



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

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ON THE COVER OF THIS ISSUE:

Agave chevreuxi (Trouessart, 1889)

A deutonymph specimen from Aegean Sea, Bozcaada, Çanakkale, sandy habitat with *P. oceanica*, 11 m.

Halacarid mites are microscopic invertebrates (also referred to as meiofauna). They live in all aquatic habitats (marine, brackish and freshwater) and include species ranging from 180 to 700 µm, more than 1000 of which are marine and more than 60 species have been found from freshwaters or brackish waters like saline lakes and estuaries. They live in a variety of substrata (e.g. on many animal groups and algae) (Ref. 3-5).

The sci-art in the cover was created and submitted by Furkan Durucan, who has been studying halacarid mites since 2012. He did a PhD on marine mites (Acari: Halacaridae) taxonomy, distribution, and ecology in 2017 along the Western coast of Antalya (Turkey). Up to date, most of halacarid studies have been focused on classical taxonomy. In his present and future career, Furkan would like to extend his work to their molecular studies, zoomorphology, neuromuscular anatomy, larval development, nervous system or studies related that SEM, TEM, 3D reconstruction, confocal microscopy in addition to classical taxonomy.



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EDITORIAL

In the last editorial of Psammonalia, I highlighted our concerns regarding the important need to communicate effectively the relevance and value of meiofauna research in our changing world. I had no idea we were a few months away from events that would dramatically change the world we live in, with effects on all aspects of life and work. When I got out of my home in early May 2020, still isolated at the work place that seemed abandoned, my plans and aims were uncertain and cloudy to say the least! We didn't know what would come to occur in the next few days, let alone weeks or months! Surprisingly, in the middle of our confinement, for many filled with anxiety and apprehension about the future, a welcomed initiative by Jeroen Ingels and Giovanni dos Santos gave us the opportunity to travel 'digitally' and bring some much-needed scientific interaction back into our lives with the MEIOLIVE sessions. This allowed us all to focus on our research for a moment each week with a series of webinars and discussion sessions. Despite the conditions, we can safely say the series marked a memorable moment for the IAM and its community, where instead of enduring isolation, we found a way to cross bridges and bring research teams closer across the world in a way we had not endeavoured before.

This issue of Psammonalia will look at the achievements of MEIOLIVE and its participants, and how a growing community has been able to come closer together. Despite the many restrictions we have had to deal with the dramatic changes to our scientific schedules in the last few months, you will see this issue is full of activities and scientific news – a clear illustration of the diversifying, quality meiofauna research the many scientific teams around the world are conducting. As societies and our lives try to return to a new normal, and schedules become filled rapidly with old and new responsibilities, MEIOLIVE carries on! Now fortnightly, and with additional hosts, Michaela Schratzberger and Florian Scharhauser. This issue brings a number of additional interesting reads; a list of recently published papers on all matters meiobenthology, some words on the new 'Guide to the Identification of Marine Meiofauna', including a book review on the guide, news, updates and some invitations for you to consider. Importantly, we also introduce Ph.D. students who are entering the wonderful world of meiofauna science.

I wish you all safety and good health, and a proactive environment where social distancing and wearing masks continues to help reduce the spread of COVID19 and prevent unnecessary loss of life.

Helena Adão,
Chairperson of the IAM

MEIOLIVE - BRINGING MEIOFAUNA RESEARCH TO LIFE ACROSS THE WORLD

Jeroen Ingels¹, Michaela Schratzberger², Giovanni Santos³, Florian Scharhauser⁴

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For the past couple of years, the International Association of Meiobenthologists (IAM) has made increasing efforts to engage the global community of meiobenthologists and to offer new ways to communicate with each other more effectively. The [IAM newsletter Psammonalia](#) has been our primary tried and trusted source of spreading our news. Let us be honest, few community newsletters have made it to the edition 172! This must be a sign that what started in 1966 filled a need that has only grown over the decades, yes decades! Over the past 50 years, the research community has grown and diversified, and so have the ways in which we are able to get in touch with each other and communicate our research: IAM conferences every three years, workshops, newsletters, papers in journals, complemented by email and many modern online platforms have allowed us to engage with an ever-growing group of people. So here we are in 2020, when the COVID-19 pandemic requiring social distancing, challenges people around the world to seek new, imaginative ways to communicate without the opportunity to meet face to face. Therefore, it befell on us to find a way to overcome physical isolation.

Giovanni dos Santos (Federal University of Pernambuco, Brazil) and Jeroen Ingels (Florida State University, USA) created **Meiolive**, a series of webinars where invited speakers deliver a presentation followed by a question-answer session and general discussion. In May 2020, Meiolive started as a weekly event, on Wednesdays, usually in the morning in the Americas, afternoon in Europe and most of Africa, while Asia, Eastern Asia and Oceania had to join in in the evening. Sessions are announced via social media and email correspondence with a beautiful image, created by Melanie Costa, to draw in more participants. Despite covering so many time zones, the sessions have been a

huge success and people from across the world have been joining in to learn about meiofauna and the researchers studying it. Most presentations are recorded and [posted on youtube](#), so that those interested can catch up in case they had to miss the live event.

Initial Meiolive sessions were attended by around a hundred people, and current sessions draw in between 50 and 90 people each time. Presentation videos have received nearly 1,500 views and a solid subscriber group of 92 people. Further illustrating the positive effect of Meiolive on the engagement amongst the research community are 241 people who have registered for future sessions. Giovanni and Jeroen have now been joined by Michaela Schratzberger (Centre for Environment, Fisheries and Aquaculture Science, UK) and Florian Scharhauser (University of Vienna, Austria) to co-host and co-moderate the sessions; and we have also had a guest appearance of Jyotsna Sharma (University of Texas at San Antonio, USA) recently. As work schedules are beginning to adjust to a "new normal" and becoming increasingly busy, the sessions have reduced in frequency since September. We now host bi-weekly sessions with alternating hosts. We sincerely hope that Meiolive delivers and continues to deliver its main goal: reaching out to facilitate communication and exchange between scientists, and to create an environment where we can all learn from each other.

Ways to join the IAM community:

- 1) [Become a member!!!](#)
- 2) Get in touch with Psammonalia@gmail.com and pass on your articles for the Psammonalia newsletter, or register for the Meiolive sessions;
- 3) Follow us and send us messages on [Facebook](#);
- 4) Follow us and send us messages on [Twitter](#);
- 5) Join the online working platform on SLACK (currently 176 members); just get in touch with Psammonalia@gmail.com on how to register.

MEIOLIVE - BRINGING MEIOFAUNA RESEARCH TO LIFE ACROSS THE WORLD



Group picture of Meiolive's session 16 participants. Taken September 30th 2020.



Nerd Challenge: Find Wally's lost things in the picture:



MEIOLIVE SESSIONS HISTORY

FIRST SESSION:

WEDNESDAY, MAY 13TH, 3PM (BRUSSELS TIME)
WITH NABIL MAJDI

Presentation: "Effects of duration and frequency of non-flow periods on stream-dwelling meiofauna"

Link: <https://youtu.be/HtNqqFAkBIg>

SECOND SESSION:

WEDNESDAY, MAY 20TH, 3PM (BRUSSELS TIME)
WITH ULF JONDELIUS AND VIRAG VENEKEY

Presentations: "Metabarcoding of soft-bodied meiofauna in Swedish waters" **and** "Meiofauna in the Amazon region: what we know and what we don't know"

Links: <https://youtu.be/7SAu3ZI7wak> **and** <https://youtu.be/1Bwh7rGsvNs>

THIRD SESSION:

THURSDAY, MAY 28TH, 3PM (BRUSSELS TIME)
WITH KEVIN KOCOT

Presentation: "Revolutionizing Biodiversity and Systematics Research on Aplousobranchia (Mollusca) and Training the Next Generation of Meiobenthologists"

Link: https://youtu.be/Z_SP5UIRuus

FOURTH SESSION:

WEDNESDAY, JUNE 3RD, 3PM (BRUSSELS TIME)
WITH LARA MACHERIOTOU

Presentation: "Community structure of deep-sea nematodes of the Clarion Clipperton Fracture Zone"

Link: <https://youtu.be/wu2DIkjv4w0>

FIFTH SESSION:

WEDNESDAY, JUNE 10TH, 3PM (BRUSSELS TIME)
WITH WOLFGANG STERRER

Presentation: "Update on Gnathostomulida, focusing on how easy they are to find, extract and identify (or describe) them"

Link: https://youtu.be/z1m3s_IiW-g

SIXTH SESSION:

WEDNESDAY, JUNE 17TH, 3PM (BRUSSELS TIME)

WITH JEROEN INGELS AND GIOVANNI SANTOS

AND WITH OLEKSANDR HOLOVACHOV

Presentations: "Meiofauna Life on Loggerhead and Hawksbill Sea Turtles" **and** "Are all free-living nematodes really free living"

Links: <https://youtu.be/sp9CTWQLcDs> **and** <https://youtu.be/6SOSzRdt0ZY>

SEVENTH SESSION:

WEDNESDAY, JUNE 24TH, 3PM (BRUSSELS TIME)
WITH MATTHEW LEE

Presentation: "Do Flamingos eat meiofauna?"

Link: <https://youtu.be/8XUxRHxK4t0>

EIGHTH SESSION:

WEDNESDAY, JULY 1ST, 3PM (BRUSSELS TIME)
WITH TORSTEN STRUCK

Presentation: "Cryptic species and stasis – the interstitial annelid genus *Stygocapitella* as a case study"

Link: <https://youtu.be/vAqZH6M8tkk>

NINTH SESSION:

WEDNESDAY, JULY 8TH, 3PM (BRUSSELS TIME)
WITH PUNYASLOKE BHADURY

Presentation: "Biodiversity assessment of free-living marine nematodes at the molecular scale"

Link: https://youtu.be/-SEO_iB-qf4

TENTH SESSION:

WEDNESDAY, JULY 15TH, 3PM (BRUSSELS TIME)
WITH BIJOY NANDAN

Presentation: "Diversity and community ecology of Meiofauna from the Arctic fjords"

Link: <https://youtu.be/Del6rinEa24>

MEIOLIVE SESSIONS HISTORY

11TH SESSION:

WEDNESDAY, JULY 22, 3PM (BRUSSELS TIME)

WITH OLEKSANDR HOLOVACHOV

AND WITH MICHAEL MARTINEZ COLON

Presentations: "Phylogenomics of Marine Nematodes - how far did we progress?" **and** "Foraminifera and their microscopic world: who cares?"

Links: <https://youtu.be/ptZ8lbomKws> **and** <https://youtu.be/mGdRIz35WHM>

12TH SESSION:

WEDNESDAY, AUGUST 5, 3PM (BRUSSELS TIME)

WITH FLORIAN SCHARHAUSER

Presentation: "Dark and stealthy. How to unravel cryptic diversity on the morphological and the molecular level in stilbonematine nematodes."

13TH SESSION:

WEDNESDAY, AUGUST 12, 3PM (BRUSSELS TIME)

WITH ANDREAS SCHMIDT-RHAESA

Presentation: "A meiofauna trip to Easter Island."

Link: <https://youtu.be/A432E4F1fWE>

14TH SESSION:

WEDNESDAY, AUGUST 26, 3PM (BRUSSELS TIME)

WITH JOHN FLEEGER

Presentation: "Saltmarsh Meiofauna and the Deep-water Horizon Oil Spill"

Link: <https://youtu.be/H-35wE9Rk2w>

15TH SESSION:

WEDNESDAY, SEPTEMBER 16, 3PM (BRUSSELS TIME)

WITH HIDETAKA NOMAKI

Presentation: "The feeding habits of hydrothermal vent meiofauna based on their stable isotopes and radioisotope (^{14}C)"

16TH SESSION:

WEDNESDAY, SEPTEMBER 30, 3PM (BRUSSELS TIME)

WITH ALEXANDRA KERBL

Presentation: "Neuroanatomy of microscopic annelids"

Link: <https://youtu.be/iyav8VsklIk>

UPCOMING SESSIONS

17TH SESSION

OCTOBER 21

Helena Adão: "What makes a better indicator? Taxonomic vs Functional response of estuarine nematode assemblages"

18TH SESSION

NOVEMBER 4

Maikon Di Domenico & Gustavo Fonseca: "How are we addressing the biodiversity shortfalls in meiofauna"

19TH SESSION

NOVEMBER 18

Stephen Fegley & Julian Smith: "Nourished, exposed beaches exhibit altered sediment structure and meiofaunal communities"

SIGN UP FOR MEIOLIVE SESSIONS BY EMAIL AT PSAMMONALIA@GMAIL.COM, OR THROUGH IAM'S [FACEBOOK](#) OR [TWITTER](#) PAGES

BE ONE OF THE NEXT MEIOLIVE SPEAKERS!

