nematoda: Leptolaimidae). *Revue de Nématologie*, **14(2)**, 197–205.
Danovaro, R., 2012. Extending the approaches of biodiversity and ecosystem functioning to the deep ocean. In: Solan, M., Aspden, R.J., Paterson, D.M. (eds.), *Marine Biodiversity and Ecosystem Functioning: Frameworks, methodologies, and integration.* Oxford: Oxford University Press, pp. 115–126.
Danovaro, R., Gambi, C., Dell'Anno, A., Corinaidesi, C., Fraschetti, S., Vanreusel, A., Vincx, M., Gooday, A.J., 2008. Exponential decline of deep-sea ecosystem functioning linked to benthic biodiversity loss. *Current Biology*, **18(1)**, 1–8.
*de Bovée, F., 1977. Nématodes interstitiels des îles Kerguelen (Terres Australes et Antarctiques Françaises). *CNFRA*, **42**, 295–303.
*Decraemer, W., 1976. The cuticular structure in *Desmoscolex* with description of *D. spinosus* sp.n. and redescription of *D. michaelseni* Steiner, 1916 (Nematoda: Desmoscolecida), *Biologisch Jaarboek Dodonaea*, **44**, 123–134.
*Decraemer, W., 1991. Revision of *Epsilonema* species from Antarctica described by Steiner (1931) (Nemata). *Nematologica*, **37**, 20–37
*Decraemer, W., Noffsinger E.M., 1992. Revision of *Bathyepsilonema* species from Antarctica described by Steiner (1931) (Nemata: Epsilonematidae). *Bulletin van het Koninklijk Belgisch Instituut voor Natuurwetenschappen / Bulletin de l'Institut Royal des Sciences Naturelles de Belgique, Biologie*, **62**, 35–52.
*De Ley, P., Decraemer, W., Eyualem, A., 2006. Introduction: summary of present knowledge and research addressing the ecology and taxonomy of freshwater nematodes. In: Eyualem A., Andrassy, I. & Traunspurger (Editors). Freshwater Nematodes: Taxonomy and ecology. CABI, U.K., pp. 3–30.
*de Man, J. G., 1904. Nématodes libres, (Expédition Antarctique Belge). *Résultats du Voyage S. Y. Belgica*, 1–51.
De Mesel, I., Lee, H.J., Vanhove, S., Vincx, M., Vanreusel, A., 2006. Species diversity and distribution within the deep-sea nematode genus *Acantholaimus* on the continental shelf and slope in Antarctica. *Polar Biology,* **29(10)**, 860–871.
Deprez, T., Steyaert, M., Vanaverbeke, J., Speybroeck, J., Raes, M., Derycke, S., De Smet, G., Ingels, J., Vanreusel, A., Van Gaever, S., Vincx, M., 2005. NeMys. World Wide Web electronic publication. nemys.ugent.be. Department of Marine Biology, Ghent University.
*Ditlevsen, H., 1921. Papers from Dr. Th. Mortensen's Pacific Expedition 1914–16. III. Marine free-living Nematodes from the Auckland and Campbell Islands. *Videnskabelige Meddelelser fra Dansk Naturhistorisk Forening i København*, **73**, 1–32.
**Fonseca, G., Vanreusel, A., Decraemer, W., 2006. Taxonomy and biogeography of *Molgolaimus* Ditlevsen, 1921 (Nematoda : Chromadoria) with reference to the origins of deep sea nematodes. *Antarctic Science*, **18(1)**, 23–50.
Fonseca, G., Muthumbi, A.W., Vanreusel, A., 2007. Species richness of the genus *Molgolaimus* (Nematoda) from local to ocean scale along continental slopes. *Marine Ecology,* **28(4)**, 446–459. doi:10.1111/j.1439-0485.2007.00202.x.
Fonseca, V.G., Carvalho, G.R., Sung, W., Johnson, H.F., Power, D.M., Neill, S.P., Packer, M., Blaxter, M.L., Lambshead, P.J.D., Thomas, W.K., Creer, S., 2010. Second-generation environmental sequencing unmasks marine metazoan biodiversity. *Nature Communication*, **1(7)**, 98.
*Gerlach, S.A., 1950. Die Diplopeltiden, eine Gruppe freilebender Nematoden, *Kieler Meeresforschungen*, **7**, 138–156.
**Gerlach, S.A., Riemann, F., 1973. The Bremerhaven Checklist of Aquatic Nematodes. A Catalogue of Nematoda Adenophorea excluding the Dorylaimida. *Veröffentlichungen des Instituts für Meeresforschung in Bremerhaven,* Supplement **4(1 & 2)**, 1–736.
*Guotong, C. 1999. Ecology and systematics of the meiofauna and nematode communities in the Strait of Magellan and the Beagle Channel (Chile). PhD thesis, Department of Marine Biology, Ghent University, 315 pp.
Heip, C., Vincx, M., Smol, N., Vranken, G., 1982. The systematics and ecology of free-living marine nematodes. *Helminthological Abstracts Series B, Plant Nematology*, **51(1)**, 1–31.
*Hope, W. D., 1974. *Deontostoma timmerchioi* n. sp., a new marine nematode (Leptosomatidae) from Antarctica, with a note on the structure and possible function of the ventromedian supplement. *Transactions of the American Microscopical Society*, **93(3)**, 314–324.
*Hopper, B.E., 1969. Marine nematodes of Canada. II. Marine nematodes from the Minas Basin – Scots Bay area of the Bay of Fundy, Nova Scotia. *Canadian Journal of Zoology*, **47(4)**, 671–690.
**Ingels, J., Vanhove, S., De Mesel, I., Vanreusel, A., 2006. The biodiversity and biogeography of the free-living nematode genera *Desmodora* and *Desmodorella* (family Desmodoridae) at both sides of the Scotia Arc, *Polar Biology*, **29**, 936–949.
*Inglis, W.G., 1958. A new species of the nematode genus *Thoracostoma* from the Antarctic. *Annals and Magazine of Natural History*, Ser. 13, **1**, 45–48.
Lambshead, P.J.D., 1993. Recent developments in marine benthic biodiversity research. *Oceanis,* **19(6)**, 5–24.
*Lorenzen, S., 1986. *Chromadorita ceratoserolis* sp. n. (Chromadoridae), a free-living marine nematode epibiotically on the Isopod *Ceratoserolis trilobitoides* from Antarctica. *Polar Biology*, **6**, 247–250.
*Mawson, P.M., 1956. Free-living nematodes. Section I: Enoploidea from Antarctic stations. *B.A.N.Z. Antarctic Research Expedition Reports*, Ser. B, **6(3)**, 37–74.
*Mawson, P.M., 1958. Free-living nematodes. Section 2: additional Enoploidea from Antarctic stations. *B.A.N.Z. Antarctic Research Expedition Reports*, Ser. B, **6(13)**, 291–306.
*Mawson, P.M., 1958. Free-living nematodes. Section 3: Enoploidea from subantarctic stations. *B.A.N.Z. Antarctic Research Expedition Reports*, Ser. B, **6(14)**, 307–358.
