# Fundamental questions in meiofauna—how small but ubiquitous animals can help to better understand Nature

Corresponding Author: Dr Alejandro Martinez

**This file contains all reviewer reports in order by version, followed by all author rebuttals in order by version.**

Version 0:

Reviewer comments:

Reviewer #1

(Remarks to the Author)
1. Brief summary of the manuscript

The manuscript (MS) provides a thorough account of which meiofauna research questions are of highest importance/priority based on the results of an internal and public survey. The research questions were divided into 8 topical panels with the 5 highest scoring questions per panel constituting the content of the Discussion section. Statistical analyses of various demographic attributes of the participants and characteristics of the questions were also conducted. It highlights the need for the continuation of research focused on meiofauna justified by the fact that this is a fascinating group of animals from which much knowledge can be gained spanning many different aspects of biology.

2. Overall impression of the work
The MS is overall well-written and tackles the (apparently) pressing issue of the lack of a next generation of researchers focused on meiofauna. It is clear that the authors have committed quite some time and energy to step out of their traditional datasets to tackle a survey-based analysis. As I have no experience dealing with such non-biological data, I am not able to comment on the correctness or thoroughness of the analyses.

3. Specific comments, with recommendations for addressing each comment
There is need for a thorough proof-read of the MS; there are syntax mistakes and inconsistent formatting throughout. The methods are not very explicitly explained: how many survey coordinators? How were they chosen? How were the panel members chosen? Was the survey also circulated via the International Association of Meiobenthologists? Why not?

I would advise to include a more detailed description of how a horizon scan methodology works. The data analysis and detailed methods are completely excluded from the main text. I suggest moving this text from supplementary to the main as now the main text goes from introduction to results without a detailed account of the methods. Please explicitly state the ANOVA model in the text. Relevant to Q40 see the following publications; DOI: 10.1098/rspb.2019.2666, 10.3389/fmars.2021.549834, 10.1111/mec.17201.

The interaction of fish and meiofauna in panel Panel VII (Biogeochemistry and applied topics) requires elaboration on the context as it feels misplaced here. Does this interaction influence biogeochemistry in some way?

Inconsistent font and formatting of references in supplementary. Headings of sections are inconsistent: 2.2.1 Systematics and taxonomy while 2.3. Panel II. Macroecology and Biogeography. Consistency of notation: L286: e.g. while L341: e.g.,. Use consistent font throughout the text. Please add "."Where needed, omitted a few times in the text.

Finally, what I feel is missing is a thorough overview of the challenges meiofauna research poses categorized by panel, along with the relevant solutions with specific examples and their references. These are crudely visualised in Figure 3 but as I see it, this is the core message/result of the MS and should be much more visible if the aim is to overcome the challenges and attract new meiofauna research. I suggest transforming this figure into a table (this should still include the nice images you have developed to represent each panel) and elaborating on the proposed solutions by also including relevant publications that have applied the suggested approach. In this way, the table will become a resource in and of itself. For example, looking at Figure 3 one could say that to overcome knowledge shortfalls we need technology, microscopy and AI,

which are all very general and vague. If this were transformed into a table you would include the exact specifics of these solutions (e.g.,
machine learning for taxon recognition (relevant ref.), new sequencing approaches (relevant ref.), etc). As it is represented now, Figure 3 is a good-looking scheme but contains very little of information you have invested much energy into collecting.You can find specific line-by-line comments below.

L132: Correct to :"Our knowledge OF Earths biodiversity"
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L787: It is not obvious to me that the survey results focus on more applied aspects of meiofaunal research. Can you please provide examples of this?
L800: Correct to "development of the meiofauna research"
L808: Correct formatting of references

Figure 1: What do the sizes in the caption refer to? Length, width? Please specify. Country missing for specimen E & Z (Galicia
is not a country).
Figure 3: Why are the panels listed in this order in plot A? Why not in numerical order? Please rephrase caption for D; delete "Yet, we hope that".
Table 2: Adjust caption. This not a list of fundamental questions in meiofaunal research including the top-50, it simply is the list of the top-50.
Table S3: Please use superscript where required. Correct to "P-value"instead of "p value".
Table S4: Adjust caption text. Delete "voter's declared expertise in evolutionary biology.". What is LR? Include in caption.
Figure S1 C: What can be discerned from this figure? Seems like everything goes everywhere in equal amounts. Can this be transformed into a table? I do not see the added value of this figure.

