

# 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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SCIENTIFIC COMMITTEE ON ANTARCTIC RESEARCH

# 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 parasitiform 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 (Lambshhead 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-XX-VII/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  $\mu\text{m}$  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 fungi-

vorous 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 (Lambshhead 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 20<sup>th</sup> 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).

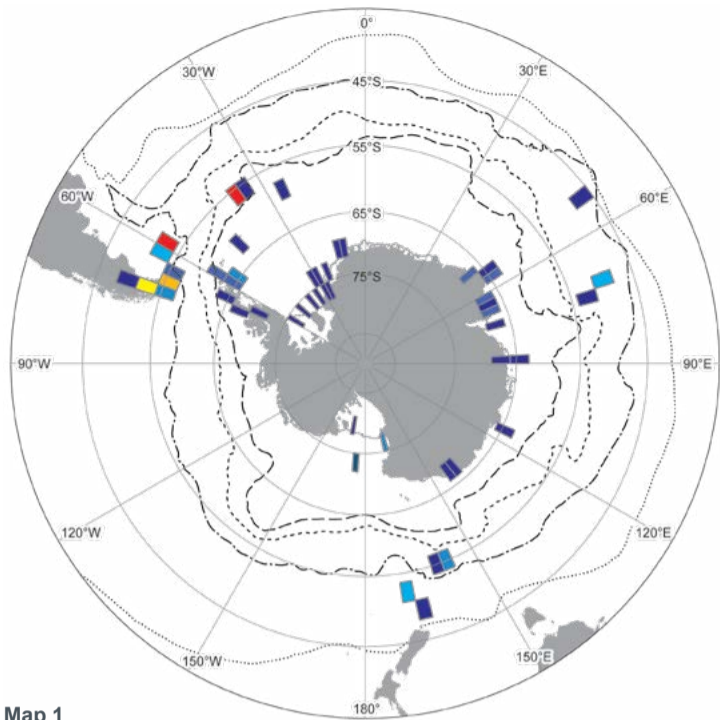
Ingels *et al.* (2006), in a biodiversity and biogeographical nematode study, focussed mainly on the genera *Desmodora* and *Desmodorella*. They found that two species, *Desmodora campbelli* and *Desmodorella aff. balteata* had wide geographical distributions in the Southern Ocean, while the other eight 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.

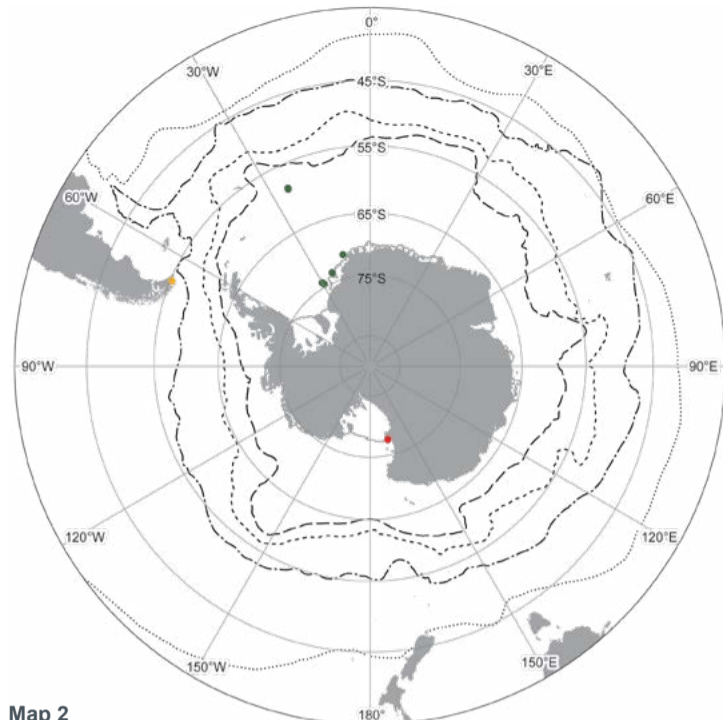
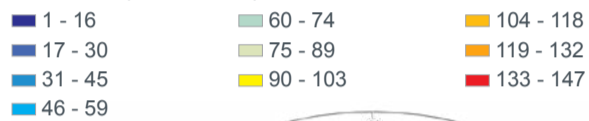
#### 5. Conclusion

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.