Miljutin, D., Gad, G., Miljutina, M., Mokievsky, V., Fonseca-Genevois, V., Esteves, A., 2010. The state of knowledge on deep-sea nematode taxonomy: how many valid species are known down there? *Marine Biodiversity*, **40(3)**, 143–159.
Moens, T., Vincx, M., 1997. Observations on the feeding ecology of estuarine nematodes. *Journal of the Marine Biological Association of the United Kingdom*, **77(1)**, 211–227.
Mokievsky, V., Azovsky, A., 2002. Re-evaluation of species diversity patterns of free-living marine nematodes. *Marine Ecology-Progress Series*, **238**, 101–108.
*Platonova, T.A., 1958. The nematode fauna of the family Leptosomatidae from the region of Kerguelen Island. *Information Bulletin of the Soviet Antarctic Expedition 1955–58*, (English Translation Elsevier, Amsterdam, 1964), **1**, 131–133**.**
*Platonova, T.A., 1968. Marine freeliving Nematodes of the family Leptosomatidae from Kerguelen Island, Resultaty biologitscheskich issledovanij sowjetskoj antarktitscheskoj expeditzii 1955–1958. *Issledowanija fauny morej*, **6(14)**, 5–24.
*Platonova, T.A., Belogurov, O.I., Sheenko, P.S., 1979. The nematodes *Anticoma pushkini* n. sp. and *A. columba* Wieser from the inshore waters of Kerguelen Island (Translated from Russian). *Biologiya Morya, Vladivostok*, **2**, 34–40.
*Platt, H.M., 1983. The freeliving marine nematode genus *Sabatieria* (Nematoda: Comesomatidae). I. Two new species from Stonington Island, Antarctica. *Bulletin of the British Museum (Natural History)*, *Zoology*, **45(5)**, 239–252.
*Raes, M., Vanreusel, A., Decraemer, W., 2003. Epsilonematidae (Nematoda) from a cold-water coral environment in the Porcupine Seabight, with a discussion on the status of the genus *Metaglochinema* Gourbault & Decraemer, 1986. *Hydrobiologia*, **505**, 49–72.
*Schuurmans Stekhoven, J.H., Mawson, P.M., 1955. On some free-living marine nematodes from Kerguelen Island. *Journal of Helminthology*, **29(1–2)**, 87–104.
Sebastian, S., Raes, M., De Mesel, I., Vanreusel, A., 2007. Comparison of the nematode fauna from the Weddell Sea Abyssal Plain with two North Atlantic abyssal sites. *Deep-Sea Research Part II: Topical Studies in Oceanography*, **54(16–17)**, 1727–1736.
Snelgrove, P.V.R., 1999. Getting to the bottom of marine biodiversity: Sedimentary habitats - Ocean bottoms are the most widespread habitat on Earth and support high biodiversity and key ecosystem services. *Bioscience*, **49(2)**, 129–138.
*Steiner, G., 1921. Beiträge zur Kenntnis mariner Nematoden. *Zoologische Jahrbücher. Abteilung für Systematik, Geographie und Biologie der Tiere*, **44(1–2)**, 1–68.
*Steiner, G., 1931. Die Nematoden der Deutschen Südpolar-Expedition 1901–1903. *I. Teil. Deutsche Südpolar-Expedition*, **20**, 167–216.
*Steiner, G., 1931. Die Nematoden der Deutschen Südpolar-Expedition 1901–1903. *II. Teil. Deutsche Südpolar-Expedition*, **20**, 305–433.
*Timm, R.W., 1978. Marine nematodes of the order Desmoscolecida from McMurdo Sound, Antarctica. *Biology of the Antarctic Seas VI - Antarctic Research Series*, **26**, 225–236.
*Timm, R.W., 1978. Redescription of the marine nematodes of Shackleton's British Antarctic Expedition of 1907–1909. American Geophysical Union. *Antarctic Research Series*, **26(6)**, 237–255.
Timm, R.W., 1978. Redescription of the marine nematodes of Shackleton's British Antarctic expedition of 1907–1909. American Geophysical Union. *Antarctic Research Series,* **26(6)**, 237–255.
**Timm, R.W., Viglierchio, D.R., 1970. Studies of Antarctic Nematodes. *Antarctic Journal of the United States*, **5(4)**, 135.
Vanhove, S., Arntz, W., Vincx, M., 1999. Comparative study of the nematode communities on the southeastern Weddell Sea shelf and slope (Antarctica). *Marine Ecology - Progress Series*, **181**, 237–256.
Vanhove, S., Beghyn, M., Van Gansbeke, D., Bullough, L.W., Vincx, M., 2000. A seasonally varying biotope at Signy Island, Antarctic: implications for meiofaunal structure. *Marine Ecology - Progress Series*, **202**, 13–25.
Vanhove, S., Lee, H.J., Beghyn, M., Van Gansbeke, D., Brockington, S., Vincx, M., 1998. The metazoan meiofauna in its biogeochemical environment: The case of an Antarctic coastal sediment. *Journal of the Marine Biological Association of the United Kingdom*, **78(2)**, 411–434.
Vanhove, S., Vermeeren, H., Vanreusel, A., 2004. Meiofauna towards the South Sandwich Trench (750–6300m), focus on nematodes. *Deep-Sea Research Part II: Topical Studies in Oceanography*, **51(14–16)**, 1665–1687.
**Vermeeren, H., Vanreusel, A., Vanhove, S., 2004. Species distribution within the free-living marine nematode genus *Dichromadora* in the Weddell Sea and adjacent areas. *Deep-Sea Research Part II: Topical Studies in Oceanography*, **51(14–16)**, 1643–1664.
von Linstow, O., 1891. Helminthen aus Süd-Georgien. Nach der Ausbeute der Deutschen Station von 1882–1883. *Jahrbuch der Hamburgischen Wissenschaftlichen Anstalten*, **9(2)**, 59–77.
Wharton, D.A., 2003. The environmental physiology of Antarctic terrestrial nematodes: a review. *Journal of Comparative Physiology B: Biochemical, Systemic, and Environmental Physiology*, **173(8)**, 621–628.
*Wieser, W., 1953. Free-living marine nematodes I. Enoploidea. *Lunds Universitets Arsskrift.*, N. F., **2**, **49**, 6.
*Wieser, W., 1954. Free-living marine nematodes II. Chromadoroidea. *Acta Universitates Lundensis*, N. F., **2**, **50(16)**,148.
*Wieser, W., 1956. Free-living marine nematodes III. Axonolaimoidea and Monhysteroidea. *Acta Universitates Lundensis*, N. F., **2**, **52(13)**, 1–115.
*WoRMS Editorial Board (2013). World Register of Marine Species. Available from http://www.marinespecies.org at VLIZ. Accessed 2013-11-22. *WoRMS Editorial Board (2013). World Register of Marine Species. Available from http://www.marinespecies.org at VLIZ. Accessed 2013-11-22.
Xu, Y.M., Zhao, Z.Q., Wang, J.M., 2013. An index to new genera and species of Nematoda in Zootaxa from 2007 to 2012. *Zootaxa*, **3646(2)**, 160–170.