We are currently looking for more meiobenthologists that want to present their research at a Meiolive session.

If you would like to make a presentation at one of the next available Meiolive dates, please get in touch with us through psammonalia@gmail.com, to arrange a date!

AFTER THE CONFERENCE

First Brazilian Symposium on Meiofauna

by Virág Venekey

From 02 to 06 March 2020 happened the XXXIII Brazilian Congress of Zoology. The event was subdivided in a series of symposiums and among them was organised the "First Brazilian Symposium on Meiofauna" on 04 March 2020. This event was probably one of last ones still presential before the pandemic of covid-19.

The symposium started with a keynote presentation by Dr. Reinhardt Kristensen entitled "Taxonomy, Phylogeny and Biogeography of Tardigrada", in which Dr. Kristensen gave a general panorama about the start of studies of Tardigrada and where we are now in the knowledge about this group.

The Symposium included also a panel about "Assessing the shortfalls in the study of meiofauna diversity in Brazil" with participation of Dr. Gustavo Fonseca (federal University of São Paulo - Unifesp), Dr. André Garraffoni (State University of Campinas - Unicamp), Maikon di Domenico (Federal University of Paraná - UFPR) and Dr. Virág Venekey (Federal University of Pará - UFPA). In this panel the researchers discussed the state of art of meiofauna studies in Brazil, the major gaps in these studies and different issues experienced in the Brazilian regions.

During the symposium seven oral presentations were also given by researchers and students from Brazil about different aspects of Tardigrada, Gastrotricha and meiofauna ecology. Furthermore 15 poster presentations about different aspects of meiofauna diversity and ecology were also presented.



From left to right – Dr. Maikon di Domenico, Dr. Virág Venekey, Dr. Reinhardt Kristensen, Dr. Gustavo Fonseca and Dr. André Garraffoni

CALL FOR CONTRIBUTIONS

"100 Articles Every Meiobenthologist Should Read"

by Matthew Lee

Why am I doing this? Firstly, last year I downloaded a paper, "100 articles every ecologist should read" by Courchamp & Bradshaw (2018). Then this year the pandemic arrived and I ended up stuck in the house under quarantine. So I thought I've got time on my hands, I'll read them all, and I've been making steady progress.

Secondly, this semester I'm teaching a course on meiobenthology to the undergraduate students on the marine biology program at the Universidad de Los Lagos in southern Chile. In preparing the course I've been trying to figure out which papers they should read.

So I thought I'd ask the community and get a consensus view. I'm not looking to rank papers, this is not a popularity contest. The objective is to generate a list of papers someone should read to get a good grounding in meiobenthology.

If I get a good response I'll publish the results, but at the very least I'll put the list online.

Please submit your responses through the following form: <https://forms.gle/TqwzvDMDFu9KSNJZ7>

Saludos,
Matt

Courchamp, F. & Bradshaw, C. J. A. (2018) 100 articles every ecologist should read. *Nature Ecology & Evolution*, 2: 395-401. doi: 10.1038/s41559-017-0370-9

EXPEDITIONS



© Scharhauser

Report on Meiofauna sampling on Elba, Italy, September 2020

Florian Scharhauser
University of Vienna, Austria

During the time of travel restriction because of the COVID19 pandemic also scientist and researchers, especially those who have to do field work have to adapt to the new circumstances. Although we had to postpone trips to tropical regions we were lucky to be able to go to the Mediterranean Sea. The region of Tuscany is not only picturesque and well known for it's historic and cultural heritage but also has a fascinating coast including the beautiful islands of the Tuscan Archipelago. The island of Elba is home to a wide range of different marine habitats such as vast sea grass meadows, sandy bottoms and beaches and rocky cliffs and bottoms, almost paradise for marine biologists and especially meiofauna researcher.

Together with the Marine Symbiosis group (working on lucinid clams) from the Department of Microbial Ecology at the University of Vienna led by Prof. Jillian Petersen, three members(Philipp, Daniel and Florian) of the Shallow Water Symbiosis group from the Department of Functional and Evolutionary Ecology at the University of Vienna, stayed at the HYDRA Marine Field Station in Fetovaia with an excellent support by the HYDRA Fieldwork team and an magnificent view over the local bay.

We took samples from different subtidal sand bottoms (max depth 8m), which in most cases are close to Posidonia sea grass meadows, from different bays across the island. We used buckets for bulk and cores for fine scale sampling.

Back at the station we immediately fixed the core samples for both morphological and molecular analyses of the whole meiofauna community. Buckets were used to do mass extractions to look for our beloved stilbonematine nematodes. Our PhD student Philipp was working hard to get enough specimens from all the known genera from there for his ultrastructural and morphological studies.

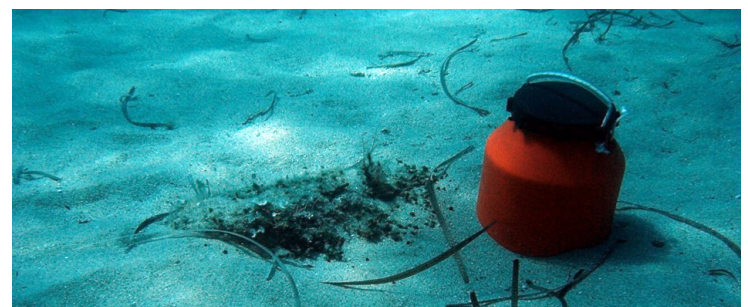


Stilbonema cf. majum type with a thick bacterial coat and suctorian epibionts.

Daniel, our technician and lab wizard, and Florian, PhD student who is focusing on the (molecular) phylogeny, biogeography and evolution of the Stilbonematinae, were digging across the island with their scuba equipment, buckets cores and sieves, hunting down all the interstitial meiofauna. Late night sieving and sorting made us hungry and thirsty and after a successful day we enjoyed fruitful discussions with our clam colleagues with some Elba rosso.

We can only recommend going to Elba and do some meiofauna research there but also marine research in general.

If you want to know more please feel free to contact Florian: florian.scharhauser@univie.ac.at or directly ask the HYDRA Fieldwork team: info@hydra-fieldwork.com



Sampling bucket next to sea grass peat (dead roots of *Posidonia oceanica*) at a sampling spot in the bay of St. Andrea, Elba, Italy. (Photo by: M. Weber)

EXPEDITIONS



M162 – GLORIA FLOW: Exploring subsurface fluid flow and active dewatering along the oceanic plate boundary between Africa and Eurasia (Gloria Fault)

Helena Adão, Kasia Sroczynska
University of Évora

Between 06.03.2020 and 11.04.2020 a R/V Meteor cruise M162 was conducted along the unexplored area of the Gloria Fault between the Azores Plateau and the Madeira-Tore Rise in the central Northeast Atlantic. The team of scientists on board of the R/V Meteor included experts from a range of scientific areas (geologists, microbiologists, biogeochemists, heat flow experts and meiobenthologists) from several institutions (GEOMAR-Germany, IPMA-Portugal, GeoB-Germany, ETH-Switzerland, MARE- Portugal). The cruise was led by Dr. Christian Hensen, GEOMAR, and Dr. Pedro Terrinha, IPMA and the meiobenthologists were Helena Adão and Kasia Sroczynska, from MARE-University of Évora.

The Gloria Fault itself is an old, reactivated, and seismically active oceanic fracture zone. Previously collected data for this area showed an indication, in a number of places, for tectonically driven fluid remobilization. Nevertheless, it is practically unknown how the fluid flows through the crusts and sediments along the plate boundaries and fracture zones. Consequently, the objective of the cruise was to investigate the fluid dynamics and identify potential zones for fluid emanation, along the Gloria Fault. To accomplish this research objective, several sampling techniques were

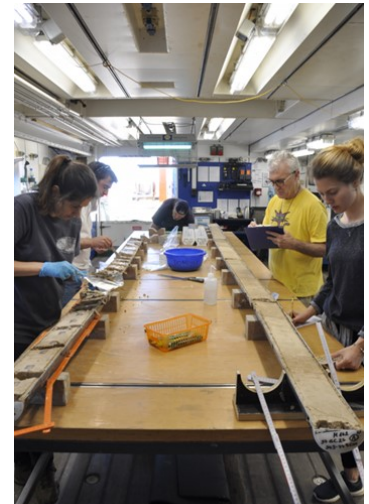


theless, it is practically unknown how the fluid flows through the crusts and sediments along the plate boundaries and fracture zones. Consequently, the objective of the cruise was to investigate the fluid dynamics and identify potential zones for fluid emanation, along the Gloria Fault. To accomplish this research objective, several sampling techniques were

used including sub-bottom profiler surveys, heat flow transects, gravity corer sampling, as well as video-guided CTD and multicorer deployments.

The results obtained during the cruise might have important implications concerning the alteration of oceanic lithosphere and their control on tectonic and seismic activity as well as the spread of chemosynthetic ecosystems and the understanding of global element cycles. Simultaneously, the meiofauna samples were collected with the main aim to establish the link between sedimentary conditions, microbial diversity and nematode communities and to analyze the large-scale distributional patterns of nematode assemblages along the Oceanic Plate boundary between Africa and Eurasia - Gloria Fault (Central North Atlantic).

Processing and analysis of the community samples and metabarcoding on sediment samples will be conducted in 2020 and we expect to publish the results by 2021.



Follow the online updates on the Meiofauna sampling cruise in the Weddell Sea, Antarctica 2020

Kevin Kocot
University of Alabama

My lab is about to embark for an Antarctic research cruise focused on meiofauna and small macrofauna in the Weddell Sea. We will have a blog and will be tweeting via [@KevinKocot](https://twitter.com/KevinKocot)

Here's a link to our website/blog:

<https://www.icyinverts.com/>

For more information or questions, please contact Kevin Kocot at kmkocot@ua.edu or visit: <https://news.ua.edu/2020/09/ua-auburn-others-join-for-antarctic-biological-research/>

NEW MEIOFAUNA BOOK

GUIDE TO THE IDENTIFICATION OF MARINE MEIOFAUNA

Edited by Andreas Schmidt-Rhaesa

2020

Despite considerable primary literature there is still little assistance from summarizing books or articles to identify meiofaunal animals. The book "Guide to the identification of marine meiofauna" tries to close this gap. 53 authors describe in 32 chapters and on more than 600 pages how to collect and identify meiofaunal animals.

A general key leads to the taxa which are then treated in more detail in the chapters. The chapters contain a brief introduction, information on where and how to find the animals, which characters to check for identification and keys. All chapters are richly illustrated. The book ends with a couple of personal stories concerning meiofauna research.

The book is available only as printed copy. It is addressed to beginners as well as experts. For more information (sample pages, list of contents etc.) see <https://pfeil-verlag.de/en/publications/guide-to-the-identification-of-marine-meiofauna/>

Please order directly from the publisher, Pfeil-Verlag (Munich, Germany).

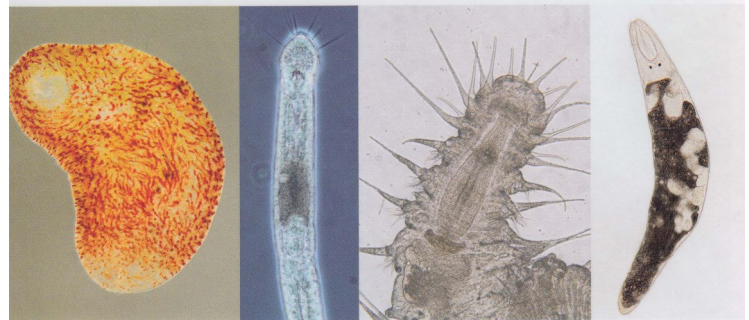
With the help of some grants the book price could be kept low (68€), although unfortunately shipping costs outside Europe may be quite high.

I hope the book will be helpful and well received in the community.