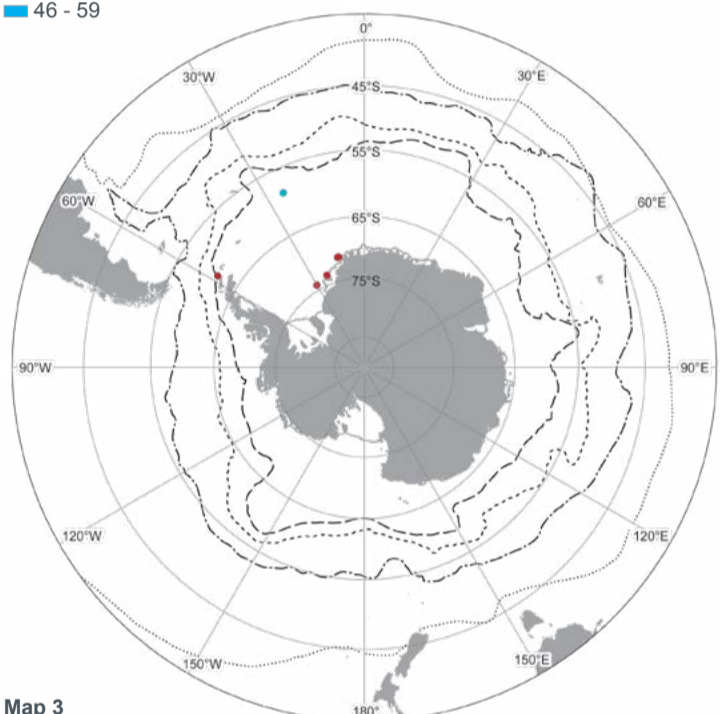
**Map 1**

Nematode species count per sector



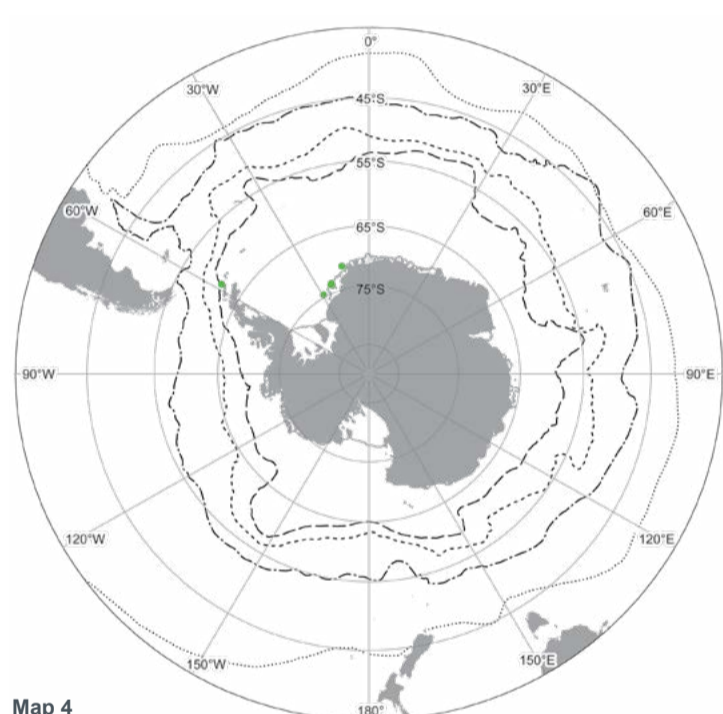
**Map 2**

- *Dichromadora antarctica*
- *Dichromadora dissipata*
- *Dichromadora weddellensis*