▶ Appendix 1 at the end of volume

## Appendix 1: Nematoda (Chap. 5.3)

### Table 1 Phylogenetic species list of (sub-)Antarctic marine free-living Nematoda

**PHYLUM NEMATODA Potts, 1932**
**Class ENOPLEA Inglis, 1983**
**Subclass ENOPLIA Pearse, 1942**
**Order Enoplida Filipjev, 1929**
**Suborder Enoplina Chitwood & Chitwood, 1937**
**Family Enoplidae Dujardin, 1845**
*Enoplus heardensis* Mawson, 1958
*Enoplus michaelseni* Linstow, 1896
*Enoplus micrognathus* Allgén, 1947
*Enoplus paralittoralis* Wieser, 1953

**Family Thoracostomopsidae Filipjev, 1927**
*Enoplolaimus acanthospiculum* Allgén, 1959
*Enoplolaimus arcospiculum* Allgén, 1959
*Enoplolaimus falklandiae* Allgén, 1959
*Enoplolaimus filiformis* (Allgén, 1935)
*Enoplolaimus niger* Allgén, 1959
*Enoplolaimus notopropinquus* Allgén, 1959
*Enoplolaimus opacus* Allgén, 1959
*Enoplolaimus propinquus* de Man, 1922
*Enoplolaimus vulgaris* (de Man, 1893)
*Epacanthion brevispiculosum* Mawson, 1958
*Epacanthion brevispiculum* Mawson, 1956
*Epacanthion filicaudatum* Mawson, 1956
*Fenestrolaimus antarcticus* Mawson, 1956
*Mesacanthion brachycolle* Allgén, 1959
*Mesacanthion infantile* (Ditlevsen, 1930)
*Mesacanthion kerguelense* Mawson, 1958
*Mesacanthion pacificum* Allgén, 1947
*Mesacanthion virile* (Ditlevsen, 1930)
*Mesacanthoides caputmedusae* (Ditlevsen, 1918)
*Mesacanthoides latignathus* (Ditlevsen, 1918)
*Metenoploides alatus* Wieser, 1953
*Oxyonchus australis* (de Man, 1904) Mawson, 1956
*Oxyonchus brachysetosus* Allgén, 1959
*Oxyonchus crassicollis* Allgén, 1959
*Oxyonchus dentatus* (Ditlevsen, 1918) Filipjev, 1927
*Oxyonchus macrodon* Allgén, 1959
*Oxyonchus notodentatus* Allgén, 1959
*Oxyonchus parastateni* Allgén, 1959
*Oxyonchus stateni* (Allgén, 1930)
*Oxyonchus subantarcticus* Mawson, 1958
*Paramesacanthion allgeni* Mawson, 1958
*Paramesacanthion estridium* Wieser, 1953
*Paramesacanthion oxycephalum* (Ditlevsen, 1926)
*Paramesacanthion tricuspis* (Schuurmans Stekhoven, 1950)

**Family Anoplostomatidae Gerlach & Riemann, 1974**
*Anoplostoma campbelli* Allgén, 1932
*Anoplostoma tenuisetum* Allgén, 1959
*Chaetonema amphora* Wieser, 1953
*Chaetonema steineri* (Filipjev, 1927)

**Family Phanodermatidae Filipjev, 1927**
*Klugea longiseta* Mawson, 1956
*Klugea truncata* Mawson, 1956
*Micoletzkyia anomala* Wieser, 1953
*Micoletzkyia austrogeorgiae* Allgén, 1954
*Micoletzkyia falklandiae* Allgén, 1954
*Micoletzkyia nudicapitata* Allgén, 1959
*Phanoderma banzare* Mawson, 1956
*Phanoderma campbelli* Allgén, 1927
*Phanoderma cocksi* Bastian, 1865
*Phanoderma laticolle* (Marion, 1870)
*Phanoderma paracampbelli* Allgén, 1958
*Phanoderma parasiticum* Ditlevsen, 1926
*Phanoderma speculum* Schuurmans Stekhoven & Mawson, 1955
*Phanoderma tuberculatum* (Eberth, 1863) Bastian, 1865
*Phanoderma wieseri* Mawson, 1956
*Phanodermopsis ingrami* Mawson, 1958

**Family Anticomidae Filipjev, 1918**
*Anticoma acuminata* (Eberth, 1863) Stekhoven, 1950
*Anticoma allgeni* Platonova, 1968
*Anticoma campbelli* Allgén, 1932
*Anticoma columba* Wieser, 1953
*Anticoma curticauda* Platonova, 1968
*Anticoma filicauda* Mawson, 1956
*Anticoma graciliceps* Platonova, 1968
*Anticoma kerguelensis* Mawson, 1958
*Anticoma longissima* Allgén, 1958
*Anticoma major* Mawson, 1956
*Anticoma pellucida* Bastian, 1865
*Anticoma pushkini* Platonova, Belogurov & Sheenko, 1979
*Anticoma subsimilis* Cobb, 1914
*Anticoma tenuis* Allgén, 1930
*Anticoma trichura* Cobb, 1898
*Anticoma wieseri* Mawson, 1958
*Anticomopsis typica* Micoletzky, 1930
*Antopus serialis* (Baylis, 1916)
*Paranticoma antarctica* Mawson, 1956
*Paranticoma odhneri* Allgén, 1959
*Paranticoma tubuliphora* Wieser, 1953

**Suborder Trefusiina Siddiqi, 1983**
**Family Simpliconematidae Blome & Schrage, 1985**
*Simpliconema aenigmatodes* Blome & Schrage, 1985

**Family Trefusiidae Gerlach, 1966**
*Trefusia axonolaimoides* Allgén, 1953

**Family Xenellidae De Coninck, 1965**
*Xennella filicaudata* (Allgén, 1954)

**Suborder Oncholaimina De Coninck, 1965**
**Family Oncholaimidae Filipjev, 1916**
*Adoncholaimus austrogeorgiae* Allgén, 1959
*Adoncholaimus crassicaudus* Wieser, 1953
*Adoncholaimus falklandiae* Allgén, 1959
*Adoncholaimus thalassophygas* (de Man, 1876)
*Curvolaimus decipiens* Wieser, 1953
*Metaparoncholaimus macrouraios* Mawson, 1958
*Metoncholaimoides squalus* Wieser, 1953
*Metoncholaimus antarcticus* (Linstow, 1896)
*Oncholaimellus carlbergi* Allgén, 1947
*Oncholaimus dujardinii* de Man, 1876
*Oncholaimus leptos* Mawson, 1958
*Oncholaimus longissimus* Allgén, 1959
*Oncholaimus notolangrunensis* Allgén, 1959
*Oncholaimus notoviridis* Allgén, 1958
*Oncholaimus notoxyuris* Allgén, 1959
*Oncholaimus paradujardini* Allgén, 1959
*Oncholaimus paraegypticus* Mawson, 1956
*Oncholaimus paralangrunensis* (Allgén, 1947)
*Oncholaimus paredron* Mawson, 1958
*Oncholaimus rotundicaudatus* Allgén, 1959
*Oncholaimus thysanouraios* (Mawson, 1958)
*Oncholaimus viridis* (Bastian, 1865)
*Pelagonema longicaudum* (Allgén, 1953)
*Pelagonema obtusicauda* Filipjev, 1918
*Pelagonema tenue* (Kreis, 1928)
*Pontonema cobbi* Mawson, 1956
*Pontonema leidyi* Mawson, 1956
*Pontonema propinquum* (Allgén, 1930)
*Pontonema serratodentatum* Mawson, 1956
*Viscosia antarctica* Allgén, 1959
*Viscosia brachydonta* Allgén, 1959
*Viscosia brevicaudata* Mawson, 1958
*Viscosia brevilaima* Allgén, 1959
*Viscosia carnleyensis* (Ditlevsen, 1921)
*Viscosia cryptodentata* Allgén, 1959
*Viscosia falklandiae* Allgén, 1959
*Viscosia glabra* (Bastian, 1865) de Man, 1890
*Viscosia graham* Allgén, 1959
*Viscosia langrunensis* (de Man, 1890)
*Viscosia parafalklandiae* Allgén, 1959
*Viscosia parapellucida* (Cobb, 1898)
*Viscosia propinqua* Allgén, 1959
*Viscosia similis* Allgén, 1959
*Viscosia subantarctica* Allgén, 1959
*Viscosia tenuilaima* Allgén, 1959
*Viscosia tenuissima* Allgén, 1959
*Viscosia viscosa* (Bastian, 1865) de Man, 1890
*Viscosia wieseri* Mawson, 1958