Andreas Schmidt-Rhaesa

Guide to the Identification of **Marine Meiofauna**

edited by
Andreas Schmidt-Rhaesa



Verlag Dr. Friedrich Pfeil

Language: English

Pages: 608

Figures: 198 coloured and 135 black-and-white

Tables: 6

*Identification keys: 40 partly illustrated
identification keys*

Book size: 24.5 × 17.3 cm

Cover: Hardcover

ISBN: 978-3-89937-244-1

Price: 68 €

BOOK REVIEW: 'Guide to the Identification of Marine Meiofauna',

Andreas Schmidt-Rhaesa (editor), Verlag Dr. Friedrich Pfeil 2020, 617 pages

Jeroen INGELS¹, Aaron RIDALL^{1, 2}, Jyotsna SHARMA³

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Reviewing a book called “Guide to the identification of marine meiofauna” to a community of meiobenthologists seems an odd thing to do to perhaps, but as many of you know, there are not that many resources out there that comprehensively package the wealth of taxonomic information that is required to guide a team of budding meiofauna researchers through the diverse and exciting world of these minute creatures. Many laboratories depend on traditional works like Giere (2009) and Higgins and Thiel (1988) as well as collections of more specific taxonomic treatises, and perhaps books on invertebrate zoology. It takes great effort to start identifying and classifying the 1000s of specimens that inhabit interstitial spaces of modest-sized aliquots of sediments and other benthic habitats sampled around the world. This new resource compiled by Andreas Schmidt-Rhaesa, containing 34 chapters on permanent and temporary members of the meiofauna size-class fills a gap that was in urgent need of filling. Written by over 50 of the world’s authorities on these taxa with collectively centuries of taxonomic expertise, anyone holding this book is certainly in good hands.

Mare (1942) coined the term meiobenthos in recognition of their unique position in benthic ecosystems, realizing their intermediate role in a complex trophic interactive system. Methodologically she separated meiofauna from macrofauna using a 1mm mesh size, and as a lower meiofauna size boundary, she used a 0.1 x 0.1 mm sieve. Although size is the main way to isolate meiofauna organisms, she puts forward the importance of their generation times and ecology, similar to how Warwick (2014) argued their unique evolutionary adaptations and differences with macrofauna. Andreas Schmidt-Rhaesa and co-authors explain the size boundaries but they also recognize life histories and the distinction between meiofaunal organisms that spend only part of their life as meiofauna and those that reside their entire life cycles in sediments. The book also considers meiofauna not traditionally found in sediments, such as those living

on hard and epiphytic substrates.

The book focuses on identification and that is of course its main value; it is an identification guide. This becomes immediately clear to the reader in Chapter 2, with a general key to guide the user to identify higher meiofauna taxa with relatively easy-to-recognize characters. From there it refers the user to the detailed chapters on each taxon. This is certainly useful since it provides a starting point, removing the threshold of “where do I start?”

Sampling and extraction methods as well as how to document specimens are explained in general terms in the Introduction and more specifically in each of the taxonomic chapters. It makes sense that over time many different ‘preferred’ methods have been developed by experts to make specific taxon extraction as efficient as possible. The book recognizes however, that many suitable and generally applicable methods receive more detailed attention in previous books. It must be said, however, that covering methods in each chapter provides a unique insight into expert techniques and provides the meiofauna beginner with plenty of choices for efficient sampling.

The book features an incredible amount of taxonomic detail considering the number of taxa it covers and all in less than 600 pages. This does result in variable taxonomic resolution depending on the taxon: species, genus, and/or (sub)family level identification. Further taxonomic resolution can be achieved by consulting other, more detailed works that are referenced, often authored by the same experts as in this guide.

One has to ask the question: “How privileged are we as meiobenthologists to have tens of thousands, perhaps even hundreds of thousands of species to study, many of which are still undescribed and undiscovered?”. This book takes us on a guided journey, a journey that allows us to recognize the minute and obscure, and gives us the opportunity to contribute to discovering the vast biodiversity resources hiding in the marine realm.

If you are in doubt of whether to get this book or not as a laboratory resource, don’t be anymore; it is a no-brainer and we highly recommend it as a reference source in your library.

Table 1. Table of contents and appended information of the book 'Guide to the Identification of Marine Meiofauna'

Chapter	Title	Authors	No. Described Species	Key	Page
Foreword					7
1	Introduction				9
2	General Key				174
3	Ciliophora	Stephen C. Landers	8000 sp(fw and marine)	Diagnostic characters	24
4	Cnidaria	Andreas Schmidt-Rhaesa, Sofia Pyataeva and Allen G. Collins	6 Classes- approx20 sp	Genera	33
5	Acoelomorpha	Ulf Jondelius and Ylva Jondelius	22 families	Family	44
6	Platyhelminthes	Julian P.S. Smith III, Niels van Steenkiste and Tom Artois	1700sp	Family and genera	54
7	Gastrotricha	Alexander Kieneke, Lukas Münster and Ole Riemann	469 marine sp	Marine genera	104
8	Rotifera	Wilko Ahlrichs and Ole Riemann	450 marine	Marine sp	164
9	Gnathostomulida	Martin V. Sørensen and Wolfgang Sterrer	101 described sp	Species	199
10	Nemertea	Jörn von Döhren and Thomas Bartolomaeus	1300 described	Marine sp	227
11	Annelida (excluding Clitellata and Sipuncula)	Katrin Worsaae	11 exclusive meiofauna fam, 14 macrofauna fam	Diagnostic characters	239
12	Oligochaeta (Clitellata)	Olav Giere	500 marine	Families, genera	271
13	Sipuncula	Anja Schulze, Gisele Y. Kawauchi and Alvaro Migotto	150 sp	Species	277
14	Entoprocta	Claus Nielsen	2sp	Species	285
15/16	Mollusca (Gastropoda and Aplacophora)	Katharina M. Jörger			288
15	Gastropoda	Katharina M. Jörger, Timea P. Neusser, Bastian Brenzinger and Michael Schrödl	64 exclusive meiofauna sp	Genera	289
16	Aplacophoran molluscs: Solenogastres and Caudofoveata	Franziska S. Bergmeier and Katharina M. Jörger	425 sp	Shallow water families	308
17	Bryozoa	Jörg Ott and Thomas Schwaha	Unknown	Species	321
18	Brachiopoda	Carsten Lüter	1 meiofauna	Species	327
19	Nematoda	Nicole Smol, Tânia Nara Bezerra and Wilfrida Decraemer	4870 sp	Subfamily	331
20	Priapulida	Andreas Schmidt-Rhaesa	13sp meiobenthic	Genera	387
21	Kinorhyncha	Martin V. Sørensen and Fernando Pardos	271sp	Genera	391
22	Loricifera	Shinta Fujimoto and Reinhardt Møbjerg Kristensen	40sp	Genera	415
23	Tardigrada	Jesper Guldborg Hansen and Reinhardt Møbjerg Kristensen	223marine sp	Genera	428
24	Halacaridae (Prostigmata: Acari)	Ilse Bartsch	1150sp	Genera	445
25	Mystacocarida	Jørgen Olesen	13sp	Genera	454
26	Cephalocarida	Jørgen Olesen	13sp	Genera	459
27	Copepoda	Kai Horst George, Sahar Khodami, Terue Cristina Kihara, Pedro Martínez Arbizu, Alejandro Martínez, Nancy F. Mercado-Salas, Karin Pointner and Gritta Veit-Köhler	6514sp	Orders and genera except Harpacticoids	465
28	Ostracoda	Dietmar Keyser	Unknown	Families	534
29	Isopoda	Nicole Coineau	290sp	Suborders and superfamilies	561
30	Cumacea	Ute Mühlenhardt-Siegel	263sp	Families	577
31	Chaetognatha	Andreas Schmidt-Rhaesa	5sp	Species	582
32	Enteropneusta	Sabrina Kaul-Strehlow and Katrine Worsaae	1sp	Species	585
33	Echinodermata: Holothuroidea	David L. Pawson	7sp	Species	588
34	Tunicata	Andreas Schmidt-Rhaesa	11sp	Species	592
My meiofauna story		(1) Andreas Schmidt-Rhaesa, (2) Jörg Ott, (3) Olav Giere, (4) Andreas Schmidt-Rhaesa, (5) Wolfgang Sterrer, (6) Carsten Lüter, (7) Andreas Schmidt-Rhaesa			598
Authors					605

NEWS AND UPDATES

New Research Topic in Frontiers - Recent and Emerging Innovations in Deep-Sea Taxonomy to Enhance Biodiversity Assessment and Conservation

As the largest habitat on Earth, the deep-sea floor supports an immense, but largely undiscovered diversity of habitats and species. At the same time, man-made pressures on great ocean depths are continuously increasing and the consequences for the resident biota are scarcely known. In light of the biodiversity crisis, when taxa undergo extinction before they have been even discovered, there is an urgent need for fast and more effective biodiversity discovery and description. A robust taxonomic identification and classification is key to studying life and its structure, functioning and evolution. But, "descriptive taxonomy is not just a service agency for the rest of biology. Its product is far more than a stock inventory of Earth's biodiversity." (Wilson, E.O., 2004). Rather, the field of taxonomy plays a pivotal role in pushing one of the last frontiers for a global deep-sea biodiversity assessment, while constantly evolving and reinventing itself.

The primary goal of this Research Topic is to outline and promote innovations and diverse ways of overcoming impediments in deep-sea taxonomic research. It is meant to foster integration of taxonomy with deep-sea biodiversity and conservation research. Overall, there is an imbalance between the urge to rapidly acquire taxonomic information for preserving deep-sea ecosystems, while (purely) taxonomic resources are declining. Linnean taxonomists and their invaluable knowledge are taking a back seat. At the same time, the advent of modern genetic, modeling and visualization techniques offer powerful tools for species delineation.

However, the surge in methodological complexity and alternative description methods make taxonomic work and cross-study comparisons increasingly difficult and time-consuming. This applies all the more to deep-sea research, where a high undescribed diversity meets a low sampling coverage. With this in mind, the following questions, among others, should be addressed: How can we increase speed of taxonomic identification, while maintaining taxonomic accuracy? How to increase the value of taxonomic revisions, representing the criterion standard in taxonomy? Can we define procedural and data standards for taxonomic descriptions? How to facili-

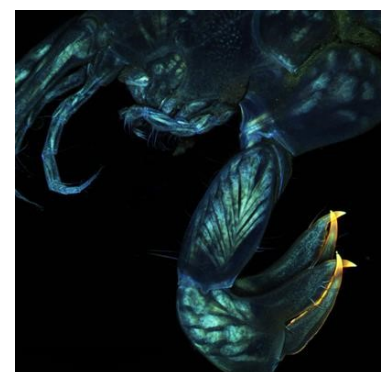
tate data sharing and exchange between taxonomists, conservation agencies, policymakers and the general public?

The focus of this Research Topic is to collate original articles, (mini-) reviews, opinion papers and perspectives on advances in the field of deep-sea taxonomy, with objectives including but not limited to:

- Deep-sea taxonomics (metagenomics, proteomics)
- Imaging & visualization techniques (e.g., CLSM, micro-CT, 3D printing)
- Underwater imagery and automated species classification
- Bioinformatics, species delimitation modeling
- Integrative taxonomy
- Linnean taxonomy
- Role of taxonomy in conservation planning
- Deep-sea specific impediments in taxonomic research
- Citizen science: pitfalls vs. opportunities
- Role of natural history collections (data basing & species cataloging, cybertaxonomy, data integration, -standards and -digitization, Big Data)
- Taxonomic revisions: new support for the criterion standard of taxonomy

Taxonomic species descriptions are only considered as part of a more comprehensive approach to assessing progress in deep-sea taxonomic research.

For more info: <https://www.frontiersin.org/research-topics/15684/recent-and-emerging-innovations-in-deep-sea-taxonomy-to-enhance-biodiversity-assessment-and-conserva>



sent by Daniel Leduc

NEWS AND UPDATES



Publication of the special issue in Hydrobiologia

Dear colleagues,

We hope that, despite the corona-crisis, you are keeping well, having the positive and enthusiastic attitude that characterises people in love with tiny animals.

