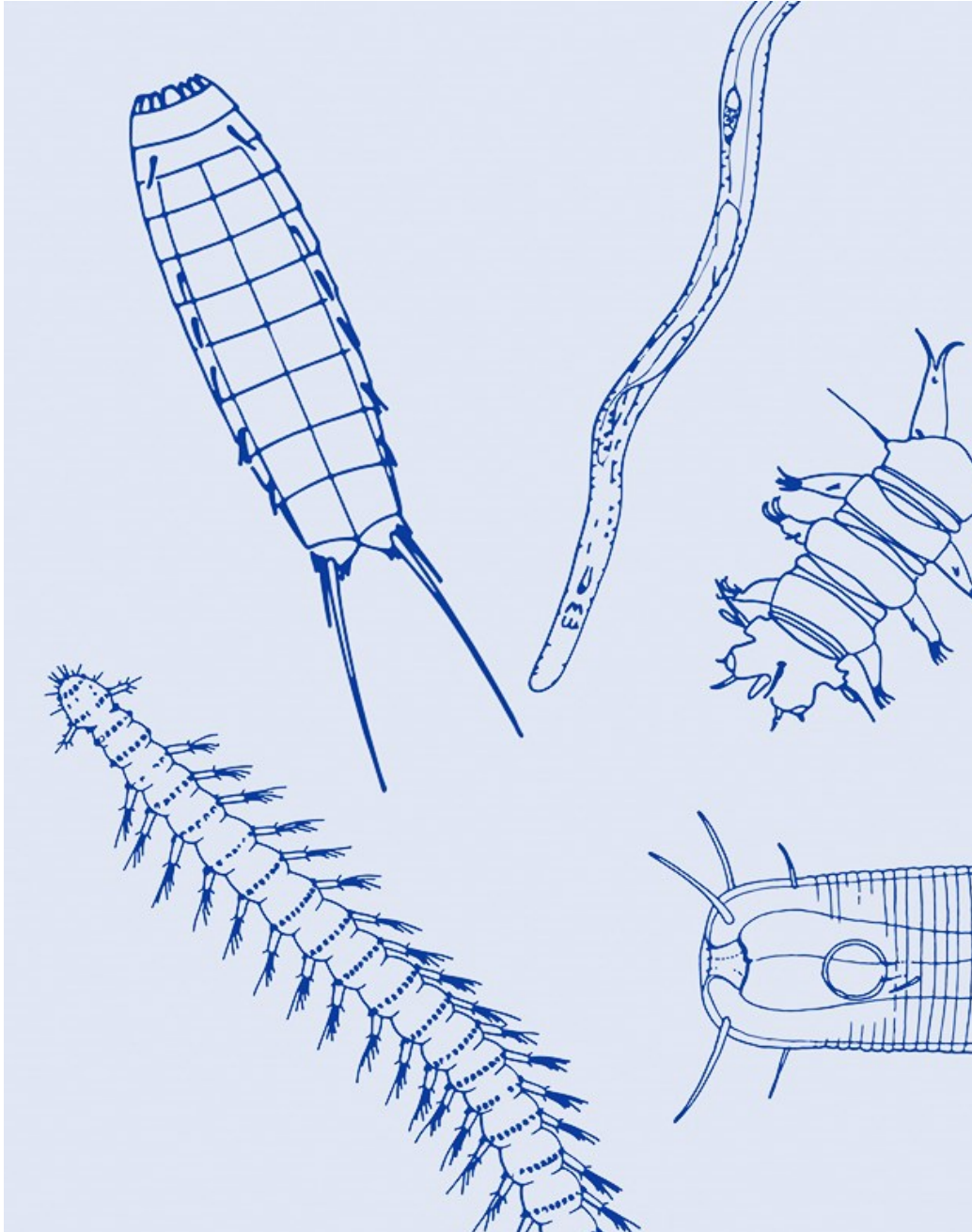




The Newsletter of the International Association of Meiobenthologists

PSAMMONALIA

Composed at
MARE - Marine and Environmental Research Centre
University of Évora, Portugal



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21-25
2021

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June
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2021

Submit to Water's Special Issue "Ecological Quality Status Assessment of Aquatic Ecosystems: New Methods and Perspectives for the Future"

Sept.
12-17
2021

16th Deep-Sea Biology Symposium

July
10-15
2022

14th International Polychaete Conference

Aug.
22-26
2022

15th International Symposium on Tardigrada

DONT FORGET TO RENEW YOUR IAM MEMBERSHIP!
APPLICATION FORM CAN BE FOUND ON THE LAST PAGE.

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EXECUTIVE COMMITTEE

Helena Adão, Chairperson

Marine and Environmental Science Centre (MARE),
School of Sciences and Technology, Biology
Department, Apartado 94, 7002-554 Évora, Portugal.
hadao@uevora.pt

Vadim Mokievsky, Past Chairperson

P.P. Shirshov Institute of Oceanology,
Russian Academy of Sciences, 36 Nakhimovskiy
Prospect, 117218 Moscow, Russia.
vadim@ocean.ru

Ann Vanreusel, Treasurer

Lab Morphologie, Universiteit Gent, Ladengancjstraat
35, B-9000 Gent, Belgium.
ann.vanreusel@ugent.be

Daniel Leduc (term expires 2022)

National Institute of Water and Atmospheric
Research, Private Bag 14-901, Wellington,
New Zealand.
daniel.leduc@niwa.co.nz

Nabil Majdi (term expires 2022)

Bielefeld University, Animal Ecology, Konsequenz 45,
33615, Bielefeld, Germany.
nabil.majdi@uni-bielefeld.de

Daniela Zeppilli (term expires 2025)