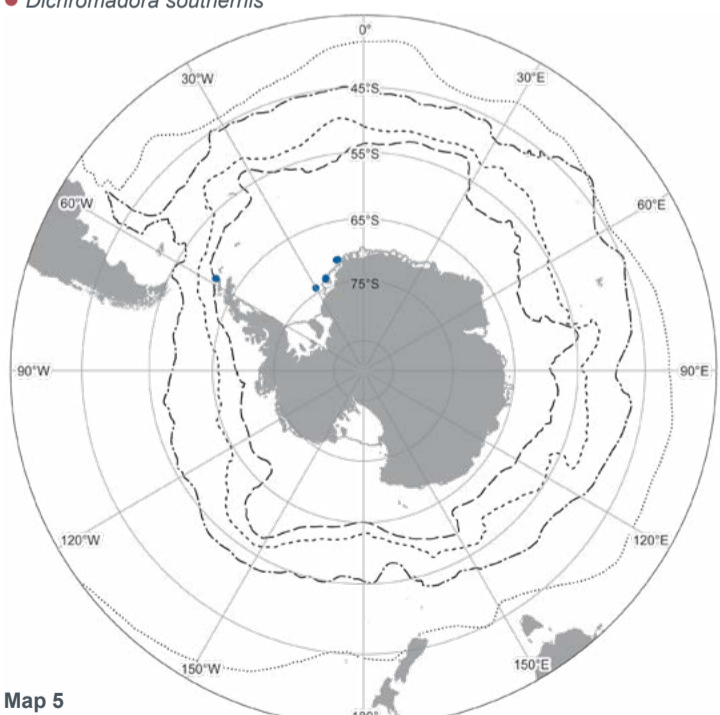
**Map 3**

- *Dichromadora quadripapillata*
- *Dichromadora southernis*



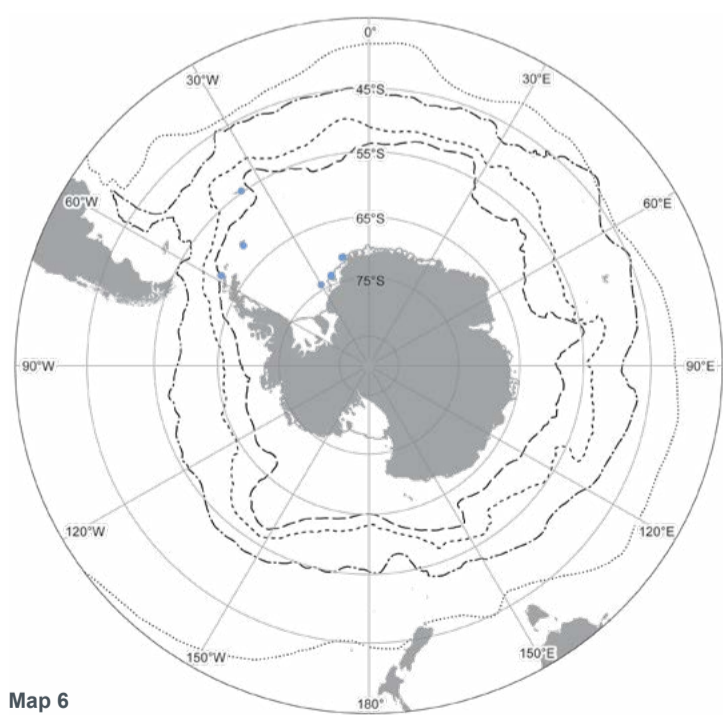
**Map 4**

- *Dichromadora parva*



**Map 5**

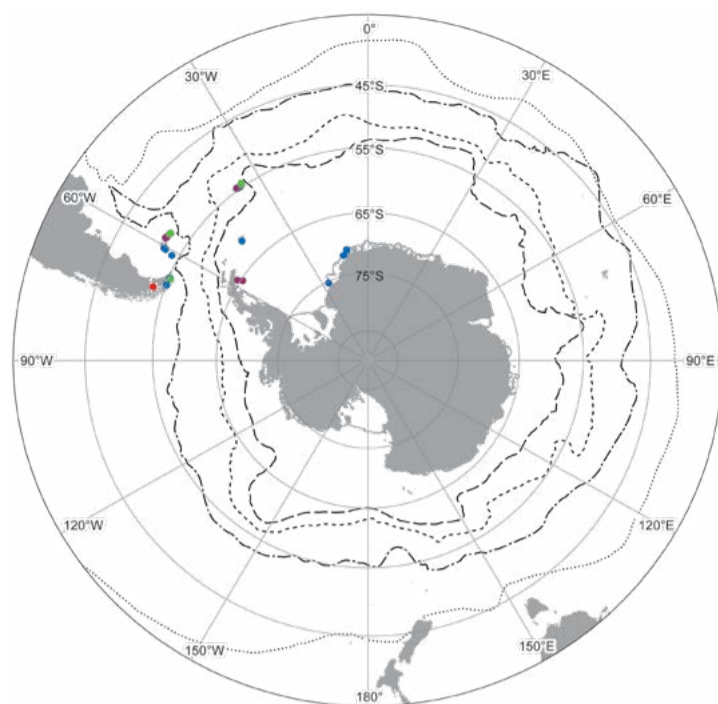
- *Dichromadora polarsternis*



**Map 6**

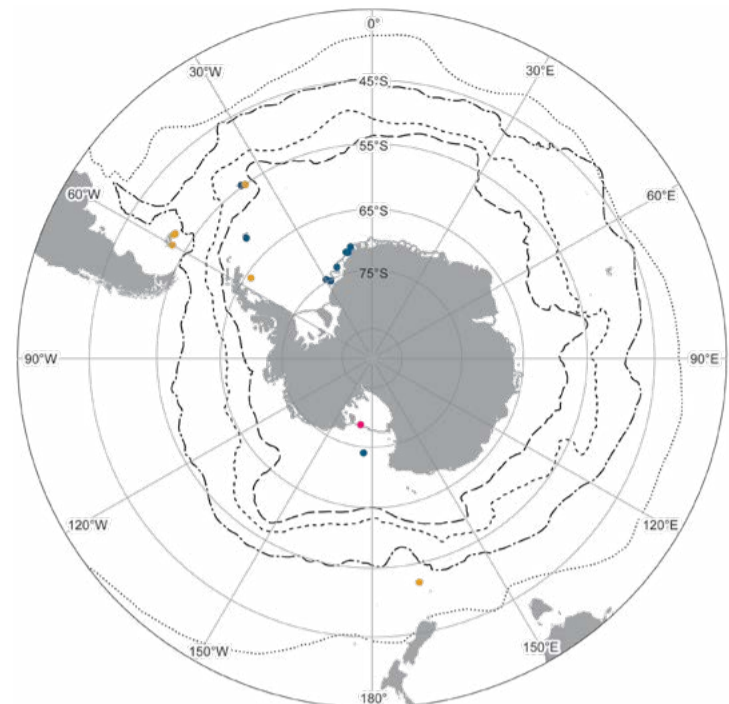
- *Dichromadora polaris*

**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).



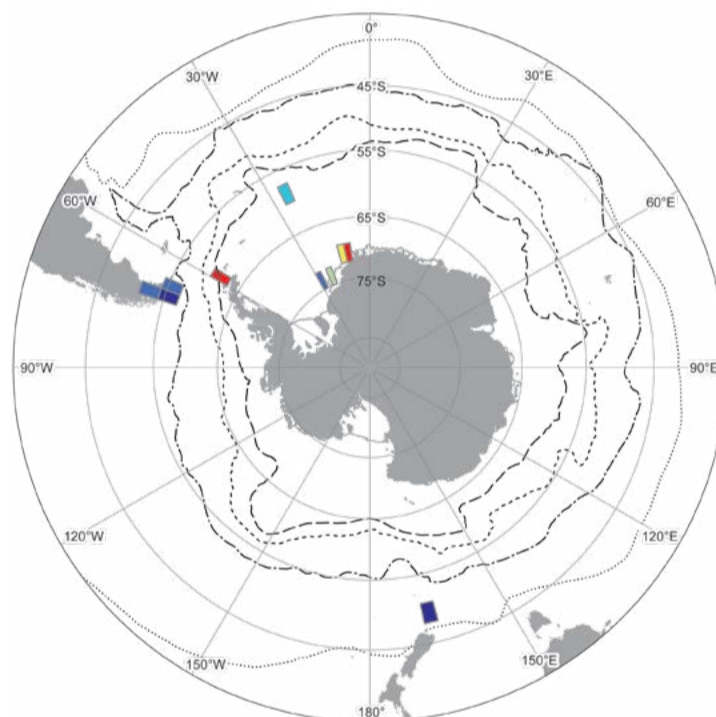
Map 7

- *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 | ■ 4 | ■ 7 |
| ■ 2 | ■ 5 | ■ 8 |
| ■ 3 | ■ 6 | ■ 9 |

**Meibenthos: 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 9. 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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\*Data source references; \*\* Text and data sources references.

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► 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