We are proud to announce the recent publication of a special issue of the journal Hydrobiologia entitled "Patterns and Processes of Meiofauna in Freshwater Ecosystems". Of course you may think this is another attempt of separatism led by the little community of rebel freshwater meiobenthologists. Actually, the idea of this issue came over with some drinks we had during the 16th IMCO in Heraklion after we were so frustrated to notice that JEMBE will be hosting a special issue without the fabulous freshwater meiofauna!.. Anyway, we had our little revenge! We're looking for reconciliation! We are convinced that this issue will be of broad interest to meiobenthologists and beyond, touching upon timely topics. In one sentence: We thrived to highlight how meiofauna will help ecologists to better understand species distribution patterns, to assess production of biomass and trait-functions relationships, to examine the trophic links between microscopic and macroscopic worlds and to grasp outstanding physiological responses to environmental extremes.

We further list below the different contributions with a link to their content, hoping you will spread this message and find those reviews useful for your own research.

Do not hesitate to request reprints in case you cannot access the papers directly.

sent by Nabil Majdi, Jenny M. Schmid-Araya and Walter Traunspurger

Hydrobiologia Volume 847, issue 12, July 2020

[Preface: Patterns and processes of meiofauna in freshwater ecosystems](#) - Nabil Majdi, Jenny M. Schmid-Araya & Walter Traunspurger

[Biodiversity analyses in freshwater meiofauna through DNA sequence data](#) - Janina Schenk & Diego Fontaneto

[The curious and neglected soft-bodied meiofauna: Rouphozoa \(Gastrotricha and Platyhelminthes\)](#) - Maria Balsamo, Tom Artois, Julian P.S. Smith III, Antonio Todaro, Loretta Guidi, Brian S. Leander & Niels W.L. Van Steenkiste

[Meiofauna as a model to test paradigms of ecological metacommunity theory](#) - Birgit Gansfort, Diego Fontaneto & Marie Zhai

[An overview of meiofaunal and nematode distribution patterns in lake ecosystems differing in their trophic state](#) - Walter Traunspurger, Benjamin Wilden & Nabil Majdi

[Biomass and production of freshwater meiofauna: a review and a new allometric model](#) - Jenny M. Schmid-Araya, Peter E. Schmid, Nabil Majdi & Walter Traunspurger

[The scaling of biomass variance across trophic levels in stream species communities: a macroecological approach](#) - Peter E. Schmid, Jenny M. Schmid-Araya & Mutsunori Tokeshi

[Micro-meiofauna morphofunctional traits linked to trophic activity](#) - Julie Neury-Ormanni, Jacky Vedrenne, Margot Wagner, Gwilherm Jan & Soizic Morin

[Examining the diet of meiofauna: a critical review of methodologies](#) - Nabil Majdi, Jenny M. Schmid-Araya & Walter Traunspurger

[Are meiofauna a standard meal for macroinvertebrates and juvenile fish?](#) - Christoph Ptatscheck, Henrike Bruchner-Hüttemann, Bianca Kreuzinger-Janik, Sebastian Weber & Walter Traunspurger

[Extreme-tolerance mechanisms in meiofaunal organisms: a case study with tardigrades, rotifers and nematodes](#) - Lorena Rebecchi, Chiara Boschetti & Diane R. Nelson

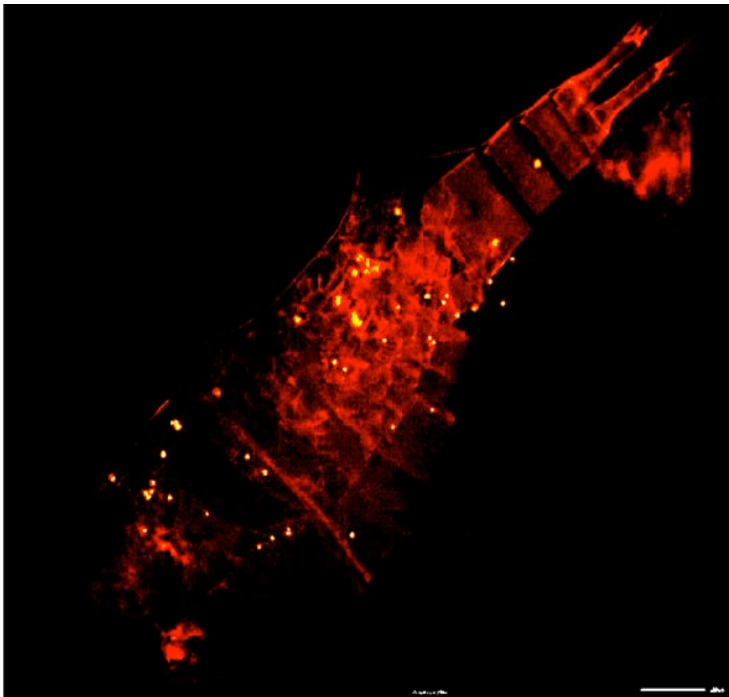
NEWS AND UPDATES

MikroPlaTaS Project - Microplastics in Dams and Reservoirs: Sedimentation, Spread, Effects.

Dear colleagues,

We hope you are doing well and staying safe, we wanted to share with you some results of our project about the ingestion and effects of microplastics on nematodes and meiofauna: Microplastics (MPs) can settle massively in sediments of reservoirs, and thus may be a threat to many meiofaunal organisms. Nevertheless, studies on the interactions of meiofauna with MPs are still scarce (Haegerbaeumer et al., 2019), which was the reason why we conducted ingestion/egestion and effect-studies in the project MikroPlaTaS.

We first observed that 0.5–6.0- μm polystyrene (PS) beads were ingested by a variety of lab-cultured nematode species, which was dependent on the buccal cavity size of the nematodes (Fueser et al., 2019). Moreover, Fueser et al. (2020, STOTEN) performed experiments in sediment microcosms and could show that a variety of field-sampled meiobenthic organisms could ingest MPs (see picture).



Bright yellow dots are micro-particles of polystyrene associated to a copepod after 24h exposure in a contaminated sediment microcosm (100x magnification).

In another set of laboratory experiment, we observed that the nematode species *Caenorhabditis elegans* as

well as *Pristionchus pacificus* were able to ingest PS beads and we measured that they egested the ingested PS beads within minutes in a species-specific manner (Fueser et al., 2020, Chemosphere). According to effect-studies on nematodes, a 96 h-exposure of PS beads of 0.1–10.0 μm in diameter revealed a surface-related toxicity to *C. elegans*, and the mechanism of toxicity is likely to be the availability of food (Mueller et al., 2020, ES&T). In another study, a long-term exposure of PS beads revealed species-specific effects on the population growth of three-bacterial feeding nematodes (Mueller et al., 2020; EcolInd), whereas long-term multi-generation tests revealed more subtle impacts on *C. elegans*. Feel free to read the papers (listed below) and visit our website (www.uni-muenster.de/Mikroplatas/en/index.html) to know more about our project.

Best regards,

Marie-Theres RauchsSchwalbe & Hendrik Fueser

Meiofauna-related MikroPlaTaS publications:

Haegerbaeumer, A.; Mueller, M-T.; Fueser, H. & Traunspurger, W. (2019). Impacts of micro – and nano-sized plastic particles on benthic invertebrates – a literature review and gap-analysis. *Frontiers in Environmental Science* 7:17. DOI: 10.3389/fenvs.2019.00017.

Fueser, H.; Mueller, M-T.; Weiss, L.; Höss, S. & Traunspurger, W. (2019). Ingestion of microplastics by nematodes depends on feeding strategy and buccal cavity size. *Environmental Pollution* 255. DOI: 10.1016/j.envpol.2019.113227.

Mueller, M-T.; Fueser, H.; Trac, L. N.; Mayer, P.; Traunspurger, W. & Höss, S. (2020). Surface-related toxicity of polystyrene beads for nematodes and the role of food availability. *Environmental Science & Technology* 54 (3), 1790-1798. DOI: 10.1021/acs.est.9b06583.

Mueller, M.-T., Fueser, H., Höss, S., Traunspurger, W. (2020): Species-specific effects of long-term microplastic exposure on the population growth of nematodes, with a focus on microplastic ingestion. *Ecological Indicators* 118, 106698. DOI: 10.1016/j.ecolind.2020.106698.

Fueser, H., Mueller, M.-T., Traunspurger, W. (2020). Ingestion of microplastics by meiobenthic communities in small-scale microcosm experiments. *Science of The Total Environment* 746, 141276. DOI: 10.1016/j.scitotenv.2020.141276.

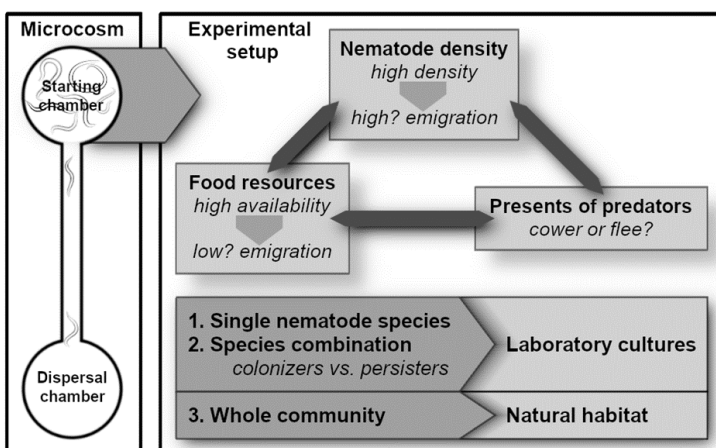
Fueser, H., Mueller, M.-T., Traunspurger, W. (2020). Rapid ingestion and egestion of microplastics by bacteria-feeding nematodes. *Chemosphere* 261, 128162. DOI: 10.1016/j.chemosphere.2020.128162.

NEWS AND UPDATES

Project: Should I stay or should I go? Testing triggers of active dispersal with nematodes

Dispersal is an important process that determines the diversity and stability of biotic communities. Actively dispersing species can increase their own fitness by leaving a habitat with unfavorable living conditions. Previous studies showed that single factors like the population density, the availability of resources and the presence of predators triggers the emigration of invertebrates, vertebrates, and even unicellular organisms. However, dispersal is multicausal and under natural circumstances these factors act simultaneously on an organism and interact with one another. Therefore, appropriate studies are challenging and require standardized laboratory experiments that allow the manipulation or exclusion of specific factors and the comparability between species.

For our project we designed an experimental setup performed in microcosms to investigate (1) single and combined triggers for the emigration of single nematode species from laboratory cultures, (2) species combinations and (3) entire communities from natural environments (see figure below). Due to their simple cultivation, their frequent and diverse occurrence in the field, their ecological importance and their species-specific characteristics, nematodes are ideal model organisms for this project. We assume that especially species with high reproduction rates and low competition tolerance (colonizers) are good dispersers while species with opposing properties (persisters) show low emigration.



Experimental setup, testing arenas (left), tested factors and hypothesis (right)

Birgit Gansfort & Christoph Ptatscheck

Meiofauna: turtleback riding around the world!

As much as we love them, it's not every day that meiofauna news reach far and wide to the general public. But that wasn't the case after the publication of the paper **"Meiofauna Life on Loggerhead Sea Turtles - Diversely Structured Abundance and Biodiversity Hotspots That Challenge the Meiofauna Paradox."** on Diversity ([Ingels, J. et al 2020](#)).

There were numerous media outlets making news articles and even youtube videos about the life of our meiofauna on the carapaces of sea turtles; and what a great moment it was to reach out to the masses, with millions of people being exposed to the term meiofauna (alongside loggerheads and sea turtles in general, of course).

To give an idea, amongst the media outlets that covered this topic were National Geographic, which has >24M twitter followers (their tweet on the subject had 1.7k likes), SciShow's youtube channel which has 6.3 M subscribers, Hakai magazine >17k on twitter, Nautilus Mag >88k, etc...



It was a blast, with many NGOs and individuals sharing the articles; and as you can imagine busy days on social media for all the researchers responsible for these findings!