Laboratoire Environnement Profond (LEP), Institut
Français Recherche pour l'Exploitation de la Mer
(IFREMER), Plouzané, 29280, France.
daniela.zeppilli@ifremer.fr

Jeroen Ingels (term expires 2025)

FSU Coastal and Marine Laboratory, Florida State
University, St. Teresa, Florida, 32358, USA.
jingels@fsu.edu

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Editor in Chief:

Helena Adão

Cover art:

Paula Godinho

Compilation and Design:

Mélanie Costa

BOARD OF CORRESPONDENTS

Er Hua

College of Marine Life Science, Ocean University of China,
Popular Republic of China.
huaer@ouc.edu.cn

Jyotsna Sharma

Department of Biology, University of Texas at San Antonio,
United States of America.
jyotsna.sharma@utsa.edu

Samuel Gomez

Universidad Nacional Autónoma de México, México.
samuelgomez@ola.icmyl.unam.mx

Cheng Chen

University of Malaysia Sabah, Malaysia.
chengann@ums.edu.my

Marten Sørensen

Natural History Museum, Denmark.
mvsorensen@snm.ku.dk

EDITORIAL

Welcome to a new edition of Psammonalia, dear meiobenthologists. It is with great satisfaction that we can report on many research activities and the continuing enthusiasm of the worldwide meiofauna community, in this issue #173, despite the many limitations imposed by the COVID19 pandemic situation.

During the past year, a number of meetings had to be postponed or cancelled, but as the various scientific and organizing committees are navigating this “new world”, several of these meetings will now take place in the near or not-so-distant future, either onsite, online or in a hybrid format. I would like to note the laudable diversity of these meetings. Our Brazilian colleagues are organizing the “II Brazilian Symposium on Meiofauna”, this month, invigorating the many meiofauna scientists and research projects in the country. The “15th International Symposium on Tardigrada” (who doesn’t love a water bear!) will assemble the steady audience of tardigradologists in Poland in 2022. And then there is the “16th Deep-Sea Biology Symposium” to take place in a hybrid format in September of this year. Meiofauna research will be well-represented at this symposium, considering the demonstrated relevance of meiofauna in addressing deep-sea ecological questions, and illustrated by the deep-sea expeditions reported in the current and previous issues of Psammonalia. In July 2021, the “Lipids in the Oceans Conference” will provide a platform to discuss fatty acid analysis in meiofauna organisms.

Important to note are the update of the Kinorhyncha database and the compilation of the 32 groups of meiofauna, including many figures to help with their identification available online. For this issue, we also received updates on studies that are being carried out as we speak, such as “Exploring the diversity and ecological role of nematodes in the ancient forest of La Massane (Southern France)” and “Estuarine southern Chilean neuston layer as habitat for intertidal meiofauna”. Reporting on research projects is of great value to Psammonalia and the members of the International Association of Meiobenthologists, since it gives us the opportunity to reinforce our connection with research teams across the world. We certainly look forward to receiving more updates on research projects worldwide to inform our community.

This issue also has a link to a questionnaire and the idea is to identify the most fundamental questions in meiofauna research. I think this is fundamental for all

meiobenthologists.

To conclude: In the past year, we were forced to move many activities online and dispense in-person communication or collaboration. However, it allowed us to find alternatives to reach out and bring scientists and research teams closer together using online platforms, likely more than we had thought possible before in a world where scientists could travel freely to meet each other. It perhaps brought to our attention that not all meiofauna researchers are available to attend meetings in far corners of the world, and their contributions are strongly valuable and nowadays we can engage all using online tools, which we were less-familiar with in pre-pandemic times.

Furthering this type of communication is most valuable. It is therefore important that we participate in initiatives such as “Meiolive”, ideally in a regular fashion, so that we can continue to increase knowledge exchange and improve collaboration worldwide.

I wish you all safety and good health and a good dose of patience! Once more, Science and Knowledge give us a renewed hope for the future.

Helena Adão,

Chairperson of the IAM

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UPCOMING CONFERENCES AND SEMINARS



16th Deep-Sea Biology Symposium

Dates: September 12-17, 2021

Abstract submission deadline: *Closed.*

Reg. Registration deadline: June 20, 2021

Location: Brest, France

We are very excited about the opportunity to host the 16th Deep-Sea Biology Symposium in Brest, France between 12 and 17 of September 2021!

Brest's history has always been linked to the sea and the oceans. Nowadays, Brest has a leading position in European deep-sea science, technology and industry.

Ifremer has a long experience in deep-sea research and technology with a dedicated deep-sea department (Department of Physical Resources and Deep-Sea Ecosystems-REM), mainly investigating the deep-sea seafloor and the sub-seafloor, biodiversity and the dynamics of deep-sea ecosystems, and the interaction between the biosphere and the geosphere on scales ranging from bacteria to the glacial cycles.

The 16th Deep-Sea Sea Biology Symposium has also proposed two associated events (dates for both to be announced soon):

- A Student Workshop on "Artificial Intelligence and new technologies to describe deep-sea biodiversity"
- A round Table with scientists, stakeholders and companies about deep-sea biomimicry

More informations are coming soon!

More Information and Registration:

<https://wwz.ifremer.fr/16dsbs/>



Mining session at the 16th Deep-Sea Biology Symposium! Submit your work!

Dates: September 12-17, 2021

Location: Brest, France

Collaborators in this deep-sea project have proposed a special session on deep-sea mining "Polymetallic Nodule Mining: Integrating scales, processes, impacts and knowledge" in the upcoming 16th Deep-Sea Biology Symposium, which will be held in Brest, France, in September 2021.