**Family Enchelidiidae Filipjev, 1918**
*Calyptronema axonolaimoides* Allgén, 1959
*Calyptronema mawsoni* Mawson, 1958
*Calyptronema retrocellatum* (Wieser, 1953)
*Catalaimus maxweberi* (de Man, 1922)
*Ditlevsenella tertia* Wieser, 1953
*Enchelidium filicolle* Allgén, 1959
*Eurystomina fenestella* Wieser, 1953
*Eurystomina filicaudatum* (Allgén, 1959)
*Eurystomina ornata* (Eberth, 1863)
*Eurystomina stenolaima* (Ditlevsen, 1930)
*Eurystomina tenuicaudata* Allgén, 1932
*Ledovitia fallae* Mawson, 1958
*Polygastrophora hexabulba* (Filipjev, 1918)
*Polygastrophora octobulba* Micoletzky, 1930
*Symplocostoma tenuicolle* (Eberth, 1863)

**Suborder Ironina Siddiqi, 1983**
**Family Ironidae de Man, 1876**
*Dolicholaimus marioni* (de Man, 1888)
*Syringolaimus striatocaudatus* de Man, 1888
*Thalassironus bipartitus* Wieser, 1953

**Family Leptosomatidae Filipjev, 1916**
*Deontostoma antarcticum* (Linstow, 1892)
*Deontostoma arcticum* (Ssaweljev, 1912)
*Deontostoma aucklandiae* (Ditlevsen, 1921)
*Deontostoma demani* (Mawson, 1956)
*Deontostoma timmerchioi* Hope, 1974
*Leptosomatides antarcticus* Mawson, 1956
*Leptosomatides conisetosus* Schuurmans Stekhoven & Mawson, 1955
*Leptosomatum arcticum* Filipjev, 1916
*Leptosomatum clavatum* Platonova, 1958
*Leptosomatum crassicutis* Platonova, 1958
*Leptosomatum gracile* Bastian, 1865
*Leptosomatum kerguelense* Platonova, 1958
*Leptosomatum sabangense* Steiner, 1915
*Paraleptosomatides elongatus* Mawson, 1956
*Paraleptosomatides spiralis* Mawson, 1956
*Platycomopsis dimorphica* Mawson, 1956
*Platycomopsis paracobbi* Mawson, 1956
*Pseudocella brachychaites* Mawson, 1958
*Pseudocella elegans* (Ditlevsen, 1926)
*Pseudocella panamaensis* (Allgén, 1947)
*Pseudocella polychaites* (Mawson, 1958)
*Pseudocella tabarini* (Inglis, 1958)
*Pseudocella trichodes* (Leuckart, 1849)
*Synonchus fasciculatus* Cobb, 1893
*Thoracostoma angustifissulatum* Mawson, 1956
*Thoracostoma anocellatum* Schuurmans Stekhoven & Mawson, 1954
*Thoracostoma arcticum* Ssaveljev, 1912
*Thoracostoma campbelli* Ditlevsen, 1921
*Thoracostoma chilense* (Steiner, 1921)
*Thoracostoma coronatum* (Eberth, 1863) Marion, 1870
*Thoracostoma falklandiae* Allgén, 1959
*Thoracostoma microfenestratum* Allgén, 1959
*Thoracostoma papillosum* Ditlevsen, 1921
*Thoracostoma parasetosum* Mawson, 1958
*Thoracostoma schizoepistylium* Mawson, 1958
*Thoracostoma setosum* (Linstow, 1896)
*Thoracostoma unifenestratum* Allgén, 1959

**Family Oxystominidae Chitwood, 1935**
*Halalaimus brachyaulax* Mawson, 1958
*Halalaimus ciliocaudatus* Allgén, 1932
*Halalaimus comatus* Wieser, 1953
*Halalaimus diacros* Mawson, 1958
*Halalaimus filicaudatus* Allgén, 1959
*Halalaimus fletcheri* Mawson, 1958
*Halalaimus gracilis* de Man, 1888
*Halalaimus longicollis* Allgén, 1932
*Halalaimus macquariensis* Mawson, 1958
*Halalaimus marri* Mawson, 1958
*Nemanema brachyure* Allgén, 1959
*Nemanema campbelli* Allgén, 1932
*Nemanema cylindraticaudatum* de Man, 1922
*Nemanema obtusicauda* (Allgén, 1959)
*Oxystomina antarctica* Mawson, 1956
*Oxystomina elongata* Bütschli, 1874
*Oxystomina filicaudata* Allgén, 1959
*Oxystomina greenpatchi* Allgén, 1959
*Oxystomina mirabilis* Allgén, 1959
*Oxystomina oxycaudata* (Ditlevsen, 1926)
*Oxystomina pulchella* Vitiello, 1970
*Oxystomina tenuicollis* Allgén, 1959
*Oxystomina vespertilio* Wieser, 1953
*Thalassoalaimus spissus* (Allgén, 1932)

**Suborder Tripyloidina De Coninck, 1965**
**Family Tripyloididae Filipjev, 1918**
*Bathylaimus australis* Cobb, 1894
*Bathylaimus austrogeorgiae* Allgén, 1959
*Paratripyloides viviparus* (Cobb, 1930) Wieser, 1956

**Order Triplonchida Cobb, 1920**
**Suborder Tobrilina Tsalolikhin, 1976**
**Family Rhabdodemaniidae Filipjev, 1934**
*Rhabdodemania calycolaimus* Schuurmans Stekhoven & Mawson, 1955
*Rhabdodemania minor* (Southern, 1914)

**Family Pandolaimidae Belogurov, 1980**
*Pandolaimus latilaimus* (Allgén, 1929)

**Subclass DORYLAIMIA Inglis, 1983**
**Order Mononchida Jairajpuri, 1969**
**Suborder Mononchina Kirjanova & Krall, 1969**
**Family Mononchidae Chitwood, 1937**
*Mononchus gerlachei* (de Man, 1904)