Here are the links to the articles for the main media platforms featuring this research:

- ◆ [National Geographic \[NL\] \[FR\] \[ES\] \[PT\] \[DE\]](#)
- ◆ [Science Daily](#)
- ◆ [Lab News \[Magazine Cover\] \[Podcast\]](#)
- ◆ [Hakai Magazine](#)
- ◆ [Nautilus Magazine](#)
- ◆ [SciShow Youtube Video](#)

CONNECTING MEIOBENTHOLOGISTS AROUND THE WORLD

Letter to the taxonomic experts in the meiofauna community:

Dear colleagues,

In 2017 we began a survey of small (mostly <1 mm) benthic and planktonic invertebrates from the coast of British Columbia, Canada (and some from Curaçao). So far, we have collected more than a thousand individual specimens from a wide variety of phyla. Every specimen was imaged alive, and processed for DNA extraction. One of the main objectives is to characterize their individual microbiomes.

While most specimens could easily be assigned to phyla or higher-level taxa, genus and species-level identification was only possible for the groups with in-house taxonomic expertise (flatworms and kinorhynchs). To improve this, we wanted to reach out to the meiofauna community for help.

To do so, we created an online repository of all our images, organized by major lineages here: <https://drive.google.com/drive/folders/1kcCF3-qCUQ9k3Pcn1JFDIvbcBcyI6s7X?usp=sharing>.

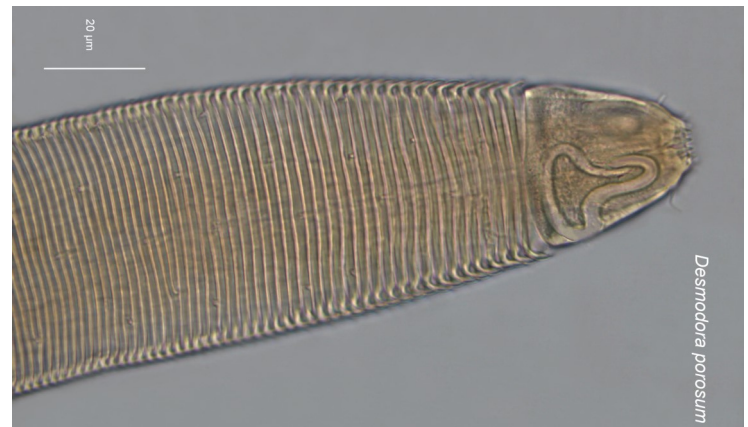
We would be extremely grateful for any help in identifying the specimens in those images. To streamline this process, we provide a pre-filled spreadsheet (on the link too) with some simple guidelines.

Any help is appreciated and the names and opinions of those who participate will be linked to the papers produced by this data. All taxonomists improving the IDs will be acknowledged for their help. We also welcome proposals for future collaborations in case you identify interesting specimens or lineages you are keen on collecting and studying. British Columbia is fairly unexplored terrain for many meiofaunal groups. We routinely do field work and should be able to obtain more material for interesting projects.

Thanks for your consideration, and best wishes,

*Niels Van Steenkiste, Maria Herranz, Vittorio Boscaro,
Corey Holt, Patrick Keeling & Brian Leander*

University of British Columbia



Desmodora porosum

by Tania Nara Bezerra

This beautiful meiofauna specimen is a *Desmodora porosum* Moura, Silva & Esteves, 2014, found at 4500 m depth on the abyssal plains of the eastern Clarion-Clipperton Fracture Zone in the Pacific Ocean. This specimen was collected in 2015 by Dr. Lara Macheriotou from Ghent University and identified by Tania Nara Bezerra.

The picture shows the anterior body part of a male. The species presents a sexual dimorphism in the shape of the amphids, which are closed loop-shaped in males, and multispiral in females.

Desmodora porosum was first recorded for the South Atlantic, off the south-eastern coast of the State of Rio de Janeiro, Brazil at 400 m depth and described by Juliana da Rocha Moura, Maria Cristina da Silva and André Morgado Esteves (2014).

To date these are the two known localities where this species is found, quite far apart, in two different oceans and from different depths. This makes us wonder how the species was spread out, would they be cryptic species? These kind of questions instigate us to know more, finding out more about the seabed. Therefore we need more campaigns and samples, which may reflect, a little, the richness of this environment that until now remains somewhat mysterious.

Reference:

Moura, J.daR., Da Silva, M.C. & Esteves, A.M. Four new species of *Desmodora* (Nematoda) from the deep south-east Atlantic, and a case of intersexuality in *Desmodoridae* (2014). *Journal of the Marine Biological Association of the United Kingdom*, 94(1), 85–104. # Marine Biological Association of the United Kingdom, 2013 doi:10.1017/S0025315413001458

INTRODUCING MEIOFAUNA PHD STUDENTS

Aaron Ridall

PhD Student

Florida State University,
Biological Sciences
Department



My name is Aaron Ridall, and I am going into my 2nd year of my PhD. I work in the Meiolab, under the direction of Dr. Jeroen Ingels, at the Florida State University's Coastal and Marine Laboratory. My research agenda focuses on the question: "How does microplastics pollution affect ecosystem health and ecosystem processes?" I find that many researchers interested in microplastics pollution are focused on the issues of how microplastics may affect food web dynamics and megafauna health, and rarely are scientists concerned with meiofauna health. I hope to understand how microplastics pollution affects benthic systems in two ways: First, I am interested in how microplastics pollution changes community dynamics and structures in coastal benthic systems. Understanding how microplastics pollution drives community change may allow conservationists to use nematodes as ecological indicators for this new type of pollution, especially since microplastics analysis is arguably more time consuming than nematode identification. I am also interested in how microplastics pollution affects oxygen availability and nitrogen cycling in benthic systems, and plan to use nematode bioturbation as a link between xenobiotics and ecosystem processes that happen in coastal sediments. If microplastics are affecting oxygen and nitrogen availability in coastal systems, then I can make a case for a targeted approach to microplastics pollution, citing the importance of oxygen and nitrogen to coastal organisms, from meio- to megafauna. I also hope to be able to support work in determining the economic importance of nematodes in marine systems, since the monetary value associated with ecosystem goods and services can drive conservation efforts.

Katie Bigham

PhD Student

Victoria University of Wellington,
School of Biological Sciences



I am a second year PhD student at Victoria University of Wellington and the National Institute of Water and Atmospheric Research (NIWA) in New Zealand under the supervision of Ashley Rowden, Daniel Leduc, and David Bowden.

The focus of my PhD is to understand the impacts of a large-scale turbidity flow – underwater avalanche – on the deep-sea benthic community of Kaikōura Canyon, off the coast of New Zealand. Once one of the most productive deep-sea environments ever measured, the community was wiped out following the turbidity flow triggered by the 2016 Kaikōura Earthquake.

Using sediment cores and images collected before and after the turbidity flow event, my project aims to understand if and how this community across the size spectrum of animals (meio-, macro-, and megafauna) can recover from a large-scale disturbance.

It has been hypothesized that the meiofaunal component may have a faster recovery time than larger fauna groups because of faster turnover times or because the canyon already hosts meiofauna that are specialized to a dynamic, nutrient rich environment. Alternatively, data from the literature suggests that meiofauna are more sensitive to the physical and chemical impacts of turbidity flows due to their close link to the sediment they live in.

Overall insights from the research will be used to inform management of New Zealand's marine protected areas and speculate on the effects of deep-sea mining.

INTRODUCING PHD STUDENTS

Soraia Vieira

PhD Student

Univeristy of Évora,
MARE

My name is Soraia Vieira, and I am developing my PhD thesis supervised by Helena Adão and Kasia Sroczyńska of MARE - Marine and Environmental Sciences Centre, University of Évora, Portugal.



Last year I had the opportunity to participate in the organization of the SeventIMCO- International Meiofauna Conference, that took place at University of Évora. The innovative and advanced thorough work developed all over the world about these small organisms brought out my interest to know more about the important role of meiofauna communities in several aquatic ecosystems. During my academic path I've always been fascinated by functional ecology and the natural recovery of highly disturbed environments such as estuaries. The ecological assessment of these ecosystems has been based mainly on structural type indicators (e.g. community response) and less on the functional component of the ecosystem's response.

My PhD research is focusing on how dredging activities in the Sado Estuary (SWcoast, Portugal) can affect the trophic position of macrobenthos and nematode species, evaluating the energy transfer from sediments to higher trophic levels by measuring isotopic ratios ($\delta^{13}C$ and $\delta^{15}N$). We hypothesized the bottom-up effect will shape the food web structure of benthic communities and reveal different trophic behaviors between organisms. Exploring the interactions between Macrofauna, Meiofauna and Microbiome communities I hope to develop a baseline knowledge for the creation of a high-throughput tool for routine assessment of Dscriptor 4- D4 within the Marine Strategy Framework Directive. I am very enthusiastic to make part of the meiobenthologist community, and I hope to contribute with interesting outputs.

STAY CONNECTED WITH IAM



On our previous Psammonalia issue, we talked about all the ways the meiofauna community can connect online, being it through IAM's email, [twitter](#), [facebook](#) or the [SLACK workspace](#).

The truth is that since then, our online connection has become of even greater weight than ever before. Sometimes it may even seem like too much is happening online now, but we should not forget that this is a great tool to stay connected, to create work related partnerships and collaborations and, of course, friendships.

It was refreshing to see people finding new ways to circle around the restrictions that COVID19 and social distancing required, MEIOLIVE is a great example that happened right in our meiofauna community thanks to the efforts and proactivity of Jeroen Ingels and Giovanni Santos.

Even when the dozens of zoom meetings and webinars a week become a little overwhelming, it is important to remember technology is such a great and versatile tool to stay connected, to keep learning, working, developing ideas, creating, making science!

We maintain the same goal as last year, for a collective social media effort, to increase meiofauna's digital presence across social media platforms and to keep our community connected and dynamic.

If you'd like us to share your most recent article, send us a message, if you are a "scientartist" and would like to see your meiofauna artwork on the next Psammonalia cover, send us an email with it, if you have some great microscopy pictures of our tiny meiofauna monsters that you'd like to share with the world, tweet them and tag us for a few retweets, if you have any ideas or topics you'd like to share, don't be shy!

Participate, get involved and share with us any and everything about the meiofauna topicality that you think should be shared on our platforms.

RECENT LITERATURE

NOTE: Although there's been an effort to compile them all, this might not be a complete list of ALL meiofauna related literature of 2020 so far.