This special session is organized by Elisa Baldrighi, Jeroen Ingels, Andrew K. Sweetman, Adrian Glover, Thomas Dahlgren, and Erik Simon-Lledó.

It welcomes studies investigating the heterogeneity of abyssal and mesopelagic systems in the context of deep-sea polymetallic nodule mining and environmental management, with a particular attention on integrative studies across organism-size classes, and those connecting surface-to-seafloor ecology, ecology-biogeochemical patterns, and mining impacts.

Abstract submission is now open:

<https://wwz.ifremer.fr/16dsbs/Abstract-submission/Standard-Special-sessions>

UPCOMING CONFERENCES AND SEMINARS



II Brazilian Symposium on Meiofauna (II Simpósio de Meiofauna do Brasil)

Dates: June 21-25, 2021

Abstract submission deadline: JUNE 20, 2021

Registration deadline: June 20, 2021

Location: Online

The II Brazilian Symposium on Meiofauna aims to bring together Brazilian meiobenthologists from all regions of Brazil and other parts of the world. The Symposium will be divided in four thematic sessions:

- Ecology in different environments;
- Tools to study and communication;
- Diversity of groups;
- Experimental studies.

The symposium will be a fully on-line event free of charge.

Virág Venekey
(Brazil)

More Information and Registration:

www.even3.com.br/iismb

meiofaunabrasil2021@gmail.com



Estuarine Coastal Conference ECSA 58 & EMECS 13

Dates: September 6-9, 2021

Location: Online

We are excited to announce that the ECSA 58 - EMECS 13: Estuaries and coastal seas in the Anthropocene – Structure, functions, services and management conference will be held online from 6-9 September 2021 and will be available afterwards on-demand.

This stimulating online event will bring together a specially selected line-up of expert speakers, contributed talks and ePosters outlining the latest innovative research and management practices and addressing key topics from our cancelled in-person meeting.

General Sessions:

- Physical, chemical & ecological structure and functioning
- Hydrodynamics and hydrology, including modelling
- Adequacy of modelling and prediction of change
- Endogenic Managed and Exogenic Unmanaged Pressures
- Interference w/connectivity across and between systems
- Repercussions of the loss of resources
- Loss and gain of habitats and ecosystems
- Recovery, restoration & creation of habitats/populations
- Recovering and increasing resilience to future changes
- Urbanisation and industrialisation of estuaries
- Ecosystem Services and Societal Goods & Benefits
- Blue Growth and Green Growth
- Governance and adaptive management
- Approaches to successful & sustainable management
- Coping with moving baselines
- Science-Policy communication

More Information and Registration:

<http://www.estuarinecoastalconference.com/>

UPCOMING CONFERENCES AND SEMINARS



14th International Polychaete Conference

Dates: July 10-15, 2022

Location: Cape Town, South Africa

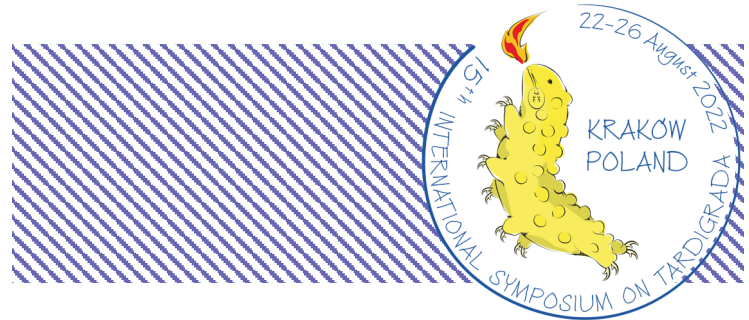
We are proud to announce that the 14th International Polychaete Conference will take place in Stellenbosch, South Africa, hosted by the University of Stellenbosch.

We hope that everyone can reconvene in Stellenbosch in 2022 for the next conference in this magnificent series conceived and launched by Pat Hutchings at the Australian Museum in Sydney 33 years ago.

The International Polychaetology Association (IPA) is a nonprofit international organization whose purpose, according to the IPA Constitution is to "encourage research on Polychaeta and stimulate others to participate and cooperate through informal meetings and correspondence; to provide a forum for exchange of ideas; to establish a means and an opportunity for personal contact and interaction in aiming for better mutual understanding; to serve as a liaison body among polychaetologists; and to introduce new students to the workers in this field."

More Information:

<http://savetcon.savetcon.co.za/ipc14/>



15th International Symposium on Tardigrada

Dates: August 22-26, 2022

Abstract submission deadline: TBA

Registration deadline: TBA

Location: Kraków, Poland

Dear Friends and Colleagues,

We are happy to invite you to the [15th International Symposium on Tardigrada](#), which is planned to be held **in Kraków, Poland, 22–26 August 2022**.

This will be the second time when a tardigrade conference is held in Poland. The last Polish meeting took place in 1977, also in Kraków. The Symposium was originally planned for 2021, but - due to the COVID-19 pandemic - it has been postponed to 2022.

We look forward to seeing you all in Kraków next year!

On behalf of the Organising Committee,
Chair of XV International Symposium on Tardigrada,

Łukasz Michalczyk

More Information and Registrations:

http://tardigrada.net/newsletter/symposia_15.htm

SUBMIT TO SPECIAL ISSUE**"Ecological Quality Status Assessment of Aquatic Ecosystems: New Methods and Perspectives for the Future"****Journal:** Water (ISSN 2073-4441)**Manuscript submission deadline:** 30 June 2021

Dear Colleagues,

Worldwide, legislation emphasizes the need to monitor the health of aquatic ecosystems based on the response of biological quality elements to environmental conditions. (...) Due to their short life cycles, meiofaunal organisms respond quickly to both environmental variability and changes in population dynamics and species composition are indicative of changes in environmental conditions. Recent studies have shown that biotic indices based on benthic foraminifera and nematodes can efficiently assess the health of transitional and marine ecosystems. The use of environmental DNA, as well as other fingerprinting techniques, is increasing in biomonitoring studies and further calibrations are still needed. Finally, recent (...) [technologies] open up new perspectives for using automatic imaging methods and artificial intelligence for benthic diversity studies.