<b>PHYLUM NEMATODA Potts, 1932</b>	<i>Adoncholaimus crassicaudus</i> Wieser, 1953	<i>Thoracostoma papillosum</i> Ditlevsen, 1921
<b>Class ENOPLEA Inglis, 1983</b>	<i>Adoncholaimus falklandiae</i> Allgén, 1959	<i>Thoracostoma parasetosum</i> Mawson, 1958
<b>Subclass ENOPLIA Pearse, 1942</b>	<i>Adoncholaimus thalassophygus</i> (de Man, 1876)	<i>Thoracostoma schizoepistylum</i> Mawson, 1958
<b>Order Enoplida Filipjev, 1929</b>	<i>Curvolaimus decipiens</i> Wieser, 1953	<i>Thoracostoma setosum</i> (Linstow, 1896)
<b>Suborder Enoplina Chitwood &amp; Chitwood, 1937</b>	<i>Metaparoncholaimus macrouraios</i> Mawson, 1958	<i>Thoracostoma unifenestratum</i> Allgén, 1959
<b>Family Enoplidae Dujardin, 1845</b>	<i>Metoncholaimoides squalus</i> Wieser, 1953	
<i>Enoplus heardensis</i> Mawson, 1958	<i>Metoncholaimus antarcticus</i> (Linstow, 1896)	<b>Family Oxystominidae Chitwood, 1935</b>
<i>Enoplus michaelseni</i> Linstow, 1896	<i>Oncholaimellus carlbergi</i> Allgén, 1947	<i>Halalaimus brachyaulax</i> Mawson, 1958
<i>Enoplus micrognathus</i> Allgén, 1947	<i>Oncholaimus dujardinii</i> de Man, 1876	<i>Halalaimus ciliocaudatus</i> Allgén, 1932
<i>Enoplus paralittoralis</i> Wieser, 1953	<i>Oncholaimus leptos</i> Mawson, 1958	<i>Halalaimus comatus</i> Wieser, 1953
<b>Family Thoracostomopsidae Filipjev, 1927</b>	<i>Oncholaimus longissimus</i> Allgén, 1959	<i>Halalaimus diacros</i> Mawson, 1958
<i>Enoplolaimus acanthospiculum</i> Allgén, 1959	<i>Oncholaimus notolangrunensis</i> Allgén, 1959	<i>Halalaimus filicaudatus</i> Allgén, 1959
<i>Enoplolaimus arcospiculum</i> Allgén, 1959	<i>Oncholaimus notoviridis</i> Allgén, 1958	<i>Halalaimus fletcheri</i> Mawson, 1958
<i>Enoplolaimus falklandiae</i> Allgén, 1959	<i>Oncholaimus notoxyuris</i> Allgén, 1959	<i>Halalaimus gracilis</i> de Man, 1888
<i>Enoplolaimus filiformis</i> (Allgén, 1935)	<i>Oncholaimus paradjardini</i> Allgén, 1959	<i>Halalaimus longicollis</i> Allgén, 1932
<i>Enoplolaimus niger</i> Allgén, 1959	<i>Oncholaimus paraegypticus</i> Mawson, 1956	<i>Halalaimus macquariensis</i> Mawson, 1958
<i>Enoplolaimus notopropinquus</i> Allgén, 1959	<i>Oncholaimus paralangrunensis</i> (Allgén, 1947)	<i>Halalaimus marri</i> Mawson, 1958
<i>Enoplolaimus opacus</i> Allgén, 1959	<i>Oncholaimus paredron</i> Mawson, 1958	<i>Nemanema brachyure</i> Allgén, 1959
<i>Enoplolaimus propinquus</i> de Man, 1922	<i>Oncholaimus rotundicaudatus</i> Allgén, 1959	<i>Nemanema campbelli</i> Allgén, 1932
<i>Enoplolaimus vulgaris</i> (de Man, 1893)	<i>Oncholaimus thysanouraios</i> (Mawson, 1958)	<i>Nemanema cylindricaudatum</i> de Man, 1922
<i>Epacanthion brevispiculosum</i> Mawson, 1958	<i>Oncholaimus viridis</i> (Bastian, 1865)	<i>Nemanema obtusicauda</i> (Allgén, 1959)
<i>Epacanthion brevispiculum</i> Mawson, 1956	<i>Pelagonema longicaudum</i> (Allgén, 1953)	<i>Oxystomina antarctica</i> Mawson, 1956
<i>Epacanthion filicaudatum</i> Mawson, 1956	<i>Pelagonema obtusicauda</i> Filipjev, 1918	<i>Oxystomina elongata</i> Bütschli, 1874
<i>Fenestrolaimus antarcticus</i> Mawson, 1956	<i>Pelagonema tenue</i> (Kreis, 1928)	<i>Oxystomina filicaudata</i> Allgén, 1959
<i>Mesacanthion brachycolle</i> Allgén, 1959	<i>Pontonema cobbi</i> Mawson, 1956	<i>Oxystomina greenpatchi</i> Allgén, 1959
<i>Mesacanthion infantile</i> (Ditlevsen, 1930)	<i>Pontonema leidy</i> Mawson, 1956	<i>Oxystomina mirabilis</i> Allgén, 1959