Reviewer #2

(Remarks to the Author)
I was asked to write a review of an article titled "Fundamental questions in meiofauna - how small but ubiquitous animals can help to better understand Nature". I would like to thank the editor for this opportunity. The authors(large international group of scientists), based on the horizon-scan methodology, create a list of the most important questions regarding the biology of meiofauna. I rate the performance of this task as very good, although an opinion from a person dealing with meiofauna would be useful, as I am a marine ecologist.Despite this, I recommend that the publication undergo a major revision, because I also have some comments.

The most serious criticism is the length of the article. The recommended word count for publication in the journal Communications Biology is 5,000 words. The authors definitely exceeded this value. On the other hand, the topic discussed is very complex. Nevertheless, in my opinion it is possible to combine the chapters: results and discussion, thus shortening

the text by at least a page.

I've included some minor comments below:

Line 144: Wouldn't it be better to express these values in millimeters?

Line 174: Is the word 'sentinel' appropriate? The word 'bioindicator' is rather used in publications.

Line 213-220: This paragraph should be moved to the methodology section.

Line 334: It would be interesting to mention about differences in sampling effort.

Line 366: It is also worth adding that even in the case of larger animals, databases do not include all information on the distribution of individual species or groups of animals, and only checking several databases combined with a search in the available literature gives the desired effect.

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Line 718: The same as for line 174.

Reviewer #3

(Remarks to the Author)
The manuscript is an interesting and timely study on the perception of the meiofauna-focussed research by those who are interested and involve in it. The study, as originally, conceived, follows the footsteps of similar exercises in other branches of science in which most important unresolved scientific questions have been identified using the horizon-scanning method (e.g. Seldon et al., 2014: Looking forward through the past: Identification of 50 priority research questions in palaeoecology. Journal of Ecology 102, 256-267; Antwis et al., 2017: Fifty important research questions in microbial ecology. FEMS Microbiology Ecology 93, fix044,1-10; Patiño et al., 2017: A roadmap for island biology: 50 fundamental questions after 50 years of the Theory of Island Biogeography. Journal of Biogeography 44, 963-983). The manuscript authors also attempt to highlight poorly studied aspects of meiofaunal research and, generally, knowledge gaps, admittedly abundant and wide. As such, the study described in the paper is very ambitious and it should raise awareness of numerous opportunities presented by meiofaunal research, including opportunities for future discoveries.
The authors have formulated numerous questions concerning the knowledge gaps and possible lines for future research in meiofauna research and circulated them among various respondents. The questions were grouped into 8 topical panels. The paper is a summary of the survey results in which the five questions deemed, by survey participants, most important in each panel are presented and discussed (but see below).
Unfortunately, the authors do not mention previous attempts to outline unresolved questions in meiofaunal research and/or to present promising and fertile areas of further research, such as those presented in Olav Giere's 2019 book (Giere, O., 2019. Perspectives in Meiobenthology. Reviews, Reflections and Conclusions. SpringerBriefs in Biology, Springer, Cham) or chapters in "New Horizons in Meiobenthos Research" edited by O. Giere and M. Schratzberger (Springer, 2023) (although the two editors of the book are listed as authors and referred to in one place in the manuscript). In my opinion, both books deserve being given justice in the manuscript.
When going through the Results section, the reader is not clear as to whether the paragraphs following the top five questions of each panel are meant to provide answers to those questions or to discuss their relevance/importance. It would be helpful if the authors explained, in the Methods section, their approach to each panel's top 5 questions.
The Discussion section is structured very strangely, with a single sub-section (why?) and again a series of questions the answers to which frequently repeat the content already covered in Results. Instead, the Discussion might, for instance, contain the authors' and survey respondents' view on the issues raised by Giere (2019) and authors of chapters in the 2023 book edited by Giere and Schratzberger.
As a general note, it has to be stated that the manuscript's linguistic side leaves A LOT to be desired. The text contains many spelling errors and typos, but more importantly, very numerous errors of grammar and style. A substantial improvement is here in order. I would urge the English-language native speakers from among the authors to review the manuscript thoroughly, correct the errors and bring the text to an appropriate linguistic level.
In conclusion, the paper deserves publication, but only after a major revision.