This Special Issue will provide new scientific knowledge by attracting high-quality papers on the use of meiofaunal organisms and/or eDNA and/or fingerprinting techniques to monitor diversity and the health of transitional and marine waters. Specifically, this Special Issue will highlight the need for an improvement of the marine legislation implementation process, particularly focusing on new groups like meiofauna and new techniques either numerical or molecular. Contributions that consider recent fossil assemblages for the reconstruction of paleoecological quality status and to define in situ reference conditions using the hindcasting approach are also welcome.

Vincent Bouchet, Fabrizio Frontalini, Daniela Zeppilli

*Guest Editors***More Information :**

https://www.mdpi.com/journal/water/special_issues/numerical_monitoring_methods

OPEN PhD POSITIONS**4 Open PhD positions at the Danish Center for Hadal Research****Deadline for applying:** June 30, 2021

We would like to recruit 4 Ph.D students to investigate aspects of biogeochemistry, biogeography, and microbiology of hadal trench systems and high-pressure effects on microbial performance.

Hadal trenches are some of the most remote, extreme, and scantily explored habitats on Earth. They act as depocenters for organic material and are deep sea hotspots for largely unknown forms of life and for element cycling. Life at hadal depth is exposed to extreme hydrostatic pressure and the intensified biological activity and mineralization in these unique settings cannot be understood by simply extrapolating findings from the ambient ocean to the hadal realm.

The 4 positions are all for three years, are interlinked but have different research foci. The positions are embedded in the newly founded HADAL center (www.sdu.dk/hadal) and will be part of a multidisciplinary and dynamics research team at SDU and collaborating institutions (University of Copenhagen, Danish Technical University, Aarhus University, Tokyo University of Marine Science and Technology (Japan), Alfred-Wegener-Institute, Helmholtz Center for Polar and Marine Research (Germany)).

Focus of*Ph.D position 1*

Anaerobic mineralization of organic material at extreme hydrostatic pressure

Ph.D position 2

Hydrostatic pressure, the viral loop and DOC turn-over in hadal setting

Ph.D position 3

Deposition dynamics and distribution of trace metal and organic material in hadal trenches

Ph.D position 4

Molecular diversity and biogeography of hadal meiofauna

More Information and How to Apply:

https://www.sdu.dk/da/service/ledge_stillinger/1150451?sc_lang=en

Or contact Ronnie N. Glud: rnglud@biology.sdu.dk

EXPEDITIONS



Fig. 1.: DeepGreen 5A campaign: deck and science crew (©DeepGreen).

NORI D Campaign 5A: A dive in the deep-sea benthic biodiversity of the Clarion Clipperton Zone of the Pacific Ocean

Elisa Baldrighi (CNR-IRBIM, Italy) & Jeroen Ingels (Florida State University, USA)

From 16 October to 30 November 2020, the Vessel MAERSK Launcher was roaming the the Clarion Clipperton Fracture Zone (CCZ) of the Pacific Ocean. This was the first benthic science campaign funded by DeepGreen (now The Metals Company) to the NORI-D area to establish the environmental baselines that document biodiversity, biology and ecology in the polymetallic nodule fields before test mining is conducted.

The team of scientists that took part in the expedition included experts from a range of different scientific fields (geochemistry, macrofauna, meiofauna, foraminifera, eDNA) from several institutions worldwide (Natural History Museum of London; University of Leeds; University of Gothenburg, Florida State University and University of South Florida). Dr. Elisa Baldrighi (CNR-IRBIM, Italy) led the meiofauna sampling onboard, working together with Dr. Jeroen Ingels (FSU, USA) the meiofauna PI in the project.

The abyssal plains of the CCZ in the central eastern Pacific are characterized by the largest known accumulation of polymetallic nodules, rich in nickel, manganese, copper and cobalt. The possibility for commercial mining of deep-sea manganese nodules is currently in the exploration phase. Since the CCZ falls beyond national jurisdiction, the regulatory framework for prospective nodule mining is provided by the International Seabed Authority (ISA) which has granted exploration licenses to contractors from different countries (<https://www.isa.org.jm/deep-seabed-minerals-contractors>).

One of the requirements of the ISA toward contractors is to document and investigate the biota in their license

area and evaluate the impact that planned mining activities will have on the environment so that appropriate measures can be put in place to avoid environmental damage.

The abyssal environment of the CCZ remains largely unknown and scientific knowledge on benthic communities is scant and generally based on data from a limited geographic coverage, so these campaigns are instrumental in enhancing our scientific knowledge of the deep sea.

In line with ISA requirements, **the overall objectives of the benthic survey program during the campaign were:**

- Establish benthic biology and biogeochemistry time-series sampling sites in the test mining area, the predicted plume impact areas, and a preservation reference zone in order to enable long-term, spatio-temporal studies of conditions pre- and post-impact;
- Characterize biological communities (i.e. metazoan meiofauna, foraminiferal meiofauna, macrofauna and megafauna) living within or on seafloor sediments and hard substrates in the investigated areas;
- Characterize the physical-chemical features of the seafloor sediments in the investigated areas;
- Investigate the relationship between habitat heterogeneity (e.g. nodule abundance and type), sediment type and biotic communities;
- Develop a dataset of baseline seafloor sediment quality and biology that will be used to guide management actions during future mining operations.