<i>Mesacanthion kerguelense</i> Mawson, 1958	<i>Pontonema propinquum</i> (Allgén, 1930)	<i>Oxystomina oxycaudata</i> (Ditlevsen, 1926)
<i>Mesacanthion pacificum</i> Allgén, 1947	<i>Pontonema serratodentatum</i> Mawson, 1956	<i>Oxystomina pulchella</i> Vitiello, 1970
<i>Mesacanthion virile</i> (Ditlevsen, 1930)	<i>Viscosia antarctica</i> Allgén, 1959	<i>Oxystomina tenuicollis</i> Allgén, 1959
<i>Mesacanthoides caputmedusae</i> (Ditlevsen, 1918)	<i>Viscosia brachydonta</i> Allgén, 1959	<i>Oxystomina vespertilio</i> Wieser, 1953
<i>Mesacanthoides latignathus</i> (Ditlevsen, 1918)	<i>Viscosia brevicaudata</i> Mawson, 1958	<i>Thalassoalaimus spissus</i> (Allgén, 1932)
<i>Metenoploides alatus</i> Wieser, 1953	<i>Viscosia brevilaima</i> Allgén, 1959	
<i>Oxyonchus australis</i> (de Man, 1904) Mawson, 1956	<i>Viscosia carnleyensis</i> (Ditlevsen, 1921)	<b>Suborder Tripyloidina De Coninck, 1965</b>
<i>Oxyonchus brachysetosus</i> Allgén, 1959	<i>Viscosia cryptodentata</i> Allgén, 1959	<b>Family Tripyloididae Filipjev, 1918</b>
<i>Oxyonchus crassicolis</i> Allgén, 1959	<i>Viscosia falklandiae</i> Allgén, 1959	<i>Bathylaimus australis</i> Cobb, 1894
<i>Oxyonchus dentatus</i> (Ditlevsen, 1918) Filipjev, 1927	<i>Viscosia glabra</i> (Bastian, 1865) de Man, 1890	<i>Bathylaimus austrogeorgiae</i> Allgén, 1959
<i>Oxyonchus macrodon</i> Allgén, 1959	<i>Viscosia graham</i> Allgén, 1959	<i>Paratripyloides viviparus</i> (Cobb, 1930) Wieser, 1956
<i>Oxyonchus notodentatus</i> Allgén, 1959	<i>Viscosia langrunensis</i> (de Man, 1890)	
<i>Oxyonchus parastateni</i> Allgén, 1959	<i>Viscosia parafalklandiae</i> Allgén, 1959	<b>Order Triplonchida Cobb, 1920</b>
<i>Oxyonchus stateni</i> (Allgén, 1930)	<i>Viscosia parapellucida</i> (Cobb, 1898)	<b>Suborder Tobrilina Tsalolikhin, 1976</b>
<i>Oxyonchus subantarcticus</i> Mawson, 1958	<i>Viscosia propinqua</i> Allgén, 1959	<b>Family Rhabdodemaniidae Filipjev, 1934</b>
<i>Paramesacanthion allgeni</i> Mawson, 1958	<i>Viscosia similis</i> Allgén, 1959	<i>Rhabdodemania calycolaimus</i> Schuurmans Stekhoven & Mawson, 1955
<i>Paramesacanthion estridium</i> Wieser, 1953	<i>Viscosia subantarctica</i> Allgén, 1959	<i>Rhabdodemania minor</i> (Southern, 1914)
<i>Paramesacanthion oxycephalum</i> (Ditlevsen, 1926)	<i>Viscosia tenuilaima</i> Allgén, 1959	
<i>Paramesacanthion tricuspis</i> (Schuurmans Stekhoven, 1950)	<i>Viscosia tenuissima</i> Allgén, 1959	<b>Family Pandolaimidae Belogurov, 1980</b>
	<i>Viscosia viscosa</i> (Bastian, 1865) de Man, 1890	<i>Pandolaimus latilaimus</i> (Allgén, 1929)
	<i>Viscosia wieseri</i> Mawson, 1958	
<b>Family Anoplostomatidae Gerlach &amp; Riemann, 1974</b>		<b>Subclass DORYLAIMIA Inglis, 1983</b>
<i>Anoplostoma campbelli</i> Allgén, 1932	<b>Family Enchelidiidae Filipjev, 1918</b>	<b>Order Mononchida Jairajpuri, 1969</b>
<i>Anoplostoma tenuisetum</i> Allgén, 1959	<i>Calyptonema axonolaimoides</i> Allgén, 1959	<b>Suborder Mononchina Kirjanova &amp; Krall, 1969</b>
<i>Chaetonema amphora</i> Wieser, 1953	<i>Calyptonema mawsoni</i> Mawson, 1958	<b>Family Mononchidae Chitwood, 1937</b>
<i>Chaetonema steineri</i> (Filipjev, 1927)	<i>Calyptonema retrocellatum</i> (Wieser, 1953)	<i>Mononchus gerlachei</i> (de Man, 1904)
	<i>Catalaimus maxweberi</i> (de Man, 1922)	
<b>Family Phanodermatidae Filipjev, 1927</b>	<i>Ditlevsenella tertia</i> Wieser, 1953	<b>Class CHROMADOREA</b>