- Allouche, M., Hamdi, I., Nasri, A., Harrath, A.H., Mansour, L., Beyrem, H., Boufahja, F., (2020a). Laboratory bioassay exploring the effects of anti-aging skincare products on free-living marine nematodes: a case study of collagen. *Environmental Science and Pollution Research* 27.
- Allouche, M., Nasri, A., Harrath, A.H., Mansour, L., Beyrem, H., Boufahja, F., (2020b). Migratory behavior of free-living marine nematodes surrounded by sediments experimentally contaminated by mixtures of polycyclic aromatic hydrocarbons. *Journal of King Saud University Science* 32.
- Arakawa, K., (2020). Simultaneous Metabarcoding of Eukaryotes and Prokaryotes to Elucidate the Community Structures within Tardigrade Microhabitats. *Diversity-Basel* 12.
- Atherton, S., & Jondelius, U. (2020). Biodiversity between sand grains: Meiofauna composition across southern and western Sweden assessed by metabarcoding. *Biodiversity Data Journal*, 8.
- Atienza, S., Guardiola, M., Praebel, K., Antich, A., Turon, X., Wangenstein, O.S., (2020). DNA Metabarcoding of Deep-Sea Sediment Communities Using COI: Community Assessment, Spatio-Temporal Patterns and Comparison with 18S rDNA. *Diversity-Basel* 12.
- Azovsky, A. I., Chertoprud, E. S., Garlitska, L. A., Mazei, Y. A., & Tikhonenkov, D. V. (2020). Does size really matter in biogeography? Patterns and drivers of global distribution of marine micro- and meiofauna. *Journal of Biogeography*, 47(5).
- Bai, L.F., Wang, X.G., Zhou, Y.D., Lin, S.Q., Meng, F.X., Fontoura, P., (2020). *Moebjergarctus clarionclippertonensis*, a new abyssal tardigrade (Arthrotardigrada, Halechiniscidae, Euclavarctinae) from the Clarion-Clipperton Fracture Zone, North-East Pacific. *Zootaxa* 4755.
- Baldrighi, E., Dovgal, I., Zeppilli, D., Abibulaeva, A., Michelet, C., Michaud, E., Franzo, A., Grassi, E., Cesaroni, L., Guidi, L., Balsamo, M., Sandulli, R., Semprucci, F., (2020a). The Cost for Biodiversity: Records of Ciliate-Nematode Epibiosis with the Description of Three New Suctorian Species. *Diversity-Basel* 12.
- Baldrighi, E., Zeppilli, D., Appolloni, L., Donnarumma, L., Chianese, E., Russo, G.F., Sandulli, R., (2020b). Meiofaunal communities and nematode diversity characterizing the Secca delle Fumose shallow vent area (Gulf of Naples, Italy). *PeerJ* 8.
- Biancalana, F., Veit-Kohler, G., Fricke, A., Berasategui, A.A., (2020). Harpacticoida (Copepoda) in the plankton of Ushuaia and Golondrina Bays, Beagle Channel, Argentina. *Regional Studies in Marine Science* 33.
- Balsamo, M. et al. (2020) The curious and neglected soft-bodied meiofauna: Rouphozoa (Gastrotricha and Platyhelminthes). *Hydrobiologia* 847, 2613-2644.
- Bianchelli, S., Nizzoli, D., Bartoli, M., Viaroli, P., Rastelli, E., & Pusceddu, A. (2020). Sedimentary Organic Matter, Prokaryotes, and Meiofauna Across a River-Lagoon-Sea Gradient. *Diversity*, 12(5), 189.
- Bighiu, M. A., S. Höss, W. Traunspurger, M. Kahlert, and W. Goedkoop. 2020. Limited effects of pesticides on stream macroinvertebrates, biofilm nematodes, and algae in intensive agricultural landscapes in Sweden. *Water Research*:115640.
- Boisnoir, A., Pavaux, A.S., Schizas, N.V., Marro, S., Blasco, T., Lemee, R., Pascal, P.Y., (2020). The use of stable isotopes to measure the ingestion rate of potentially toxic benthic dinoflagellates by harpacticoid copepods. *Journal of Experimental Marine Biology and Ecology* 524.
- Bonaglia, S., Hedberg, J., Marzocchi, U., Iburg, S., Glud, R. N., & Nascimento, F. J. (2020). Meiofauna improve oxygenation and accelerate sulfide removal in the seasonally hypoxic seabed. *Marine Environmental Research*, 104968.
- Bouchet, V. M., Deldicq, N., Baux, N., Dauvin, J. C., Pezy, J. P., Seuront, L., & Méar, Y. (2020). Benthic foraminifera to assess ecological quality statuses: The case of salmon fish farming. *Ecological Indicators*, 117, 106607.
- Bouchet, V. M., & Seuront, L. (2020). Strength May Lie in Numbers: Intertidal Foraminifera Non-Negligible Contribution to Surface Sediment Reworking. *Open Journal of Marine Science*, 10(3), 131-140.
- Broman, E., Bonaglia, S., Holovachov, O., Marzocchi, U., Hall, P.O.J., Nascimento, F.J.A., 2020. Uncovering diversity and metabolic spectrum of animals in dead zone sediments. *Communications Biology* 3.
- Broman, E., Bonaglia, S., Norkko, A., Creer, S., Nascimento, F.J.A., High throughput shotgun sequencing of eRNA reveals taxonomic and derived functional shifts across a benthic productivity gradient. *Molecular Ecology*.
- Brüchner-Hüttemann, H., C. Ptatscheck, and W. Traunspurger. 2020. Meiofauna in stream habitats: temporal dynamics of abundance, biomass and secondary production in different substrate microhabitats in a first-order stream. *Aquatic Ecology*: in press.

RECENT LITERATURE

- Bruchner-Huttemann, H., Traunspurger, W., (2020). Seasonal distribution of abundance, biomass and secondary production of free-living nematodes and their community composition in different stream microhabitats. *Nematology* 22.
- Cai, L., Fu, S., Zhou, X., Tseng, L. C., & Hwang, J. S. (2020). Benthic meiofauna with emphasis on nematode assemblage response to environmental variation in the intertidal zone of the Danshuei River estuary, northwest Taiwan. *Ecological Research*.
- Campos, A., Todaro, M.A., Garraffoni, A.R.S., 2020. A New Species of Paraturbanella Remane, 1927 (Gastrotricha, Macrotrichida) from the Brazilian Coast, and the Molecular Phylogeny of Turbanellidae Remane, 1926. *Diversity-Basel* 12.
- Candido, T.F., Netto, S.A., 2020. Multiple benthic indicators suggest low sewage impact from an ocean outfall in a high-energy sandy shore (South Brazil). *Ecological Indicators* 113.
- Cepeda, D., Gonzalez-Casarrubios, A., Sanchez, N., Pardos, F., 2020a. *Setaphyes elenae* sp. nov., a new species of mud dragon (Kinorhyncha: Allomalorhagida) from Skagerrak (north-eastern Atlantic Ocean). *European Journal of Taxonomy* 637, 1-15.
- Cepeda, D., Pardos, F., Zeppilli, D., Sanchez, N., 2020b. Dragons of the Deep Sea: Kinorhyncha Communities in a Pockmark Field at Mozambique Channel, With the Description of Three New Species. *Frontiers in Marine Science* 7.
- Chuar, C.H., Tong, S.J.W., Chim, C.K., San Wong, H.P., Tan, K.S., 2020. Abyssal macrofaunal community structure in the polymetallic nodule exploration area at the easternmost region of the Clarion-Clipperton Fracture Zone, Pacific Ocean. *Deep-Sea Research Part I-Oceanographic Research Papers* 161.
- Cordier, T., Alonso-Saez, L., Apotheloz-Perret-Gentil, L., Aylagas, E., Bohan, D.A., Bouchez, A., Chariton, A., Creer, S., Fruhe, L., Keck, F., Keeley, N., Laroche, O., Leese, F., Pochon, X., Stoeck, T., Pawlowski, J., Lanzen, A., Ecosystems monitoring powered by environmental genomics: A review of current strategies with an implementation roadmap. *Molecular Ecology*.
- Couturier, L. I., Michel, L., Amaro, T., Budge, S. M., da Costa, E., De Troch, M., ... & Loaiza, I. (2020). State of art and best practices for fatty acid analysis in aquatic sciences. *ICES Journal of Marine Science*.
- Curini-Galletti, M., Artois, T., Di Domenico, M., Fontaneto, D., Jondelius, U., Jorger, K.M., Leasi, F., Martinez, A., Norenburg, J.L., Sterrer, W., Todaro, M.A., 2020. Contribution of soft-bodied meiofaunal taxa to Italian marine biodiversity. *European Zoological Journal* 87, 369-384.
- Dawson, J., Pillay, D., Perissinotto, R., 2020. Idiosyncratic responses of meiofaunal assemblages to hippodung inputs in an estuarine lake. *Estuarine Coastal and Shelf Science* 239.
- Denis-Roy, L., Ling, S.D., Fraser, K.M., Edgar, G.J., 2020. Relationships between invertebrate benthos, environmental drivers and pollutants at a subcontinental scale. *Marine Pollution Bulletin* 157.
- Ehrlich, J., Schaafsma, F.L., Bluhm, B.A., Peeken, I., Castellani, G., Brandt, A., Flores, H., 2020. Sympagic Fauna in and Under Arctic Pack Ice in the Annual Sea-Ice System of the New Arctic. *Frontiers in Marine Science* 7.
- Erdenezul, J., and D. Narangarvuu. 2020. A New Record of Freshwater Harpacticoid Copepod, *Atteyella nordenskjoeldii* Lilljeborg, 1902 (Copepoda: Harpacticoida: Canthocamptidae) from Khentii Mountains, Mongolia. *Mongolian Journal of Biological Sciences* 18:47-53.
- Essid, N., Allouche, M., Lazzem, M., Harrath, A.H., Mansour, L., Alwasel, S., Mahmoudi, E., Beyrem, H., Boufahja, F., (2020a). Ecotoxic response of nematodes to ivermectin, a potential anti-COVID-19 drug treatment. *Marine Pollution Bulletin* 157.
- Essid, N., Gharbi, R., Harrath, A. H., Mansour, L., Mahmoudi, E., Beyrem, H., ... & Boufahja, F. (2020b). Toxicity of a chromium-enriched superfood, *Spirulina platensis*, assessed by taxonomic and morpho-functional diversity of marine meiofauna. *Environmental Pollution*, 114350.
- Fais, M., Bellisario, B., Duarte, S., Vieira, P. E., Sousa, R., Canchaya, C., & Costa, F. O. (2020). Meiofauna metabarcoding in Lima estuary (Portugal) suggests high taxon replacement within a background of network stability. *Regional Studies in Marine Science*, 38.
- Fegley, S. R., Smith, J. P., Johnson, D., Schirmer, A., Jones-Boggs, J., Edmonds, A., & Bursey, J. (2020). Nourished, Exposed Beaches Exhibit Altered Sediment Structure and Meiofaunal Communities. *Diversity*, 12(6).
- Feio, M.J., Filipe, A.F., Garcia-Raventos, A., Ardura, A., Calapez, A.R., et al., 2020. Advances in the use of molecular tools in ecological and biodiversity assessment of aquatic ecosystems. *Limnetica* 39.
- Fueser, H., M.-T. Mueller, and W. Traunspurger. 2020a. Rapid ingestion and egestion of spherical microplastics by bacteria-feeding nematodes. *Chemosphere*:128162.
- Fueser, H., M.-T. Mueller, and W. Traunspurger. 2020b. Ingestion of microplastics by meiobenthic communities in small-scale microcosm experiments. *Science of The Total Environment* 746:141276.
- Fujimoto, S., & Jimi, N. (2020a). A new marine tardi-

RECENT LITERATURE

grade genus and species (Arthrotardigrada, Styraconyxidae) with unique pockets on the legs. *Zoosystematics and Evolution*, 96, 115.

Fujimoto, S., Suzuki, A.C., Ito, M., Tamura, T., Tsujimoto, M., (2020b). Marine tardigrades from Lutzow-Holm Bay, East Antarctica with the description of a new species. *Polar Biology* 43.

Gallucci, F., Christofoletti, R.A., Fonseca, G., Dias, G.M., 2020. The Effects of Habitat Heterogeneity at Distinct Spatial Scales on Hard-Bottom-Associated Communities. *Diversity-Basel* 12.

Gambi, C., Canals, M., Corinaldesi, C., Dell'Anno, A., Manea, E., Pusceddu, A., Sanchez-Vidal, A., Danovaro, R., 2020. Impact of historical sulfide mine tailings discharge on meiofaunal assemblages (Portman Bay, Mediterranean Sea). *Science of the Total Environment* 736.

Gansfort, B., Fontaneto, D. & Zhai, M. (2020) Meiofauna as a model to test paradigms of ecological metacommunity theory. *Hydrobiologia* 847.

George KH (2020). Restructuring the Ancorabolidae Sars (Copepoda, Harpacticoida) and Cletodidae T. Scott, with a new phylogenetic hypothesis regarding the relationships of the Laophontoidea T. Scott, Ancorabolidae and Cletodidae. *Zoosystematics and Evolution* 96(2).

George KH, Viertel L in press. Frisia gen. nov., a new Cerviniinae Sars (Copepoda: Harpacticoida: Aegisthidae Giesbrecht) from Tierra del Fuego (Chile), with description of a new species. *Studies on Neotropical Fauna and Environment*.

Gharakhani A, Pourjam E, Leduc D, Pedram E (in press) A molecular phylogenetic reappraisal of Richtersiidae Kreis, 1929 (Nematoda: Desmodorida), with two new species of intertidal nematodes from the Persian Gulf. *Nematology*

Gollner, S., Govenar, B., Arbizu, P.M., Mullineaux, L.S., Mills, S., Le Bris, N., Weinbauer, M., Shank, T.M., Bright, M., 2020. Animal Community Dynamics at Senescent and Active Vents at the 9 degrees N East Pacific Rise After a Volcanic Eruption. *Frontiers in Marine Science* 6.

Gomes, E., Santos, E., da Rocha, C.M.C., Santos, P.J.P., Fontoura, P., 2020. The Deep-Sea Genus *Coronarctus* (Tardigrada, Arthrotardigrada) in Brazil, South-Western Atlantic Ocean, with the Description of Three New Species. *Diversity-Basel* 12.