Fig. 2.: Dr. Elisa Baldrighi and a colleague during meiofauna core processing (©DeepGreen)

EXPEDITIONS

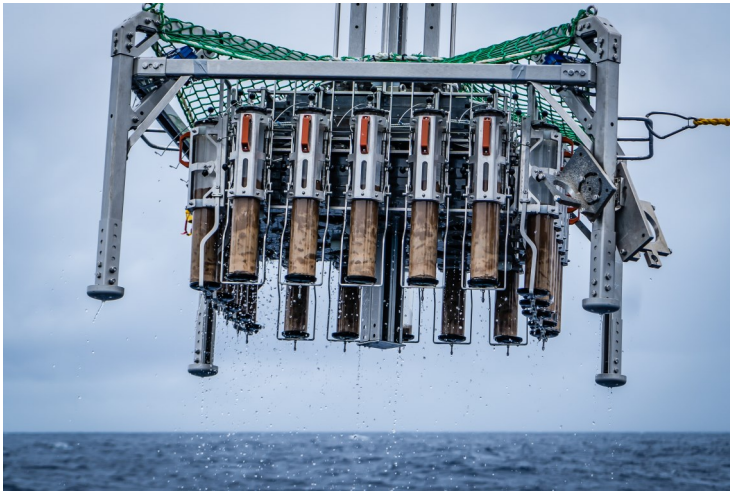


Fig. 3.: Recovery of the Multicorer (©DeepGreen)

To accomplish these objectives, meiofauna samples were collected from >40 stations located at 4000-4500 meter depth by multicorer to assess horizontal (1m-10s of kms and across habitat distinctions) and vertical (cm) spatial variability in communities. The processing of the meiofauna samples is currently in progress at Florida State University (Dr. Jeroen Ingels) who will also collaborate with Prof. Giovanni Santos at the Federal University of Pernambuco.

To also provide data on temporal variability of communities, a second benthic cruise is planned for JUNE – June 2021. The same target areas are under investigation as in the first benthic campaign, giving an opportunity to extend the sampling program across seasons. The results obtained from this project JUNE have important implications concerning the management and potential future exploitation of the mining area.

If you want to have a look to the DG 5A campaign, click on the link below for the video: <https://vimeo.com/488171719>

If you would like to know more about the overall project, please visit <https://deep.green/deep-sea-science-program/>



Fig. 4.: Dr Claire Dalglish, Tech Lead during the MUC core quality evaluation (picture by E. Baldrighi).

NEWS AND UPDATES

A tardigrade, *Neoechiniscoides aski*, was selected for the WoRMS Top 10 Marine Species of 2020

As for previous years, the World Register of Marine Species (WoRMS) released the annual list of the top-ten marine species described by researchers during the year 2020 to coincide with World Taxonomist Appreciation day - March 19th.

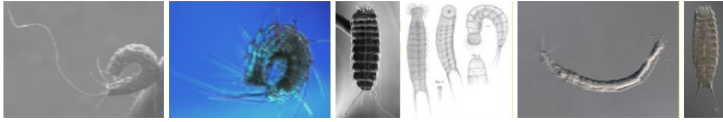
This top-ten list, nominated and voted for by taxonomists and journal editors, is just a small highlight of almost 2,000 fascinating new marine species discovered every year.



The ten remarkable new marine species from 2020:

- The E.T. Sponge: *Advhena magnifica*
- The Patrick Sea Star: *Astrolirus patricki*
- The Branch-Armed Nostril Copepod: *Dendrapta nasicola*
- The Yellow Sea Slug of Ørland: *Dendronotus yrjargul*
- The Giant Plastic Amphipod: *Eurythenes plasticus*
- Haffi's Upside-Down Tapeworm: *Gyrocotyle haffii*
- The Beautiful Branching Bryozoan: *Hornera mediterranea*
- The Tree-of-Life Tardigrade: *Neoechiniscoides aski* (in the picture)
- The Feisty Elvis Worm: *Peinaleopolynoe orphanage*
- Red Wide-Bodied Pipefish: *Stigmatopora harastii*

NEWS AND UPDATES



World Kinorhyncha database updated!

The World Register of Marine Species (WoRMS) recently launched the updated site of the World Kinorhyncha database with currently over 300 accepted names (<https://www.marinespecies.org/kinorhyncha>).

The site starts with a short introduction, links to museum collections which house significant amounts of specimens of Kinorhyncha, information about historical and recent classification systems by different authors, and a reference list. The references allow to quickly enter into relevant aspects of kinorhynchology such as systematics, phylogeny, identification, checklists, biogeography, fossil representatives of the stem-lineage, morphology, development, and ecology; reviews and technical aspects of working with this meiofaunal group are also provided.

The database provides information about the taxonomic status, synonymy, etymology, and specimens of all described species. The literature published between 1851 until today is cross-referenced with kinorhynch species. The database contains also all literature with reference to Kinorhyncha at taxonomic levels above species. Each publication is either available from WoRMS on request or via a link to the publisher's site if open access or via a link to the Biodiversity Heritage Library.

Information allocatable in WoRMS is also cross-linked to all applicable regional databases such as the Arctic Register of Marine Species (ARMS), European Register of Marine Species (ERMS), and Gulf of Mexico Register of Marine Species (GoMexico), and to thematic databases like the World Register of Marine Cave Species (WoRCS) and the World Register of Deep-Sea Species (WoRDSS). The World Kinorhyncha database is citeable and contains a DOI. It will be updated continuously as soon as a publication about a new species will be available with volume and page numbers, which is a requirement of WoRMS.