<i>Klugea longiseta</i> Mawson, 1956	<i>Enchelidium filicolle</i> Allgén, 1959	<b>Subclass CHROMADORIA</b>
<i>Klugea truncata</i> Mawson, 1956	<i>Eurystomina fenestella</i> Wieser, 1953	<b>Order Chromadorida Chitwood, 1933</b>
<i>Micoletzkyia anomala</i> Wieser, 1953	<i>Eurystomina filicaudatum</i> (Allgén, 1959)	<b>Suborder Chromadorina Filipjev, 1929</b>
<i>Micoletzkyia austrogeorgiae</i> Allgén, 1954	<i>Eurystomina ornata</i> (Eberth, 1863)	<b>Family Chromadoridae Filipjev, 1917</b>
<i>Micoletzkyia falklandiae</i> Allgén, 1954	<i>Eurystomina stenolaima</i> (Ditlevsen, 1930)	<i>Acantholaimus quintus</i> Gerlach, Schrage & Riemann, 1979
<i>Micoletzkyia nudicapitata</i> Allgén, 1959	<i>Eurystomina tenuicaudata</i> Allgén, 1932	<i>Actinonema longicaudatum</i> (Steiner, 1918)
<i>Phanoderma banzare</i> Mawson, 1956	<i>Ledovitia fallae</i> Mawson, 1958	<i>Actinonema pachydermatum</i> Cobb, 1920
<i>Phanoderma campbelli</i> Allgén, 1927	<i>Polygastrophora hexabulba</i> (Filipjev, 1918)	<i>Atrochromadora microlaima</i> (de Man, 1889)
<i>Phanoderma cocksi</i> Bastian, 1865	<i>Polygastrophora octobulba</i> Micoletzky, 1930	<i>Atrochromadora parva</i> (de Man, 1893) Wieser, 1954
<i>Phanoderma laticolle</i> (Marion, 1870)	<i>Symplocostoma tenuicolle</i> (Eberth, 1863)	<i>Chromadora nudicapitata</i> (Bastian, 1865)
<i>Phanoderma paracampbelli</i> Allgén, 1958		<i>Chromadorella cobbiana</i> Johnston, 1938
<i>Phanoderma parasiticum</i> Ditlevsen, 1926	<b>Suborder Ironina Siddiqi, 1983</b>	<i>Chromadorella filiformis</i> (Bastian, 1865)
<i>Phanoderma speculum</i> Schuurmans Stekhoven & Mawson, 1955	<b>Family Ironidae de Man, 1876</b>	<i>Chromadorita brachypharynx</i> (Allgén, 1932)
<i>Phanoderma tuberculatum</i> (Eberth, 1863) Bastian, 1865	<i>Dolicholaimus marioni</i> (de Man, 1888)	<i>Chromadorita ceratoserolis</i> Lorenzen, 1986
<i>Phanoderma wieseri</i> Mawson, 1956	<i>Syringolaimus striatocaudatus</i> de Man, 1888	<i>Chromadorita gracilis</i> (Filipjev, 1922)
<i>Phanodermopsis ingrami</i> Mawson, 1958	<i>Thalassironus bipartitus</i> Wieser, 1953	<i>Chromadorita minor</i> (Allgén, 1927) Wieser, 1954
		<i>Chromadorita mucrodonta</i> (Steiner, 1916)
<b>Family Anticomidae Filipjev, 1918</b>	<b>Family Leptosomatidae Filipjev, 1916</b>	<i>Chromadorita pharetra</i> Ott, 1972
<i>Anticomia acuminata</i> (Eberth, 1863) Stekhoven, 1950	<i>Deontostoma antarcticum</i> (Linstow, 1892)	<i>Dichromadora antarctica</i> (Cobb, 1914) Timm, 1978
<i>Anticomia allgeni</i> Platonova, 1968	<i>Deontostoma arcticum</i> (Ssaweljev, 1912)	<i>Dichromadora dissipata</i> Wieser, 1954
<i>Anticomia campbelli</i> Allgén, 1932	<i>Deontostoma aucklandiae</i> (Ditlevsen, 1921)	<i>Dichromadora parva</i> Vermeeren, Vanreusel & Vanhove, 2004
<i>Anticomia columba</i> Wieser, 1953	<i>Deontostoma demani</i> (Mawson, 1956)	<i>Dichromadora polaris</i> Vermeeren, Vanreusel & Vanhove, 2004
<i>Anticomia curticauda</i> Platonova, 1968	<i>Deontostoma timmerchio</i> Hope, 1974	<i>Dichromadora polarsternis</i> Vermeeren, Vanreusel & Vanhove, 2004
<i>Anticomia filicauda</i> Mawson, 1956	<i>Leptosomatides antarcticus</i> Mawson, 1956	<i>Dichromadora quadripapillata</i> Muthumbi & Vincx, 1998
<i>Anticomia graciliceps</i> Platonova, 1968	<i>Leptosomatides conisetosus</i> Schuurmans Stekhoven & Mawson, 1955	<i>Dichromadora southernis</i> Vermeeren, Vanreusel & Vanhove, 2004