**Class CHROMADOREA**
**Subclass CHROMADORIA**
**Order Chromadorida Chitwood, 1933**
**Suborder Chromadorina Filipjev, 1929**
**Family Chromadoridae Filipjev, 1917**
*Acantholaimus quintus* Gerlach, Schrage & Riemann, 1979
*Actinonema longicaudatum* (Steiner, 1918)
*Actinonema pachydermatum* Cobb, 1920
*Atrochromadora microlaima* (de Man, 1889)
*Atrochromadora parva* (de Man, 1893) Wieser, 1954
*Chromadora nudicapitata* (Bastian, 1865)
*Chromadorella cobbiana* Johnston, 1938
*Chromadorella filiformis* (Bastian, 1865)
*Chromadorita brachypharynx* (Allgén, 1932)
*Chromadorita ceratoserolis* Lorenzen, 1986
*Chromadorita gracilis* (Filipjev, 1922)
*Chromadorita minor* (Allgén, 1927) Wieser, 1954
*Chromadorita mucrodonta* (Steiner, 1916)
*Chromadorita pharetra* Ott, 1972
*Dichromadora antarctica* (Cobb, 1914) Timm, 1978
*Dichromadora dissipata* Wieser, 1954
*Dichromadora parva* Vermeeren, Vanreusel & Vanhove, 2004
*Dichromadora polaris* Vermeeren, Vanreusel & Vanhove, 2004
*Dichromadora polarsternis* Vermeeren, Vanreusel & Vanhove, 2004
*Dichromadora quadripapillata* Muthumbi & Vincx, 1998
*Dichromadora southernis* Vermeeren, Vanreusel & Vanhove, 2004
*Dichromadora weddellensis* Vermeeren, Vanreusel & Vanhove, 2004
*Euchromadora amokurae* (Ditlevsen, 1921)
*Euchromadora denticulata* (sp incertae sedis) Cobb, 1914
*Euchromadora meridiana* (sp incertae sedis) Cobb, 1914
*Euchromadora vulgaris* (Bastian, 1865)
*Graphonema amokurae* (Ditlevsen, 1921) Inglis, 1971
*Neochromadora aberrans* Cobb, 1930
*Neochromadora complexa* Gerlach, 1953
*Neochromadora craspedota* (Steiner, 1916)
*Neochromadora edentata* (Cobb, 1914)
*Neochromadora notocraspedota* Allgén, 1958
*Neochromadora poecilosoma* (de Man, 1893) Micoletzky, 1926
*Prochromadorella antarctica* (Cobb, 1914)
*Prochromadorella conicaudata* (Allgén, 1927) Wieser, 1954
*Prochromadorella paramucrodonta* (Allgén, 1929) Wieser, 1951
*Spiliphera dolichura* de Man, 1893
*Spiliphera edentata* (Cobb, 1914)
*Spiliphera gracilicauda* (de Man, 1893) Wieser, 1954
*Spilophorella campbelli* Allgén, 1928
*Spilophorella paradoxa* (de Man, 1888)

**Family Neotonchidae Wieser & Hopper, 1966**
*Neotonchus chamberlaini* Wieser & Hopper, 1966

**Family Cyatholaimidae Filipjev, 1918**
*Cyatholaimus gracilis* (Eberth, 1863)
*Longicyatholaimus longicaudatus* (de Man, 1876)
*Marylynnia macrodentata* (Wieser, 1959)
*Marylynnia quadriseta* Hopper, 1972
*Metacyatholaimus spatiosus* Wieser, 1954
*Paracanthonchus arcospiculum* Allgén, 1959
*Paracanthonchus axonolaimoides* Allgén, 1960
*Paracanthonchus caecus* (Bastian, 1865)
*Paracanthonchus elongatus* (de Man, 1906)
*Paracanthonchus falklandiae* Allgén, 1959
*Paracanthonchus macrospiralis* Allgén, 1959
*Paracanthonchus paralongus* Allgén, 1959
*Paracanthonchus paramacrodon* (Allgén, 1951)
*Paracanthonchus spectabilis* Allgén, 1931
*Paracanthonchus stateni* Allgén, 1930
*Pomponema multipapillatum* Filipjev, 1922
*Praeacanthonchus kreisi* (Allgén, 1929)
*Praeacanthonchus punctatus* (Bastian, 1865)

**Family Selachnematidae Cobb, 1915**
*Cheironchus conicaudatus* Allgén, 1959
*Halichoanolaimus chordiurus* Gerlach, 1955
*Halichoanolaimus dolichurus* Ssaweljev, 1912
*Halichoanolaimus minor* Ssaweljev, 1912
*Halichoanolaimus ovalis* (Ditlevsen, 1921)
*Halichoanolaimus robustus* (Bastian, 1865)

**Order Desmodorida De Coninck, 1965**
**Suborder Desmodorina De Coninck, 1965**
**Family Desmodoridae Filipjev, 1922**
*Acanthopharynx merostomacha* (Steiner, 1921)
*Chromaspirina crinita* Gerlach, 1952
*Croconema stateni* Allgén, 1928
*Desmodora campbelli* (Allgén, 1932)
*Desmodora microchaeta* (Allgén, 1929)
*Desmodora minuta* Wieser, 1954
*Desmodora scaldensis* de Man, 1889
*Desmodorella abyssorum* (Allgén, 1929)
*Desmodorella* aff. *balteata* Verschelde, Gourbault & Vincx, 1998
*Desmodorella tenuispiculum* (Allgén, 1928)
*Laxus septentrionalis* Cobb, 1914
*Molgolaimus allgeni* Allgén, 1935
*Molgolaimus australis* Fonseca, Vanreusel & Decraemer, 2006
*Molgolaimus carpediem* Fonseca, Vanreusel & Decraemer, 2006
*Molgolaimus drakus* Fonseca, Vanreusel & Decraemer, 2006
*Molgolaimus exceptionregulum* Fonseca, Vanreusel & Decraemer, 2006
*Molgolaimus falliturvisus* Fonseca, Vanreusel & Decraemer, 2006
*Molgolaimus galluccii* Fonseca, Vanreusel & Decraemer, 2006
*Molgolaimus gigaslongicus* Fonseca, Vanreusel & Decraemer, 2006
*Molgolaimus gigasproximus* Fonseca, Vanreusel & Decraemer, 2006
*Molgolaimus liberalis* Fonseca, Vanreusel & Decraemer, 2006
*Molgolaimus macilenti* Fonseca, Vanreusel & Decraemer, 2006
*Molgolaimus mareprofundus* Fonseca, Vanreusel & Decraemer, 2006
*Molgolaimus nettoensis* Fonseca, Vanreusel & Decraemer, 2006
*Molgolaimus sabakii* Muthumbi & Vincx, 1996
*Molgolaimus sapiens* Fonseca, Vanreusel & Decraemer, 2006
*Molgolaimus tenuispiculum* Ditlevsen, 1921
*Molgolaimus unicus* Fonseca, Vanreusel & Decraemer, 2006
*Molgolaimus walbethi* Fonseca, Vanreusel & Decraemer, 2006
*Molgolaimus xuxunaraensis* Fonseca, Vanreusel & Decraemer, 2006
*Onyx ferox* (Ditlevsen, 1921) Gerlach, 1951
*Paradesmodora campbelli* (Allgén, 1932) Gerlach, 1963
*Pseudometachromadora longilaima* (Schuurmans Stekhoven, 1950)
*Pseudonchus symmetricus* De Coninck, 1942
*Spirinia gnaigeri* Ott, 1977
*Spirinia parasitifera* (Bastian, 1865) Gerlach, 1963
*Spirinia septentrionalis* (Cobb, 1914) Gerlach, 1963
*Spirinia tenuicauda* (Allgén, 1959) Gerlach, 1963