Version 1:

Reviewer comments:

Reviewer #1

(Remarks to the Author)
The manuscript has been greatly improved; it is clear that the authors have devoted a good deal of time to adjusting the

language and content. I hope the feeling is mutual. I have very few outstanding comments; otherwise the work is well-suited for publication once these have been addressed.

215: Use micron or millimetre notation instead as you do later on in L218.
L220: Use consistent quotition marks.
L222 : Not necessarily evolutionary biologists, just biologists.
L322: Microscopic, not minute.
L501: Correct to "patterns".
L600: Correct to "phylogenetisists"
L783-784: Correct to "disturbance" and "abundance"
L792: Correct to "life cycle"
L800: Correct to "disturbance"
L902: Correct to "abundance"

Reviewer #3

(Remarks to the Author)
The authors did a great job in revising and streamlining the manuscript, and I congratulate them. The manuscript, as it stands now, is more concise and reads much better than before.
For me, however, there are just a few points that I am not comfortable with and would still ask the authors to correct and/or explain:
Lines 190-191: "Responses were only marginally affected by the voters' areas of expertise, gender, and age, explaining less than 11% of the total variance" – this sentence requires correction, as it is not known what exactly explained less than 11% of the total variance
Lines 196-198: "We position the 5 highest-scoring questions per panel, within future meiofaunal research: - please remove the comma between "panel" and "within"
Line 207: "the assignment of correct species hypotheses to DNA sequences"- while I don't know what "correct species hypotheses" are, I would suggest rephrasing, e.g. "the correct assignment of hypothetical species to DNA sequences"
Lines 268-269: "Although comprehensive databases do exist for certain groups (e.g., acoels104, platyhelminths105, tardigrades106,107, gastrotrichs108), geographical areas20,109–114 and habitats13,110." – this sentence is either unfinished, or is a part of the previous sentence. It shouldn't be left dangling like this
Lines 170-271: "global datasets remain unavailable for nematodes, copepods, and foraminifera, despite their abundance in sediments worldwide74." – pardon my saying so, but no dataset is ever available for nematodes & co.; I would suggest rephrasing, e.g., global datasets have few available records of nematodes….. etc.
Lines 277-280: "Because the entire meiofaunal organism and its internal contents can be studied simultaneously with high resolution microscopy, the case can be made that they are particularly well-suited models to spearhead this research." – this sentence requires rephrasing as it is not known what ("they"?) is a particularly suitable model (the entire meiofaunal organism?) or are particularly suitable models (internal contents of the said organism?)
Lines 398-399: "in so far as stablishing those links require to develop understanding" – this phrase definitely needs to be corrected as it is not understandable
Line 435: "timely field" – please find another adjective for 'field', as 'field' cannot, in and of itself, be 'timely'
Lines 446-447: "influence in the cycling of other macronutrients: - please change to "influence on the cycling of other macronutrients"
Lines 498-499: "toughness41 bdelloid rotifers" – please insert a comma between "toughness" and "bdelloid"
Line 545: "Implementing these methods though, requires" – please insert a comma between "methods" and "though"
Line 589: ", Andrew Klein and as members" – this part of the acknowledgements is not understandable; most likely you meant to say "to members", but I'm not sure.