<i>Anticomia kerguelensis</i> Mawson, 1958	<i>Leptosomatium arcticum</i> Filipjev, 1916	<i>Dichromadora weddellensis</i> Vermeeren, Vanreusel & Vanhove, 2004
<i>Anticomia longissima</i> Allgén, 1958	<i>Leptosomatium clavatum</i> Platonova, 1958	<i>Euchromadora amokurae</i> (Ditlevsen, 1921)
<i>Anticomia major</i> Mawson, 1956	<i>Leptosomatium crassicutis</i> Platonova, 1958	<i>Euchromadora denticulata</i> (sp. incertae sedis) Cobb, 1914
<i>Anticomia pellucida</i> Bastian, 1865	<i>Leptosomatium gracile</i> Bastian, 1865	<i>Euchromadora meridiana</i> (sp. incertae sedis) Cobb, 1914
<i>Anticomia pushkini</i> Platonova, Belogurov & Sheenko, 1979	<i>Leptosomatium kerguelense</i> Platonova, 1958	<i>Euchromadora vulgaris</i> (Bastian, 1865)
<i>Anticomia subsimilis</i> Cobb, 1914	<i>Leptosomatium sabangense</i> Steiner, 1915	<i>Graphonema amokurae</i> (Ditlevsen, 1921) Inglis, 1971
<i>Anticomia tenuis</i> Allgén, 1930	<i>Paraleptosomatides elongatus</i> Mawson, 1956	<i>Neochromadora aberrans</i> Cobb, 1930
<i>Anticomia trichura</i> Cobb, 1898	<i>Paraleptosomatides spiralis</i> Mawson, 1956	<i>Neochromadora complexa</i> Gerlach, 1953
<i>Anticomia wieseri</i> Mawson, 1958	<i>Platycomopsis dimorphica</i> Mawson, 1956	<i>Neochromadora craspedota</i> (Steiner, 1916)
<i>Anticomopsis typica</i> Micoletzky, 1930	<i>Platycomopsis paracobbii</i> Mawson, 1956	<i>Neochromadora edentata</i> (Cobb, 1914)
<i>Antopus serialis</i> (Baylis, 1916)	<i>Pseudocella brachychaites</i> Mawson, 1958	<i>Neochromadora notocraspedota</i> Allgén, 1958
<i>Paranticoma antarctica</i> Mawson, 1956	<i>Pseudocella elegans</i> (Ditlevsen, 1926)	<i>Neochromadora poecilosoma</i> (de Man, 1893) Micoletzky, 1926
<i>Paranticoma odhneri</i> Allgén, 1959	<i>Pseudocella panamaensis</i> (Allgén, 1947)	<i>Prochromadorella antarctica</i> (Cobb, 1914)
<i>Paranticoma tubuliphora</i> Wieser, 1953	<i>Pseudocella polychaites</i> (Mawson, 1958)	<i>Prochromadorella conicaudata</i> (Allgén, 1927) Wieser, 1954
	<i>Pseudocella tabarini</i> (Inglis, 1958)	<i>Prochromadorella paramucrodonta</i> (Allgén, 1929) Wieser, 1951
<b>Suborder Trefusiina Siddiqi, 1983</b>	<i>Pseudocella trichodes</i> (Leuckart, 1849)	<i>Spiliphora dolichura</i> de Man, 1893
<b>Family Simpliconematidae Blome &amp; Schrage, 1985</b>	<i>Synonchus fasciculatus</i> Cobb, 1893	<i>Spiliphora edentata</i> (Cobb, 1914)
<i>Simpliconema aenigmatodes</i> Blome & Schrage, 1985	<i>Thoracostoma angustifissulatum</i> Mawson, 1956	<i>Spiliphora gracilicauda</i> (de Man, 1893) Wieser, 1954
	<i>Thoracostoma anocellatum</i> Schuurmans Stekhoven & Mawson, 1954	<i>Spilophorella campbelli</i> Allgén, 1928
<b>Family Trefusiidae Gerlach, 1966</b>	<i>Thoracostoma arcticum</i> Ssaveljev, 1912	<i>Spilophorella paradoxa</i> (de Man, 1888)
<i>Trefusia axonolaimoides</i> Allgén, 1953	<i>Thoracostoma campbelli</i> Ditlevsen, 1921	
	<i>Thoracostoma chilense</i> (Steiner, 1921)	
<b>Family Xenellidae De Coninck, 1965</b>	<i>Thoracostoma coronatum</i> (Eberth, 1863) Marion, 1870	
<i>Xennella filicaudata</i> (Allgén, 1954)	<i>Thoracostoma falklandiae</i> Allgén, 1959	
	<i>Thoracostoma microfenestratum</i> Allgén, 1959	
<b>Suborder Oncholaimina De Coninck, 1965</b>		
<b>Family Oncholaimidae Filipjev, 1916</b>		
<i>Adoncholaimus austrogeorgiae</i> Allgén, 1959		