Launch of the new site of the World Kinorhyncha

database would not have been possible without the kind, consistent, and extensive help of the WoRMS management team, especially Khadija Bouirig, Wim Decock, Gizem Poffyn, Bart Vanhoorne, and Leen Vandepitte, who are funded by Research Foundation - Flanders (FWO) as part of the Belgian contribution to LifeWatch, which is gratefully appreciated.

I would greatly appreciate any feedback on missing or erroneous information.

Birger Neuhaus — Museum für Naturkunde Berlin,
birger.neuhaus@mfn.berlin

Meiofauna of Marine Sediments: a fascinating world of animal life

After working on meiofauna of marine sand beaches of the seas around India for over 4 decades, it was my long cherished ambition to bring out a comprehensive and concise publication on the astonishing morphological diversity of meiofauna inhabiting coarse and soft sediments of the seas around the world to be viewed at a glance. Hitherto, such a work is not available for consultation.

For this purpose, I compiled information on 32 groups of meiofauna (see table on the next page) from Ciliophora to Tunicata comprising 333 families, 1258 genera and 2210 species, presented in this work. As a picture is worth a thousand words, I reproduced available full figures of all the species with a brief description of diagnostic features to help their identification. Instead of publishing the work as a priced hard copy I preferred to keep it online with free and better access to all. I hope this act will amply serve my sole objective of disseminating knowledge on this fascinating faunal realm at the fag end of my life. The work is being put online and it will soon be available to readers at <https://meiofauna.online/>.

G. C. Rao
drgcrao@yahoo.com

NEWS AND UPDATES

	GROUPS	FAMILIES	GENERA	SPECIES
1.	Ciliophora	27	70	81
2.	Cnidaria	11	14	19
3.	Turbellaria	55	267	457
4.	Gnathostomulida	12	25	41
5.	Nermertina	6	10	13
6.	Nematoda	43	296	587
7.	Gastrotricha	11	41	139
8.	Kinorhyncha	11	26	43
9.	Rotifera	8	16	36
10.	Loricifera	3	10	18
11.	Polychaeta	21	71	134
12.	Oligochaeta	7	34	42
13.	Ostracoda	16	28	34
14.	Mystacocarida	1	1	4
15.	Cyclopoida	7	27	30
16.	Harpacticoida	23	160	194
17.	Isopoda	7	14	18
18.	Amphipoda	6	17	18
19.	Acari	4	30	33
20.	Tardigrada	11	38	91
21.	Pycnogonida	3	5	7
22.	Palpigradi	1	1	1
23.	Bryozoa	2	2	3
24.	Entoprocta	1	2	2
25.	Priapulida	4	4	4
26.	Sipuncula	2	2	2
27.	Aplacophora	4	6	8
28.	Gastropoda	14	17	24
29.	Brachiopoda	1	2	2
30.	Chaetognatha	1	1	2
31.	Holothuroidea	2	6	8
32.	Tunicata	8	15	18
	TOTAL	333	1258	2210

@ <https://meiofauna.online/>

Estuarine southern Chilean neuston layer as habitat for intertidal meiofauna

Between 2010 and 2019, the Austral Laboratory of Biological Oceanography (ALBO) of University of Magallanes (UMAG; www.umag.cl) has studied the biodiversity and community structure of the neuston living in surface layer of a large estuary system extended between 41° S and 56° S along southern Chilean inner

continental shelf. This area is under the influence of large freshwater discharge, glaciated and iceberg conditions and significant volume of rain (2 to 3 m³ year⁻¹). The freshwater intrusion produces strong stratification in the water column with surface salinities varying between 0 to 31 psu, which rise latitudinal and longitudinal trends in biodiversity, abundance, size, composition and community structure of neuston.

The organisms living in this oligohaline layer have been studied through the financial support of the Chilean Navy (Cimar Fjord Program), allowing to discover along Magellan Strait that the pelagic harpacticoid *Microsetella rosea* and the polychaete *Polygordius* sp exolarvae are dominant in terms of abundance and spatial distribution. Both species inhabiting stenohaline layers varying between 28 and 31 psu while that intertidal adult populations living in lowest condition of salinity (≤ 6 psu).

Other interesting discovery is the role of neustonic layer as nursery ground. Around 55% of the total abundance of neustonic fauna is dominated for larvae of intertidal

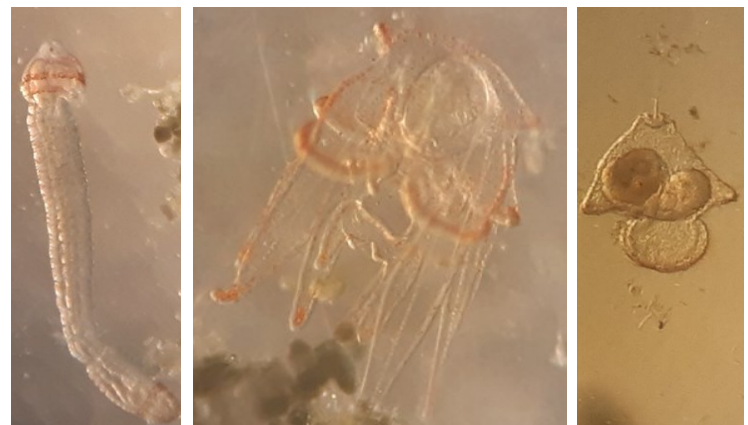


Fig. 1.: From left to right: Exolarvae of *Polygordius* sp.; Pluteus of eight arms of Ophiuroid; Pildidium larvae probably of the common intertidal nemertean *Parborlasia corrugatus*.

benthic invertebrates which we denominate as meroneuston.