Finally, what requires clarification is the subject of the manuscript. The overall impression is that the authors focus on the marine (or more generally aquatic) meiofauna; and yet, they make references to Caenorhabditis elegans (Lines 301-302; 313-314; 477-478), a soil nematode that, admittedly, is a well-known biological model; and there are some references to soil meiofauna (Lines 413-440; 479-480). As this may introduce some confusion, the authors might like to clarify why they refer to C. elegans and to soil meiofauna (incidentally, in terrestrial studies, the soil meiofauna is referred to as the mesofauna)

*Responses to reviewers*

**Reviewer #1**

1. Brief summary of the manuscript

The manuscript (MS) provides a thorough account of which meiofauna research questions are of highest importance/priority based on the results of an internal and public survey. The research questions were divided into 8 topical panels with the 5 highest scoring questions per panel constituting the content of the Discussion section. Statistical analyses of various demographic attributes of the participants and characteristics of the questions were also conducted. It highlights the need for the continuation of research focused on meiofauna justified by the fact that this is a fascinating group of animals from which much knowledge can be gained spanning many different aspects of biology.

*Answer: Thanks for the constructive comments*

2. Overall impression of the work

The MS is overall well-written and tackles the (apparently) pressing issue of the lack of a next generation of researchers focused on meiofauna. It is clear that the authors have committed quite some time and energy to step out of their traditional datasets to tackle a survey-based analysis. As I have no experience dealing with such non-biological data, I am not able to comment on the correctness or thoroughness of the analyses.

*Answer: Thanks for the positive impression*

3. Specific comments, with recommendations for addressing each comment

There is need for a thorough proof-read of the MS; there are syntax mistakes and inconsistent formatting throughout.

*Answer: We have now reviewed the entire manuscript for consistency and errors.*

The methods are not very explicitly explained: how many survey coordinators? How were they chosen? How were the panel members chosen? Was the survey also circulated via the International Association of Meiobenthologists? Why not?

*Answer: We have now addressed all questions in the newly add methods section at the end of the manuscript*

I would advise to include a more detailed description of how a horizon scan methodology works. The data analysis and detailed methods are completely excluded from the main text. I suggest moving this text from supplementary to the main as now the main text goes from introduction to results without a detailed account of the methods.

*Answer: This has now been included to the main text*

Please explicitly state the ANOVA model in the text.

*Answer: This has now been included to the supplementary material. We didn't run any ANOVAs but we used the function "Anova" in the R package "car" to summarize our results. This has been further clarified*

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Relevant to Q40 see the following publications; DOI: 10.1098/rspb.2019.2666, 10.3389/fmars.2021.549834, 10.1111/mec.17201.
***Answer: Thanks, cited.***

The interaction of fish and meiofauna in Panel VII (Biogeochemistry and applied topics) requires elaboration on the context as it feels misplaced here. Does this interaction influence biogeochemistry in some way?
***Answer: This section has been rephrased now as a consequence of shortening the text.***

Inconsistent font and formatting of references in supplementary. Headings of sections are inconsistent: 2.2.1 Systematics and taxonomy while 2.3. Panel II. Macroecology and Biogeography. Consistency of notation: L286: e.g. while L341: e.g., Use consistent font throughout the text. Please add ".".Where needed, omitted a few times in the text.
***Answer: Reviewed***

Finally, what I feel is missing is a thorough overview of the challenges meiofauna research poses categorized by panel, along with the relevant solutions with specific examples and their references. These are crudely visualized in Figure 3 but as I see it, this is the core message/result of the MS and should be much more visible if the aim is to overcome the challenges and attract new meiofauna research. I suggest transforming this figure into a table (this should still include the nice images you have developed to represent each panel) and elaborating on the proposed solutions by also including relevant publications that have applied the suggested approach. In this way, the table will become a resource in and of itself. For example, looking at Figure 3 one could say that to overcome knowledge shortfalls we need technology, microscopy and AI, which are all very general and vague. If this were transformed into a table you would include the exact specifics of these solutions (e.g., machine learning for taxon recognition (relevant ref.), new sequencing approaches (relevant ref.), etc.). As it is represented now, Figure 3 is a good-looking scheme but contains very little of information you have invested much energy into collecting. You can find specific line-by-line comments below.
***Answer: We have now added this Table.***