Gooday AJ, Schoenle A, Dolan JR, Arndt H (2020) Protist diversity and function in the dark ocean: Challenging paradigms of deep-sea ecology with special emphasis on foraminiferans and naked protists. *European Journal of Protistology* 75: 125721

Gorska, B., Soltwedel, T., Schewe, I., Wlodarska-

Kowalczyk, M., 2020. Bathymetric trends in biomass size spectra, carbon demand, and production of Arctic benthos (76-5561 m, Fram Strait). *Progress in Oceanography* 186.

Gradinger, R., & Bluhm, B. A. (2020). First analysis of an Arctic sea ice meiofauna food web based on abundance, biomass and stable isotope ratios. *Marine Ecology Progress Series*, 634, 29-43.

Grego, M., Malej, A., De Troch, M., 2020. The Depleted Carbon Isotopic Signature of Nematodes and Harpacticoids and Their Place in Carbon Processing in Fish Farm Sediments. *Frontiers in Marine Science* 7.

Holovachov O. (2020) The nomenclatural status of new nematode nomina proposed in 1993 in the doctoral thesis of Christian Bussau, entitled *Taxonomische und ökologische Untersuchungen an Nematoden des Perubeckens (Nematoda)*. *Bionomina* 19: 86-99

Hong, J.H., Semprucci, F., Jeong, R., Kim, K., Lee, S., Jeon, D., Yoo, H., Kim, J., Kim, J., Yeom, J., Lee, S., Lee, K., Lee, W., 2020. Meiobenthic nematodes in the assessment of the relative impact of human activities on coastal marine ecosystem. *Environmental Monitoring and Assessment* 192.

Höss, S., I. Roessink, T. C. M. Brock, and W. Traunspurger. 2020. Response of a nematode community to the fungicide fludioxonil in sediments of outdoor freshwater microcosms compared to a single species toxicity test. *Science of The Total Environment* 710:135627.

Ingels, J. O. G., Valdes, Y., Pontes, L., Silva, A., Neres, P., Correa, G., Silver-Gorges, I., Fuentes, M., Gillis, A., Hooper, L., Ware, M., O'Reilly, C., Bergman, Q., Danyuk, J., Sanchez Zarate, S., Acevedo Natale, L., & dos Santos, G. (2020). Meiofauna Life on Loggerhead Sea Turtles-Diversely Structured Abundance and Biodiversity Hotspots That Challenge the Meiofauna Paradox. *Diversity MDPI*, 12(5), 203.

Jeong, R., Tchesunov, A.V., Lee, W., 2020. Two species of Thoracostomopsidae (Nematoda: Enoplida) from Jeju Island, South Korea. *PeerJ* 8.

Kang, T., & Kim, D. (2020). Meiobenthic Community Structure on the Northeast Coastal Area of Jeju Island, Korea. *Ocean and Polar Research*, 42(1).

Kim, H.G., Song, S.J., Bae, H., Noh, J., Lee, C., Kwon, B.O., Lee, J.H., Ryu, J., Khim, J.S., 2020. Natural and anthropogenic impacts on long-term meiobenthic communities in two contrasting nearshore habitats. *Environment International* 134.

Kitahashi, T., Sugime, S., Inomata, K., Nishijima, M., Kato, S., Yamamoto, H., 2020. Meiofaunal diversity at a seamount in the Pacific Ocean: A comprehensive study

RECENT LITERATURE

using environmental DNA and RNA. Deep-Sea Research Part I-Oceanographic Research Papers 160.

Kobbi-Rebai, R., Annabi-Trabelsi, N., Al-Jutaili, S., Al-Enezi, Y., Subrahmanyam, M.N.V., Ali, M., Belmonte, G., Ayadi, H., 2020. Abundance and reproduction variables of two species of harpacticoid copepods along an increasing salinity gradient. *Aquatic Ecology* 54.

Kuhn, T., Uhlenkott, K., Vink, A., Ruhlemann, C., Arbizu, P.M., 2020. Manganese nodule fields from the Northeast Pacific as benthic habitats.

Lacoste, E., Boufahja, F., Pelaprat, C., Le Gall, P., Berteaux, T., Messiaen, G., Mortreux, S., Oheix, J., Ouisse, V., d'Orbcastel, E.R., Gaertner-Mazouni, N., Richard, M., 2020. First simultaneous assessment of macro- and meiobenthic community response to juvenile shellfish culture in a Mediterranean coastal lagoon (Thau, France). *Ecological Indicators* 115.

Lampadariou, N., Syranidou, E., Sevastou, K., Tselepidis, A., 2020. Meiobenthos from biogenic structures of the abyssal time-series station in the NE Pacific (Station M). *Deep-Sea Research Part II-Topical Studies in Oceanography* 173.

Landers, S. C., Bassham, R. D., Miller, J. M., Ingels, J., Sánchez, N., & Sørensen, M. V. (2020). Kinorhynch communities from Alabama coastal waters. *Marine Biology Research*, 1-11.

Leasi, F., De Smet, W.H., 2020. Thalassic Rotifers from the United States: Descriptions of Two New Species and Notes on the Effect of Salinity and Ecosystem on Biodiversity. *Diversity-Basel* 12.

Leduc, D. (2020). A new nematode species, *Chromadorina tangaroa* sp. nov. (Chromadorida: Chromadoridae) from the hull of a research vessel, New Zealand. *PeerJ*, 8, e9233.

Leduc D (in press) Two new nematode species (Plectida: Leptolaimidae, Rhadinematidae) from Chatham Rise, New Zealand. *PeerJ* 8: 29923

Leduc D, Nodder SD, Rowden AA, Gibbs M, Berkenbusch K, Wood A, De Leo F, Smith C, Brown J, Bury SJ, Pallen-tin A (in press) Structure of infaunal communities in New Zealand submarine canyons is linked to origins of sediment organic matter. *Limnology & Oceanography*

Leduc D, Zhao ZQ, Sinniger F (2020) *Halanonchus scintillatulus* sp. nov. from New Zealand and a review of the suborder Trefusiina (Nematoda, Enoplida). *European Journal of Taxonomy* 661 : 1-45

Lee, W., 2020. *Doolia*, A New Genus of Nannopodidae (Crustacea: Copepoda: Harpacticoida) from off Jeju Island, Korea. *Diversity-Basel* 12.

Lekang, K., Lanzedn, A., Jonassen, I., Thompson, E.,

Troedsson, C., 2020. Evaluation of a eukaryote phylogenetic microarray for environmental monitoring of marine sediments. *Marine Pollution Bulletin* 154.

Liao JX, Wei CL, Yasuhara M (2020) Species and functional diversity of deep-sea nematodes in a high energy submarine canyon. *Frontiers in Marine Science* 7: 591

Macheriotou, L., Rigaux, A., Derycke, S., Vanreusel, A., 2020. Phylogenetic clustering and rarity imply risk of local species extinction in prospective deep-sea mining areas of the Clarion-Clipperton Fracture Zone. *Proceedings of the Royal Society B-Biological Sciences* 287.

Magliozzi, C., Meyer, A., Usseglio-Polatera, P., Robertson, A., Grabowski, R.C., 2020. Investigating invertebrate biodiversity around large wood: taxonomic vs functional metrics. *Aquatic Sciences* 82.

Majdi, N., Colls, M., Weiss, L., et al. (2020) Duration and frequency of non-flow periods affect the abundance and diversity of stream meiofauna. *Freshwater Biology*.

Majdi, N., Schmid-Araya, J.M., Traunspurger, W., 2020a. Examining the diet of meiofauna: a critical review of methodologies. *Hydrobiologia* 847.

Majdi, N., Schmid-Araya, J.M., Traunspurger, W., 2020b. Preface: Patterns and processes of meiofauna in freshwater ecosystems. *Hydrobiologia* 847.

Majdi, N., Uthoff, J., Traunspurger, W., Laffaille, P., Maire, A., 2020c. Effect of water warming on the structure of biofilm-dwelling communities. *Ecological Indicators* 117.

Martinez-Arce, A., De Jesus-Nayarrete, A., Leasi, F., 2020. DNA Barcoding for Delimitation of Putative Mexican Marine Nematodes Species. *Diversity-Basel* 12.

Martinez, A., Eckert, E.M., Artois, T., Careddu, G., Casu, M., Curini-Galletti, M., Gazale, V., Gobert, S., Ivanenko, V.N., Jondelius, U., Marzano, M., Pesole, G., Zanello, A., Todaro, M.A., Fontaneto, D., 2020. Human access impacts biodiversity of microscopic animals in sandy beaches. *Communications Biology* 3.

Minowa, A. K., & Garraffoni, A. R. (2020). Assessing biodiversity shortfalls of freshwater meiofauna from the Atlantic Forest: new species, distribution patterns and the first total-evidence phylogeny of semiplanktonic Gastrotricha. *Molecular Phylogenetics and Evolution*, 106926.

Mueller, M. T., Fueser, H., Höss, S., & Traunspurger, W. (2020). Species-specific effects of long-term microplastic exposure on the population growth of nematodes, with a focus on microplastic ingestion. *Ecological Indicators*, 118.

Mueller, M.-T., H. Fueser, L. N. Trac, P. Mayer, W.

RECENT LITERATURE

- Traunspurger, and S. Höss. 2020b. Surface-related toxicity of polystyrene beads to nematodes and the role of food availability. *Environmental Science & Technology* 54:1790–1798.
- Neelima Vasu, K., Nandan, S. B., & Radhakrishnan, C. K. Taxonomic notes on epibenthic harpacticoid copepods from lagoon waters of Lakshadweep, India. *Frontiers in*, 107.
- Neury-Ormanni, J., C. Doose, N. Majdi, J. Vedrenne, W. Traunspurger, and S. Morin. 2020. Selective grazing behaviour of chironomids on microalgae under pesticide pressure. *Science of The Total Environment*:138673.
- Neury-Ormanni, J., J. Vedrenne, and S. Morin. 2020. Benthic diatom growth kinetics under combined pressures of microalgal competition, predation and chemical stressors. *Science of The Total Environment*:139484.
- Neury-Ormanni, J., Vedrenne, J., Wagner, M. et al. (2020) Micro-meiofauna morphofunctional traits linked to trophic activity. *Hydrobiologia* 847.
- Nguyen, Q. T., Kim, D., Shimanaga, M., Uchida, J., Aoshima, T., & Wada, M. (2020). Horizontal distribution of nematode communities in a seasonally-hypoxic enclosed sea (Omura Bay, Japan). *Journal of Oceanography*.
- Oliveira, N. R., Moens, T., Fonseca, G., Nagata, R. M., Custódio, M. R., & Gallucci, F. (2020). Response of life-history traits of estuarine nematodes to the surfactant sodium dodecyl sulfate. *Aquatic Toxicology*.
- Olszewski, P., Bruhn-Olszewska, B., Namiotko, L., Sell, J., Namiotko, T., 2020. Co-cultured non-marine ostracods from a temporary wetland harbor host-specific microbiota of different metabolic profiles. *Hydrobiologia* 847.
- Pérez-García, J. A., A. Ruiz-Abierno, and M. Armenteros. 2020. A checklist of aquatic nematodes from Cuban Archipelago. *Zootaxa* 4731:301–320.
- Perez-Pech, W.A., De Jesus-Navarrate, A., Demilio, E., Anguas-Escalante, A., Hansen, J.G., 2020. Marine Tardigrada from the Mexican Caribbean with the description of *Styraconyx robertoi* sp. nov. (Arthrotardigrada: Styraconyxidae). *Zootaxa* 4731.
- Pessoa, L.A., Paiva, P.C., Paranhos, R., Freitas, M.A.V., Echeverria, C.A., 2020. Intra-annual variation in rainfall and its influence of the adult's Cyprideis spp (Ostracoda, Crustacea) on a eutrophic estuary (Guanabara Bay, Rio de Janeiro, Brazil). *Brazilian Journal of Biology* 80.
- Pontes, L. P., Vafeiadou, A. M., de França, F. J. L., Cavalcante, R. A., de Araújo França, D. A., Brito, C. M., ... & dos Santos, G. A. P. Toxic effects of phenanthrene intensify with an increase of temperature for the populations of a free-living nematode. *Ecological Indicators*, 120.
- Pogwizd, J., Stec, D., 2020. New Records of *Dactylobiotus parthenogeneticus* Bertolani, 1982 Provide Insight into Its Genetic Variability and Geographic Distribution. *Folia Biologica-Krakow* 68.
- Ptatscheck, C., Brüchner-Hüttemann, H., Kreuzinger-Janik, B. et al. (2020a) Are meiofauna a standard meal for macroinvertebrates and juvenile fish?. *Hydrobiologia* 847.
- Ptatscheck, C., B. Gansfort, N. Majdi, and W. Traunspurger. 2020. The influence of environmental and spatial factors on benthic invertebrate metacommunities differing in size and dispersal mode. *Aquatic Ecology* 54: 447-461.
- Ptatscheck, C., S. Gehner, and W. Traunspurger. 2020. Should we redefine meiofaunal organisms? The impact of mesh size on collection of meiofauna with special regard to nematodes. *Aquatic Ecology in press*.
- Ptatscheck, C., Traunspurger, W., (2020b). The ability to get everywhere: dispersal modes of free-living, aquatic nematodes. *Hydrobiologia*.
- Quero, G.M., Ape, F., Manini, E., Mirto, S., Luna, G.M., 2020. Temporal Changes in Microbial Communities Beneath Fish Farm Sediments Are Related to Organic Enrichment and Fish Biomass Over a Production Cycle. *Frontiers in Marine Science* 7.
- Ramalho, S.P., Lins, L., Soetaert, K., Lampadariou, N., Cunha, M.R., Vanreusel, A., Pape, E., 2020. Ecosystem Functioning Under the Influence of Bottom-Trawling Disturbance: An Experimental Approach and Field Observations From a Continental Slope Area in the West Iberian Margin. *Frontiers in Marine Science* 7.
- Rebecchi, L., C. Boschetti, and D. R. Nelson. 2020. Extreme-tolerance in meiofaunal organisms: a case study with tardigrades, rotifers and nematodes. *Hydrobiologia* 847: 2779-2799.
- Reuscher, M.G., Baguley, J.G., Montagna, P.A., 2020. The expanded footprint of the Deepwater Horizon oil spill in the Gulf of Mexico deep-sea benthos. *Plos One* 15.
- Revkova, T. N. (2020). A new species of *Microlaimus* de Man 1880 (Nematoda: Microlaimidae) from the Black Sea. *Zootaxa*, 4772(1).
- Rizzo, L., Pusceddu, A., Bianchelli, S., Frascchetti, S., 2020. Potentially combined effect of the invasive seaweed *Caulerpa cylindracea* (Sonder) and sediment deposition rates on organic matter and meiofaunal assemblages. *Marine Environmental Research* 159.
- Rohal, M., Barrera, N., Escobar-Briones, E., Brooks, G., Hollander, D., Larson, R., Montagna, P.A., Pryor, M., Romero, I.C., Schwing, P., (2020a). How quickly will the offshore ecosystem recover from the 2010 Deepwater