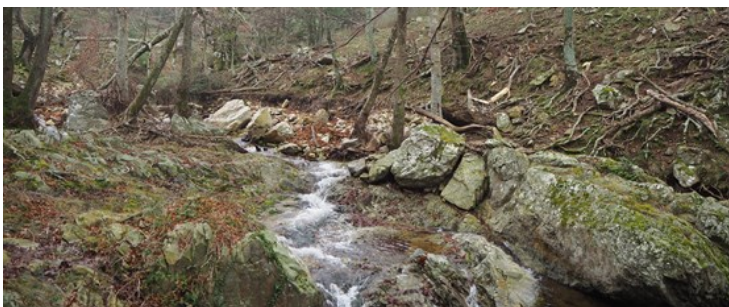
During year 2017, Dr. Andreas Schmidt-Rhaesa (University of Hamburg, Germany) visited Chile and ALBO thanks to Conicyt project and found an important biodiversity of benthic meiofauna in sandy beach in diverse zone of the Magellan Strait, specially Gastrotricha. He hosted the visit of my student Mrs Tania Figueroa to Hamburg University laboratory during three weeks and she since 2018 began the Master Science thesis analyzing the influence of two rivers

NEWS AND UPDATES

discharge on biodiversity and abundance of the intertidal meiofauna of the Magellan Strait. Now (2021), Miss Samantha Kusch, student of Marine Biology career of UMAG, develop a pre-graduate thesis to determine if there is oceanographic and biological intra-decadal change (2010 vs 2019) in the neustonic biodiversity of the Magellan Strait. Preliminary results evidence not change in composition, but important variations in abundance and spatial distribution of the main species such as *Polygordius* and *Microsetella*. She waiting to probe if the Magellan neuston can be an important biological tool to study the climate change and warming in estuarine environments.

Academic interaction with Dr Gunter Purschke (University of Osnabruck, Germany), Dra Patricia Ramey-Balci (Koç University, Turkey), Torsten Struck (Department of Research and Collections Natural History Museum, Oslo, Norway) and Matthew Lee (University of Lagos, Chile) has allowed to define that *Polygordius* sp inhabit estuarine zone along southern Chile and is a new species for science according to barcoding evidence.

New research wait be granted to analyze biological traits of the neustonic meiofauna species as well as adaptation to live in an extremophile environment such are the surface layer of the ocean along Chilean coast, subtropical oceanic Chilean island and Antarctic neustonic communities.



Exploring the diversity and ecological role of nematodes in the ancient forest of La Massane (Southern France)

In a context of biodiversity erosion and alteration of ecosystem functions, it is important to observe and describe the role that key faunal groups, such as the nematodes, play in reference 'climax' ecosystems before it is too late. Although increasingly

threatened by climate change, these 'climax' conditions can still be found in 'La Massane' nature reserve in southern France. This old-growth, mountainous beech forest (600 to 1200 m asl.) is one of the last of its kind remaining in the Mediterranean area. There, tree growth and decomposition has been left unaltered for centuries representing a biodiversity hotspot for saproxylic insects, among others. It is a unique open-air research site to study the natural dynamics of wood decomposition and the immense diversity of animals, fungi and bacteria associated with this pivotal function. On top of that, a river flows through the reserve thus allowing to examine the fate of organic matter from the forest to the river, and to the Mediterranean sea.

Nematode communities dwelling in the stream and in dendro-microhabitats associated to trees (e.g. trunk dendrotelms, rot-holes, insect galleries, bark pockets, mosses, lichens) are currently unknown, but will be sampled seasonally over one year (March, June, September and December 2021) to assess species richness, community structure, secondary production and trophic position (stable isotopes).

This survey aims to establish correlations between nematode community structure and the different stages of wood decomposition. We also seek to better understand the transfer of organic matter from the forest to the river, and the food web involved in this transfer. This project relies on international collaboration (Bielefeld University in Germany, INRAe and RNN in France, ICRA in Spain). Other meiofaunal groups (e.g. tardigrades, copepods, etc.) will surely be present but we lack the expertise to identify other groups we JUNE find in our samples.

Of course, we would be pleased to welcome onboard IAM experts willing to do so! For more information, feel free to visit the website: www.rnnmassane.fr and contact me: nabil.majdi@uni-bielefeld.de.

Best regards,

Nabil Majdi — Bielefeld University, Animal Ecology

CONNECTING MEIOBENTHOLOGISTS AROUND THE WORLD



**What's next in meiofauna research?
Help us identify the fundamental
questions that we can address using
meiofauna!**

by Alejandro Martínez and Diego Fontaneto

During the last decades, researchers with diverse scientific backgrounds have built a common and extremely productive collaborative network around the term 'meiofauna'.

From an ecological perspective, meiofauna is often used to refer to the fraction of animals that is retained between meshes of 0.5 and 0.0063 mm. In contrast, many evolutionary biologists and zoologists considered as meiofauna all animals that are invisible with a naked eye—something that, of course, might even depend on the visual skills of the different researchers.

Jokes and semantics aside, what might be most important is that this term has provided a cross-road for scientists interested in multiple aspects of life and geological science, which otherwise might not have interacted at all. Therefore, in an era in which research has become inherently multidisciplinary, meiofauna provides unique opportunities to address timely questions in many aspects of Natural Sciences, understood in their broadest sense.

However, are we exploiting the full potential that meiofaunal organisms offer as model organisms to address such broad questions? What might be our research priorities as a community during the next decades? How can we engage more researchers and students into our field to move forward this research agenda? And, last but not least, how can we make it more inclusive?

Please, help us to identify the most fundamental questions in meiofauna research by clicking on the link below and voting our questionnaire of 120 candidate questions.