**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 macilentii* 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 antarcticus* 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 bifurca* 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 Andrassy, 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)

# 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](http://www.biodiversity.aq).

## The Census of Antarctic Marine Life (CAML)

CAML ([www.caml.aq](http://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](http://www.scarmarbin.be), integrated into [www.biodiversity.aq](http://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](http://www.iobis.org)), under the aegis of SCAR (Scientific Committee on Antarctic Research, [www.scar.org](http://www.scar.org)). SCAR-MarBIN established a comprehensive register of Antarctic marine species and, with [biodiversity.aq](http://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



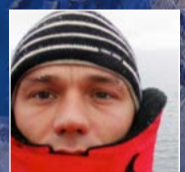
**Claude DE BROYER** is a marine biologist at the Royal Belgian Institute of Natural Sciences in Brussels. His research interests cover structural and ecofunctional biodiversity and biogeography of crustaceans, and polar and deep sea benthic ecology. Active promoter of CAML and ANDEEP, he is the initiator 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 [www.scarmarbin.be](http://www.scarmarbin.be) and [antabif.be](http://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 KOUUBI** 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 Biodiversity Portal [www.biodiversity.aq](http://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.



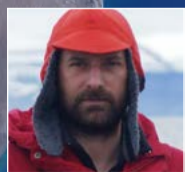
**Julian GUTT** is a marine ecologist at the Alfred Wegener Institute Helmholtz Centre for Polar and Marine Research, Bremerhaven, and professor at the Oldenburg University, Germany. He participated in 13 scientific expeditions to the Antarctic and was twice chief scientist on board *Polarstern*. He is member of the SCAR committees ACCE and ANT-ERA (as chief officer). Main foci 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.