**Family Epsilonematidae Steiner, 1927**
*Archepsilonema celidotum* Steiner, 1931
*Bathyepsilonema brachycephalum* Steiner, 1931
*Bathyepsilonema drygalskii* Steiner, 1931
*Epsilonema cyrtum* Steiner, 1931
*Epsilonema docidocricum* (Steiner, 1931)
*Glochinema trispinatum* Raes, Vanreusel & Decraemer, 2003

**Family Draconematidae Filipjev, 1918**
*Cygnonema steineri* Allen & Noffsinger, 1978
*Draconactus suillus* (Allgén, 1932) Allen & Noffsinger, 1978
*Draconema antarcticum* (Allen & Noffsinger, 1978)
*Draconema cephalatum* (Cobb, 1913)
*Paradraconema antarcticum* Allen & Noffsinger, 1978
*Prochaetosoma campbelli* (Allgén, 1932)
*Prochaetosoma longicapitata* Allgén, 1932

**Family Microlaimidae Micoletzky, 1922**
*Bolbolaimus dentatus* (Allgén, 1935)
*Microlaimus dimorphus* Chitwood, 1937
*Microlaimus falklandiae* Allgén, 1959
*Microlaimus honestus* (de Man, 1922)
*Microlaimus kaurii* Wieser, 1954
*Microlaimus latilaimus* Allgén, 1959
*Microlaimus papilliferus* Allgén, 1959
*Microlaimus pinguis* Wieser, 1954
*Microlaimus sensus* Wieser, 1954
*Microlaimus texianus* Chitwood, 1951

**Family Monoposthiidae Filipjev, 1934**
*Monoposthia costata* (Bastian, 1865)
*Monoposthia desmodoroides* Allgén, 1959
*Monoposthia falklandiae* Allgén, 1959
*Monoposthia grahami* Allgén, 1959
*Monoposthia mirabilis* Schulz, 1932
*Monoposthia paramediterranea* (Allgén, 1959)
*Nudora campbelli* (Schulz, 1935) Wieser, 1954

**Order Desmoscolecida Filipjev, 1929**
**Family Desmoscolecidae Shipley, 1896**
*Antarcticonema comicapitatum* Timm, 1978
*Desmoscolex amaurus* Lorenzen, 1972
*Desmoscolex antarcticos* Timm, 1970
*Desmoscolex articulatus* Timm, 1978
*Desmoscolex campbelli* Allgén, 1946
*Desmoscolex cristatus* (Allgén, 1932)
*Desmoscolex frigidus* Timm, 1978
*Desmoscolex gerlachi* Timm, 1970
*Desmoscolex labiosus* Lorenzen, 1969
*Desmoscolex max* Timm, 1970
*Desmoscolex parafalklandiae* Allgén, 1955
*Desmoscolex spinosus* Decraemer, 1976
*Greeffiella antarctica* Timm, 1978
*Quadricoma avicapitata* Timm, 1978
*Quadricomoides magna* (Timm, 1970)
*Tricoma antarctica* Timm, 1970
*Tricoma curvicauda* (Timm, 1978)
*Tricoma maxima* (Schepotieff, 1907)
*Tricoma nematoides* (Greeff, 1869)
*Tricoma pontica* (Filipjev, 1922)
*Tricoma septentrionalis* Timm, 1978
*Usarpnema auriculatum* Timm, 1978

**Order Monhysterida Filipjev, 1929**
**Suborder Monhysterina De Coninck & Schuurmans Stekhoven, 1933**
**Family Monhysteridae de Man, 1876**
*Halomonhystera disjuncta* Bastian, 1865
*Halomonhystera uniformis* Cobb, 1914
*Longitubopharynx obtusicaudatus* Allgén, 1959
*Monhystera macquariensis* Allgén, 1929
*Thalassomonhystera parva* (Bastian, 1865)

**Family Sphaerolaimidae Filipjev, 1918**
*Sphaerolaimus arcospiculum* Allgén, 1959
*Sphaerolaimus campbelli* Allgén, 1927
*Sphaerolaimus gracilis* de Man, 1876
*Sphaerolaimus hirsutus* Bastian, 1865
*Sphaerolaimus pacificus* Allgén, 1947

**Family Xyalidae Chitwood, 1951**
*Austronema (Dub) spirurum* Cobb, 1914
*Cobbia dentata* Gerlach, 1953
*Cobbia mawsoni* Cobb, 1930
*Daptonema acanthospiculum* (Allgén, 1959)
*Daptonema alternus* (Wieser, 1956)
*Daptonema dentatus* (Wieser, 1956)
*Daptonema filispiculum* (Allgén, 1932)
*Daptonema fistulatus* (Wieser & Hopper, 1967)
*Daptonema normandicus* (de Man, 1890)
*Daptonema resimus* (Wieser, 1959)
*Daptonema septentrionalis* (Cobb, 1914)
*Daptonema tortus* (Wieser & Hopper, 1967)
*Elzalia tenuis* Allgén, 1959
*Filipjeva crucis* Blome & Schräge, 1985
*Linhystera longa* Pastor de Ward, 1985
*Linhystera problematica* Juario, 1974
*Manganonema antarctica* Fonseca, Vanreusel & Decraemer, 2006
*Paramonhystera biforma* Wieser, 1956
*Paramonhystera geraerti* Chen & Vincx, 2000
*Paramonhystera megacephala* Wieser, 1956
*Paramonhystera proteus* Wieser, 1956
*Rhynchonema megamphida* Boucher, 1974
*Steineria pilosa* Cobb, 1914
*Steineridora loricata* (Steiner, 1916)
*Theristus acer* Bastian, 1865
*Theristus conicaudatus* Allgén, 1959
*Theristus filicaudatus* Allgén, 1959
*Theristus horridus* Steiner, 1916
*Theristus normandicus* (de Man, 1890)
*Theristus oistospiculum* (Allgén, 1930)
*Theristus paravelox* Allgén, 1934
*Theristus pellucidus* Allgén, 1939
*Theristus problematicus* (Allgén, 1928)
*Theristus velox* (Bastian, 1865)

**Suborder Linhomoeina Andrássy, 1974**
**Family Siphonolaimidae Filipjev, 1918**
*Siphonolaimus falklandiae* Allgén, 1959
*Siphonolaimus smetti* Chen & Vincx, 2000

**Family Linhomoeidae Filipjev, 1922**
*Anticyathus septentrionalis* (Cobb, 1914)
*Desmolaimus conicaudatus* Allgén, 1959
*Desmolaimus macrocirculus* Allgén, 1959
*Desmolaimus propinquus* Allgén, 1959
*Disconema falklandiae* Allgén, 1959
*Linhomoeus elongatus* Bastian, 1865
*Metalinhomoeus biformis* Juario, 1974
*Metalinhomoeus filiformis* (de Man, 1907)
*Metalinhomoeus leptosoma* Allgén, 1959
*Metalinhomoeus longiseta* Kreis, 1929
*Metalinhomoeus retrosetosus* Wieser, 1956
*Metalinhomoeus setosus* Chitwood, 1951
*Metalinhomoeus tristis* (Allgén, 1933)
*Notosouthernia obtusicauda* Allgén, 1959
*Paralinhomoeus lepturus* de Man, 1907
*Paralinhomoeus macquariensis* Allgén, 1929
*Paralinhomoeus meridionalis* Cobb, 1930
*Paralinhomoeus tenuicaudatus* (Bütschli, 1874)
*Terschellingia claviger* Wieser, 1956
*Terschellingia communis* de Man, 1888
*Terschellingia longicaudata* de Man, 1907
*Terschellingia longispiculata* Wieser & Hopper, 1967