The questionnaire has been assembled by 42 experts grouped in eight panels, which covered the areas of systematics, macroecology and biogeography, morphology and adaptation, genetics and genomics, anthropogenic impacts and global change, population and community ecology, biogeochemistry and applied topics, as well as science communication. Depending on your reading speed and English proficiency, we have estimated it will take you between 20 and 40 minutes to go through the questionnaire.

Your opinion will be highly appreciated and valued as a part of this survey—even if you do not consider yourself as an expert on meiofauna.

Ultimately, our overarching goal is to make available to the community of researchers interested in meiofauna a roadmap based to guide future research endeavors (see Patiño et al. 2017; McGill et al. 2019; Mammola et al. 2020).

The questionnaire, as well as additional instructions on how to fill it are provided in the following link: <https://docs.google.com/forms/d/1A-VIkBLGALwkUAsjfcjztWZA0Jcea3BC04xs4-XyHA8>

Thanks a lot,

Alejandro Martínez and Diego Fontaneto,

on behalf of the panel leaders, Stefano Bonaglia, Maikon diDomenico, Gustavo Fonseca, Jeroen Ingels, Katharina Jörger, Christopher Laumer, Francesca Leasi, and Daniela Zeppilli

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CONNECTING MEIOBENTHOLOGISTS AROUND THE WORLD

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Fatty acid analysis of meiofauna

by Marleen De Troch

Lipids and their fatty acids are vital to life and are present in all living organisms. These biological compounds play essential roles in cell and tissue membranes functioning, energy storage, thermal insulation, and chemical communication.

Determining the lipid content and fatty acid composition of aquatic organisms has been of major interest in trophic ecology, aquaculture, and nutrition for more than half a century.

Although protocols for lipid analysis are well-described, their application to aquatic sciences often requires modifications to adapt to field conditions and sample type. There are likely to be nearly as many variations of procedures as there are laboratories. Yet, not all are suitable to aquatic samples and for sure not for meiofauna and their potential food sources.

More and more researchers apply the technique of FA profiling on meiofauna and combine it with stable isotope data to unravel the feeding ecology of especially nematodes and copepods. The use of compound-specific stable isotope analysis allows to trace the pathways of fatty acids in the consumer

and was used to prove the ability of meiofauna to bioconvert fatty acids at the basis of marine food webs (see De Troch et al. 2012).

To allow more researchers to apply the technique it is pivotal to report on the protocols from an ecologist point of view.

Dr. Iván Loaiza Alamo and Prof. Dr. Marleen De Troch (both Marine Biology, Ghent University, Belgium), contributed to a review that emerges from the international conference [Lipids in the Oceans](#) (Brest, France, November 2018), in which they present the current state of knowledge of methods dedicated to both marine and freshwater lipid analyses, from sampling to data treatment. Practical questions are addressed that are not formulated in papers and textbooks, but that are essential to obtain reliable fatty acid profiles. The review paper was selected as the Editor's Choice article from the *ICES Journal of Marine Science* and [is now available here](#).

The next Lipids in the Oceans Conference is currently postponed to July 2021 in Aveiro (Portugal, [lipids2020.web.ua.pt](#)), feel free to join with your meiofauna results!

More info: marleen.detroch@ugent.be. EMRBC facilities at UGent provide access to FA analysis of meiofauna and training: <http://www.embrc.be/product/fatty-acid-analysis-through-gc-fid-and-gc-ms/>

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NEW MEIOFAUNA STUDENTS

Rickard Westerman

Masters Student

Swedish Museum of Natural History and the Department of Zoology, Stockholm University



In September last year, Rickard started his masters project entitled "Animal parasitism in marine nematodes" under the supervision of Oleksandr Holovachov from the Swedish Museum of Natural History.

First chapter of his project focuses on the description of a new species of marimermithid *Aborjinia* found in the cold-water deep-sea coral. Dozens of specimens of this peculiar nematode were collected along the coasts of Newfoundland, Labrador and Baffin Island by our colleague Bárbara de Moura Neves and her co-workers from the Ecological Sciences Section of the Department of Fisheries and Oceans Canada.

The second chapter describes two new species of monhysterid nematodes from the genera *Gammarinema* and *Monhystrium*, both of which were found by Oleksandr Holovachov in different land crabs in New Caledonia.

In his work, Rickard combines morphological and molecular data to characterize and differentiate new species, although this will be the first publicly available sequences for all three genera, *Aborjinia*, *Gammarinema* and *Monhystrium*.

His project will conclude with the discussion on the evolution of nematodes parasites of marine invertebrates.

Funmilola Mercy Adedidran

Masters Student

Swedish Museum of Natural History and the Department of Zoology, Stockholm University



Supervised by Mohammed Ahmed and Oleksandr Holovachov, Funmi worked on the project entitled "Phylogenomics of marine nematodes".

One of the highlights of the project are newly sequenced and assembled transcriptomes of eight marine nematode species from the genera *Cylicolaimus*, *Dorylaimopsis*, *Gammarinema*, *Halichoanolaimus*, *Neocamacolaimus*, *Sphaerolaimus*, *Stephanolaimus* and as yet unidentified Linhomoeidae.

The new phylogeny that includes 90 species and 802 orthogroups is still overrepresented by terrestrial and animal parasitic nematodes and does not clearly resolve the relationships between major marine clades.

Neither Monhysterida nor Araeolaimida are monophyletic, just like in 18S rDNA-based phylogenies. It does help, however to define future sampling strategy and is a step forward towards a more complete and comprehensive nematode evolutionary tree.

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NOTE: This is not a complete list of ALL meiofauna-related literature published between the last issue of *Psammonalia* and the present one, but one compiled from the contributions sent to us and a quick data base search.

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