L132: Correct to :"Our knowledge OF Earths biodiversity"
***Answer: Done.***

L166-168: Please explain how meiofauna has fostered discussion between life & earth sciences; this is not evident from the text.
***Answer: The text is now modified and doesn't include this statement. The change is unnecessary.***

L175: Please specify what is meant by "fundamental service provider"?
***Answer: Rephrased to "providers of fundamental ecosystem services"***

L188: Correct to "left AN extensive fossil record".
***Answer: Corrected.***

L219: Remove spaces

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*Answer: Corrected.*

L235: Correct to "they have NO or very little experience"
*Answer: Rephrased.*

L251: Correct to "decided to DISCUSS"
*Answer: Rephrased.*

L330: Correct to "model SYSTEM"
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L345: Correct to "alleviated THE problem only partially"
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L346: What is mean by "punctual samples"?
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L549: Correct to "recover FROM disturbance"
*Answer: Rephrased.*

L561: Correct to "LEARN"
*Answer: Rephrased.*

L577: Correct to "many meiofaunal COMMUNITIES"
*Answer: Rephrased.*

L578: Correct to "ASSEMBLING meaningful data"
*Answer: Rephrased.*

L599: Delete "for"
*Answer: Rephrased.*

L603: Delete "well"
*Answer: Rephrased.*

L643: Replace "despite" with "even though"

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*Answer: Rephrased.*

L659: Replace with "intertidal and shelf DEPTHS".
*Answer: Rephrased.*

L660: Correct to "lack AN understanding"
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L670: Correct to "we KNOW that meiofauna COMMUNITIES"
*Answer: Rephrased.*

L704: Please use another word than "prettiness".
*Answer: Changed.*

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*Answer: Corrected.*

L720: Correct formatting of e.g.
*Answer: Corrected thorough the text.*

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*Answer: The text no longer includes this expression.*

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L800: Correct to "development of the meiofauna research"
*Answer: Rephrased.*

L808: Correct formatting of references
*Answer: Checked using Zotero.*

Figure 1: What do the sizes in the caption refer to? Length, width? Please specify. Country missing for specimen E & Z (Galicia is not a country).
*Answer: The caption has been reviewed now.*

Figure 3: Why are the panels listed in this order in plot A? Why not in numerical order? Please rephrase caption for D; delete "Yet, we hope that".
*Answer: The caption has been reviewed now, and the arrangement of the panels clarified.*

Table 2: Adjust caption. This not a list of fundamental questions in meiofaunal research including the top-50, it simply is the list of the top-50.
*Answer: Changed*

Table S3: Please use superscript where required. Correct to "P-value" instead of "p value".
*Answer: Corrected*

Table S4: Adjust caption text. Delete "voter's declared expertise in evolutionary biology.". What is LR? Include in caption.
*Answer: Corrected*

Figure S1 C: What can be discerned from this figure? Seems like everything goes everywhere in equal amounts. Can this be transformed into a table? I do not see the added value of this figure.
*Answer: The point of the figure is to show that there is no effect of the covariance on the scores. We have clarified this in the caption.*


**Reviewer #2**

I was asked to write a review of an article titled "Fundamental questions in meiofauna - how small but ubiquitous animals can help to better understand Nature". I would like to thank the editor for this opportunity. The authors(large international group of scientists), based on the horizon-scan methodology, create a list of the most important questions regarding the biology of meiofauna. I rate the performance of this task as very good, although an opinion from a person dealing with meiofauna would be useful, as I am a marine ecologist. Despite this, I recommend that the publication undergo a major revision, because I also have some comments.
*Answer: Thanks for the constructive comments*

The most serious criticism is the length of the article. The recommended word count for publication in the journal Communications Biology is 5,000 words. The authors definitely exceeded this value.