**Order Araeolaimida De Coninck & Schuurmans Stekhoven, 1933**
**Family Axonolaimidae Filipjev, 1918**
*Axonolaimus antarcticus* Cobb, 1930
*Axonolaimus austrogeorgiae* Allgén, 1959
*Axonolaimus spinosus* (Bütschli, 1874)
*Axonolaimus tenuicaudatus* Allgén, 1959
*Odontophora angustilaimoides* Chitwood, 1951
*Odontophora longisetosa* (Allgén, 1928)
*Odontophora peritricha* Wieser, 1956
*Odontophora polaris* (Cobb, 1914)
*Parodontophora pacifica* (Allgén, 1947)
*Parodontophora quadristicha* (Schuurmans Stekhoven, 1950)

**Family Comesomatidae Filipjev, 1918**
*Cervonema chilensis* Chen & Vincx, 2000
*Cervonema hermani* Chen & Vincx, 2000
*Cervonema papillatum* Jensen, 1988
*Cervonema shiae* Chen & Vincx, 2000
*Cervonema tenuicauda* Schuurmans Stekhoven, 1950
*Comesoma hermani* Chen & Vincx, 1998
*Comesoma tenuispiculum* (Ditlevsen, 1921)
*Dorylaimopsis magellanense* Chen & Vincx, 1998
*Dorylaimopsis punctatus* Ditlevsen, 1918
*Hopperia beaglense* Chen & Vincx, 1998
*Hopperia dorylaimopsoides* Allgén, 1959
*Laimella annae* Chen & Vincx, 2000
*Laimella filipjevi* Jensen, 1979
*Laimella longicauda* Cobb, 1920
*Laimella sandrae* Chen & Vincx, 2000
*Laimella subterminata* Chen & Vincx, 2000
*Metacomesoma cyatholaimoides* Wieser, 1954
*Sabatieria celtica* Southern, 1914
*Sabatieria coomansi* Chen, 1999
*Sabatieria curvispiculum* (Allgén, 1959)
*Sabatieria falcifera* Wieser, 1954
*Sabatieria furcillata* Wieser, 1954
*Sabatieria granifer* Wieser, 1954
*Sabatieria intermissa* Wieser, 1954
*Sabatieria kelletti* Platt, 1983
*Sabatieria lawsi* Platt, 1983
*Sabatieria mortenseni* (Ditlevsen, 1921)
*Sabatieria ornata* (Ditlevsen, 1918)
*Sabatieria parabyssalis* Wieser, 1954
*Sabatieria praedatrix* de Man, 1907
*Setosabatieria hilarula* (de Man, 1922)
*Vasostoma spiratum* (Jensen, 1979)

**Family Coninckiidae Lorenzen, 1981**
*Coninckia macrospirifera* Zhang, 1983

**Family Diplopeltidae Filipjev, 1918**
*Araeolaimus australis* Allgén, 1959
*Araeolaimus conicaudatus* Allgén, 1959
*Araeolaimus dubiosus* Allgén, 1959
*Araeolaimus elegans* (de Man, 1888)
*Araeolaimus obtusicaudatus* Allgén, 1959
*Araeolaimus ovalis* Wieser, 1956
*Araeolaimus paracylindricauda* Allgén, 1959
*Araeolaimus paradubiosus* Allgén, 1959
*Araeolaimus tenuicauda* Allgén, 1959
*Campylaimus inaequalis* Cobb, 1920
*Diplopeltis cirrhatus* (Eberth, 1863)
*Diplopeltula bulbosa* Vitiello, 1972
*Diplopeltula cylindricauda* (Allgén, 1932)
*Diplopeltula incisa* (Southern, 1914)
*Southerniella nojii* Jensen, 1991.
*Southerniella simplex* (Allgén, 1932)

**Order Plectida Malakhov, 1982**
**Family Leptolaimidae Örley, 1880**
*Camacolaimus ampullocaudatus* Allgén, 1959
*Camacolaimus austrogeorgiae* Allgén, 1959
*Camacolaimus cylindricauda* Allgén, 1959
*Camacolaimus falklandiae* Allgén, 1959
*Camacolaimus guillei* de Bovée, 1977
*Camacolaimus longicauda* de Man, 1922
*Camacolaimus macrocellatus* Allgén, 1959
*Camacolaimus paratardus* Allgén, 1959
*Camacolaimus spissus* Allgén, 1959
*Camacolaimus tardus* de Man, 1889
*Camacolaimus zostericola* (Filipjev, 1918)
*Ionema cobbi* (Steiner, 1916)
*Leptolaimus antarcticus* (Cobb, 1914)
*Leptoplectonema fuegoense* Coomans & Raski, 1991
*Necolaimus austrogeorgiae* Allgén, 1959
*Notocamacolaimus australis* Allgén, 1959

**Family Aegialoalaimidae Lorenzen, 1981**
*Aegialoalaimus conicaudatus* Allgén, 1959
*Aegialoalaimus elegans* de Man, 1907
*Aegialoalaimus paratenuicaudatus* Allgén, 1959
*Aegialoalaimus tenuicaudatus* Allgén, 1932

**Family Plectidae Örley, 1880**
*Plectus falklandiae* Allgén, 1959
*Plectus gisleni* Allgén, 1951
*Plectus grahami* Allgén, 1951

**Order Rhabditida Chitwood, 1933**
**Suborder Tylenchina Thorne, 1949**
**Family Cephalobidae Filipjev, 1934**
*Cephalobus incisocaudatus* Allgén, 1951

**Suborder Rhabditina Chitwood, 1933**
**Family Rhabditidae Örley, 1880**
*Rhabditis marina* Bastian, 1865

# THE BIOGEOGRAPHIC ATLAS OF THE SOUTHERN OCEAN

**Scope**

Biogeographic information is of fundamental importance for discovering marine biodiversity hotspots, detecting and understanding impacts of environmental changes, predicting future distributions, monitoring biodiversity, or supporting conservation and sustainable management strategies.

The recent extensive exploration and assessment of biodiversity by the Census of Antarctic Marine Life (CAML), and the intense compilation and validation efforts of Southern Ocean biogeographic data by the SCAR Marine Biodiversity Information Network (SCAR-MarBIN / OBIS) provided a unique opportunity to assess and synthesise the current knowledge on Southern Ocean biogeography.

The scope of the Biogeographic Atlas of the Southern Ocean is to present a concise synopsis of the present state of knowledge of the distributional patterns of the major benthic and pelagic taxa and of the key communities, in the light of biotic and abiotic factors operating within an evolutionary framework. Each chapter has been written by the most pertinent experts in their field, relying on vastly improved occurrence datasets from recent decades, as well as on new insights provided by molecular and phylogeographic approaches, and new methods of analysis, visualisation, modelling and prediction of biogeographic distributions.