RECENT LITERATURE

Horizon oil spill? Lessons learned from the 1979 Ixtoc-1 oil well blowout. *Ecological Indicators* 117.

Rohal, M., et al. (2020b). The effects of experimental oil-contaminated marine snow on meiofauna in a microcosm. *Marine pollution bulletin*, 150, 110656.

Rucci, K. A., Neuhaus, B., Bulnes, V. N., & Cazzaniga, N. J. (2020). New record of the soft-bodied genus *Franciscideres* (Kinorhyncha) from Argentina, with notes on its movement and morphological variation. *Zootaxa*, 4780 (1).

Sahraeian N., Hosseinzadeh H., Mosallanejad H., Ingels J., Semprucci F. (2020) Temporal and spatial variability of free-living nematodes in a beach system characterized by a gradient of anthropogenic disturbance (Bandar Abbas, Persian Gulf, Iran). *Ecological Indicators*. 118.

Sane, E., Ingrassia, M., Martorelli, E., Chiocci, F., 2020. Amino acids in surface sediments of the Zannone Island shelf (Western Mediterranean Sea): Possible bioindicators of submarine hydrothermal activity. *Organic Geochemistry* 140.

Sarrazin, J., Portail, M., Legrand, E., Cathalot, C., Laes, A., Lahaye, N., Sarradin, P.M., Husson, B., 2020. Endogenous versus exogenous factors: What matters for vent mussel communities? *Deep-Sea Research Part I-Oceanographic Research Papers* 160.

Schenk, J., and D. Fontaneto. 2020. Biodiversity analyses in freshwater meiofauna through DNA sequence data. *Hydrobiologia* 847: 2597-2611.

Schenk, J., S. Höss, M. Brinke, N. Kleinbölting, H. Brüchner-Hüttemann, and W. Traunspurger. 2020. Nematodes as bioindicators of polluted sediments using metabarcoding and microscopic taxonomy. *Environment International* 143:105922.

Schenk, J., S. Höss, M. Brinke, N. Kleinbölting, H. Brüchner-Hüttemann, and W. Traunspurger. 2020. Dataset supporting the use of nematodes as bioindicators of polluted sediments. *Data in Brief* 32:106087.

Schenk, J., N. Kleinbölting, and W. Traunspurger. 2020. Comparison of morphological, DNA barcoding, and metabarcoding characterizations of freshwater nematode communities. *Ecology and Evolution* 10:2885–2899.

Schmid-Araya, J. M., Schmid, P. E., Majdi, N., & Traunspurger, W. (2020). Biomass and production of freshwater meiofauna: a review and a new allometric model. *Hydrobiologia*, 847.

Schmid, P.E., Schmid-Araya, J.M., Tokeshi, M., 2020. The scaling of biomass variance across trophic levels in stream species communities: a macroecological approach. *Hydrobiologia* 847.

Schnurr, P.J., Drever, M.C., Elner, R.W., Harper, J., Arts,

M.T., 2020. Peak Abundance of Fatty Acids From Intertidal Biofilm in Relation to the Breeding Migration of Shorebirds. *Frontiers in Marine Science* 7.

Schratzberger, M., & Somerfield, P. J. (2020). Effects of widespread human disturbances in the marine environment suggest a new agenda for meiofauna research is needed. *Science of The Total Environment*, 138435.

Sedano, F., Navarro-Barranco, C., Guerra-Garcia, J.M., Espinosa, F., 2020. Understanding the effects of coastal defence structures on marine biota: The role of substrate composition and roughness in structuring sessile, macro- and meiofaunal communities. *Marine Pollution Bulletin* 157.

Semprucci, F., Sandulli, R., 2020. Editorial for Special Issue "Meiofauna Biodiversity and Ecology". *Diversity-Basel* 12.

Sevastou, K., Lampadariou, N., Mouriki, D., Tselepides, A., Arbizu, P.M., 2020. Meiofaunal distribution in the Levantine Basin (Eastern Mediterranean): Spatial variability at different scales, depths and distance-to-coast. *Deep-Sea Research Part II-Topical Studies in Oceanography* 171.

Shin, A., Kim, D., Kang T., & Oh, J. H. (2020). Studies on the Optimal Conditions of Feeding and Light Supply for the Long-Term Cultivation of Meiofauna in the Laboratory. *The Sea*, 25(2).

Smirnova, E.A., Azovsky, A.I., 2020. Modelling of Spatially Distributed Predator-Prey System with Periodically Migrating Predator (Case Study of the White Sea Intertidal Harpacticoids and Benthic Microalgae). *Oceanology* 60.

Soltwedel, T., Grzelak, K., & Hasemann, C. (2020). Spatial and Temporal Variation in Deep-Sea Meiofauna at the LTER Observatory HAUSGARTEN in the Fram Strait (Arctic Ocean). *Diversity*, 12(7), 279.

Spedicato, A., Sánchez, N., Pastor, L., Menot, L., & Zepilli, D. (2020). Meiofauna community in soft sediments at TAG and Snake Pit hydrothermal vent fields. *Frontiers in Marine Science*, 7(200).

Stark JS, Mohammad M, McMinn A, Ingels J (2020) Diversity, abundance, spatial variation and human impacts in marine meiobenthic nematode and copepod communities at Casey station, East Antarctica. *Frontiers in Marine Science – Global Change and the Future Ocean*. *Frontiers in Marine Science*, 7(480).

Stratmann, T., van Oevelen, D., Arbizu, P. M., Wei, C. L., Liao, J. X., Cusson, M., ... & Burd, B. J. (2020). The BenBioDen database, a global database for meio-, macro- and megabenthic biomass and densities. *Scientific Data*, 7(1).

RECENT LITERATURE

Tarrago, L.D., Ferreira, P.M.A., Utz, L.R.P., 2020. Benthic Marine Ciliate Assemblages from Southern Brazil and Their Relationship with Seasonality and Urbanization Level. *Diversity-Basel* 12.

Tchesunov, A., Jeong, R., Lee, W., 2020. Two New Marine Free-Living Nematodes from Jeju Island Together with a Review of the Genus *Gammanema* Cobb 1920 (Nematoda, Chromadorida, Selachinematidae). *Diversity-Basel* 12.

Thai, T., Yen, N., Son, H., & Quang, N. (2020). Multi-correlation between nematode communities and environmental variables in mangrove-shrimp ponds, Ca Mau Province, Southern Vietnam. *Academia Journal of Biology* 42:15–29.

Tran, T. T., Nguyen Y. M. T., Pham L. T., Veettil B. K., Hoang S. N., and Ngo Q. X. 2020. Relationships between environmental variables and free-living nematode communities in seasonally flooded wetlands. *Global Journal of Environmental Science and Management* 6: 509-522.

Traunspurger, W., Wilden, B., & Majdi, N. (2020). An overview of meiofaunal and nematode distribution patterns in lake ecosystems differing in their trophic state. *Hydrobiologia*, 847(12).

Traunspurger, W., Witthöft-Mühlmann, A., & Höss, S. (2020). Free-living nematode communities in a large and deep oligotrophic lake in Europe: comparison of different depth zones of Lake Constance (Germany). *Nematology*, 1(aop).

Tustison, C., Ramey-Balci, P., Rouse, G., 2020. More Knot Worms: Four New *Polygordius* (Annelida) Species from the Pacific and Caribbean. *Diversity-Basel* 12.

Uhlenkott, K., Vink, A., Kuhn, T. & Martínez Arbizu, P. (2020) Predicting meiofauna abundance to define preservation and impact zones in a deep-sea mining context using random forest modelling. *J Appl Ecol*. 57.

Vafeiadou, A. M., & Moens, T. Effects of temperature and interspecific competition on population fitness of free-living marine nematodes. *Ecological Indicators*, 120, 106958.

van der Heijden, L. et al. (2020). Quantitative food web modeling unravels the importance of the microphytobenthos-meiofauna pathway for a high trophic transfer by meiofauna in soft-bottom intertidal food webs. *Ecological Modelling*. 430. 109129.

Wang, F, Lin, D, Li, W, et al. (2020) Meiofauna promotes litter decomposition in stream ecosystems depending on leaf species. *Ecol Evol*. 00: 1– 14.

Warwick, R.M., Hourston, M., Tweedley, J.R., Potter, I.C., The Contrasting Ecology of Free-Living Nematodes in Macrotidal and Microtidal Estuaries. *Estuaries and Coasts*.

Wilden, B., O. Tasevska, and W. Traunspurger. 2020. A comparison of benthic meiofaunal communities in the oldest European lake. *Journal of Great Lakes Research*, in press

Yamasaki, H., Fujimoto, S., & Tanaka, H. Three new meiobenthic species from a submarine cave in Japan: *Echinoderes gama*, *E. kajiharai* and *E. uozumii* (Kinorhyncha: Cyclorhagida). *Journal of the Marine Biological Association of the United Kingdom*, 1-22.

Yen, N.T.M., Vanreusel, A., Lins, L., Thai, T.T., Bezerra, T.N., Quang, N.X., 2020. The Effect of a Dam Construction on Subtidal Nematode Communities in the Ba Lai Estuary, Vietnam. *Diversity-Basel* 12.

Zawierucha K., D. L. Porazinska, G. F. Ficetola, R. Ambrosini, G. Baccolo, J. Buda, J. L. Ceballos, et al. 2020. A hole in the nematosphere: tardigrades and rotifers dominate the cryoconite hole environment, whereas nematodes are missing. *Journal of Zoology*, in press.

Zeppilli D, Puce S (2020) First report of nematocysts fired at deep-sea hydrothermal vent nematodes. *Marine Biodiversity* 50: 1-2

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