A dynamic online version of the Biogeographic Atlas will be hosted on www.biodiversity.aq.

**The Census of Antarctic Marine Life (CAML)**

CAML (www.caml.aq) was a 5-year project that aimed at assessing the nature, distribution and abundance of all living organisms of the Southern Ocean. In this time of environmental change, CAML provided a comprehensive baseline information on the Antarctic marine biodiversity as a sound benchmark against which future change can reliably be assessed. CAML was initiated in 2005 as the regional Antarctic project of the worldwide programme Census of Marine Life (2000-2010) and was the most important biology project of the International Polar Year 2007-2009.

**The SCAR Marine Biodiversity Information Network (SCAR-MarBIN)**

In close connection with CAML, SCAR-MarBIN (www.scarmarbin.be, integrated into www.biodiversity.aq) compiled and managed the historic, current and new information (i.a. generated by CAML) on Antarctic marine biodiversity by establishing and supporting a distributed system of interoperable databases, forming the Antarctic regional node of the Ocean Biogeographic Information System (OBIS, www.iobis.org), under the aegis of SCAR (Scientific Committee on Antarctic Research, www.scar.org). SCAR-MarBIN established a comprehensive register of Antarctic marine species and, with biodiversity.aq provided free access to more than 2.9 million Antarctic georeferenced biodiversity data, which allowed more than 60 million downloads.

**The Editorial Team**

**Claude DE BROYER** is a marine biologist at the Royal Belgian Institute of Natural Sciences in Brussels. His research interests cover structural and ecofunctional biodiversity and biogeography of crustaceans, and polar and deep sea benthic ecology. Active promoter of CAML and ANDEEP, he is the initiator of the SCAR Marine Biodiversity Information Network (SCAR-MarBIN). He took part to 19 polar expeditions.

**Huw GRIFFITHS** is a marine Biogeographer at the British Antarctic Survey. He created and manages SOMBASE, the Southern Ocean Mollusc Database. His interests include large-scale biogeographic and ecological patterns in space and time. His focus has been on molluscs, bryozoans, sponges and pycnogonids as model groups to investigate trends at high southern latitudes.

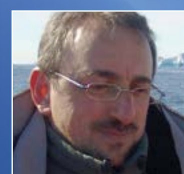
**Cédric d'UDEKEM d'ACOZ** is a research scientist at the Royal Belgian Institute of Natural Sciences, Brussels. His main research interests are systematics of amphipod crustaceans, especially of polar species and taxonomy of decapod crustaceans. He took part to 2 scientific expeditions to Antarctica on board of the *Polarstern* and to several sampling campaigns in Norway and Svalbard.

**Bruno DANIS** is an Associate Professor at the Université Libre de Bruxelles, where his research focuses on polar biodiversity. Former coordinator of the scarmarbin. be and antabif.be projects, he is a leading member of several international committees, such as OBIS or the SCAR Expert Group on Antarctic Biodiversity Informatics. He has published papers in various fields, including ecotoxicology, physiology, biodiversity informatics, polar biodiversity or information science.

**Susie GRANT** is a marine biogeographer at the British Antarctic Survey. Her work is focused on the design and implementation of marine protected areas, particularly through the use of biogeographic information in systematic conservation planning.

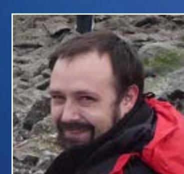
**Christoph HELD** is a Senior Research Scientist at the Alfred Wegener Institute Helmholtz Centre for Polar and Marine Research, Bremerhaven. He is a specialist in molecular systematics and phylogeography of Antarctic crustaceans, especially isopods.

**Falk HUETTMANN** is a 'digital naturalist' he works on three poles ( Arctic, Antarctic and Hindu-Kush Himalaya) and elsewhere (marine, terrestrial and atmosphere). He is based with the university of Alaska-Fairbank (UAF) and focuses primarily on effective conservation questions engaging predictions and open access data.



**Philippe KOUBBI** is professor at the University Pierre et Marie Curie (Paris, France) and a specialist in Antarctic fish ecology and biogeography. He is the Principal Investigator of projects supported by IPEV, the French Polar Institute. As a French representative to the CCAMLR Scientific Committee, his main input is on the proposal of Marine Protected Areas. His other field of research is on the ecoregionalisation of the high seas.

**Ben RAYMOND** is a computational ecologist and exploratory data analyst, working across a variety of Southern Ocean, Antarctic, and wider research projects. His areas of interest include ecosystem modelling, regionalisation and marine protected area selection, risk assessment, animal tracking, seabird ecology, complex systems, and remote sensed data analyses.



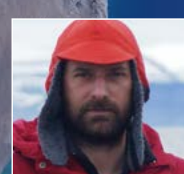
**Anton VAN DE PUTTE** works at the Royal Belgian Institute for Natural Sciences (Brussels, Belgium). He is an expert in the ecology and evolution of Antarctic fish and is currently the Science Officer for the Antarctic Biodiveristy Portal www. biodiversity.aq. This portal provides free and open access to Antarctic Marine and terrestrial biodiversity of the Antarctic and the Southern Ocean.

**Bruno DAVID** is CNRS director of research at the laboratory BIOGÉOSCIENCES, University of Burgundy. His works focus on evolution of living forms, with and more specifically on sea urchins. He authored a book and edited an extensive database on Antarctic echinoids. He is currently President of the scientific council of the Muséum National d'Histoire Naturelle (Paris), and Deputy Director at the CNRS Institute for Ecology and Environment.

**Julian GUTT** is a marine ecologist at the Alfred Wegener Institute Helmholtz Centre for Polar and Marine Research, Bremerhaven, and professor at the Oldenburg University, Germany. He participated in 13 scientific expeditions to the Antarctic and was twice chief scientist on board Polarstern. He is member of the SCAR committees ACCE and AnT-ERA (as chief officer). Main focii of his work are: biodiversity, ecosystem functioning and services, response of marine systems to climate change, non-invasive technologies, and outreach.

**Graham HOSIE** is Principal Research Scientist in zooplankton ecology at the Australian Antarctic Division. He founded the SCAR Southern Ocean Continuous Plankton Recorder Survey and is the Chief Officer of the SCAR Life Sciences Standing Scientific Group. His research interests include the ecology and biogeography of plankton species and communities, notably their response to environmental changes. He has participated in 17 marine science voyages to Antarctica.

**Alexandra POST** is a marine geoscientist, with expertise in benthic habitat mapping, sedimentology and geomorphic characterisation of the seafloor. She has worked at Geoscience Australia since 2002, with a primary focus on understanding seafloor processes and habitats on the East Antarctic margin. Most recently she has led work to understand the biophysical environment beneath the Amery Ice Shelf, and to characterise the habitats on the George V Shelf and slope following the successful CAML voyages in that region.



**Yan ROPERT COUDERT** spent 10 years at the Japanese National Institute of Polar Research, where he graduated as a Doctor in Polar Sciences in 2001. Since 2007, he is a permanent researcher at the CNRS in France and the director of a polar research programme (since 2011) that examines the ecological response of Adélie penguins to environmental changes. He is also the secretary of the Expert Group on Birds and Marine Mammals and of the Life Science Group of the Scientific Committee on Antarctic Research.