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On the other hand, the topic discussed is very complex. Nevertheless, in my opinion it is possible to combine the chapters: results and discussion, thus shortening the text by at least a page.
*Answer: We have now shortened the text to 5000 words.*

I've included some minor comments below:
Line 144: Wouldn't it be better to express these values in millimeters?
*Answer: We prefer to keep the values in meters, since we are describing meiofauna from a human perspective.*

Line 174: Is the word 'sentinel' appropriate? The word 'bioindicator' is rather used in publications.
*Answer: Changed.*

Line 213-220: This paragraph should be moved to the methodology section.
*Answer: The methods have been now restructured*

Line 334: It would be interesting to mention about differences in sampling effort.
*Answer: This section has now been modified in order to shorten the text*

Line 366: It is also worth adding that even in the case of larger animals, databases do not include all information on the distribution of individual species or groups of animals, and only checking several databases combined with a search in the available literature gives the desired effect.
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*Answer: Corrected*

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**Reviewer #3**
The manuscript is an interesting and timely study on the perception of the meiofauna-focussed research by those who are interested and involve in it. The study, as originally, conceived, follows the footsteps of similar exercises in other branches of science in which most important unresolved scientific questions have been identified using the horizon-scanning method (e.g. Seldon et al., 2014: Looking forward through the past: Identification of 50 priority research questions in paleoecology. Journal of Ecology 102, 256-267; Antwis et al., 2017: Fifty important research questions in microbial ecology. FEMS Microbiology Ecology 93, fix044,1-10; Patiño et al., 2017: A roadmap for island biology: 50 fundamental questions after 50 years of the Theory of Island Biogeography. Journal of Biogeography 44, 963-983). The manuscript authors also attempt to highlight poorly studied aspects of meiofaunal research and, generally, knowledge gaps, admittedly abundant and wide. As such, the study described in the paper is very ambitious and it should raise

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awareness of numerous opportunities presented by meiofaunal research, including opportunities for future discoveries.

*Answer: Thanks for the constructive comments*

The authors have formulated numerous questions concerning the knowledge gaps and possible lines for future research in meiofauna research and circulated them among various respondents. The questions were grouped into 8 topical panels. The paper is a summary of the survey results in which the five questions deemed, by survey participants, most important in each panel are presented and discussed (but see below).

Unfortunately, the authors do not mention previous attempts to outline unresolved questions in meiofaunal research and/or to present promising and fertile areas of further research, such as those presented in Olav Giere's 2019 book (Giere, O., 2019. Perspectives in Meiobenthology. Reviews, Reflections and Conclusions. SpringerBriefs in Biology, Springer, Cham) or chapters in "New Horizons in Meiobenthos Research" edited by O. Giere and M. Schratzberger (Springer, 2023) (although the two editors of the book are listed as authors and referred to in one place in the manuscript). In my opinion, both books deserve being given justice in the manuscript.

When going through the Results section, the reader is not clear as to whether the paragraphs following the top five questions of each panel are meant to provide answers to those questions or to discuss their relevance/importance. It would be helpful if the authors explained, in the Methods section, their approach to each panel's top 5 questions.

*Answer: This is now clarified.*

The Discussion section is structured very strangely, with a single sub-section (why?) and again a series of questions the answers to which frequently repeat the content already covered in Results. Instead, the Discussion might, for instance, contain the authors' and survey respondents' view on the issues raised by Giere (2019) and authors of chapters in the 2023 book edited by Giere and Schratzberger.

*Answer: We have now restructured the discussion in to avoid repetitions. We have included a number of references to Giere (2019) and Giere and Schratzberger (2023) thorough the text.*

.
As a general note, it has to be stated that the manuscript's linguistic side leaves A LOT to be desired. The text contains many spelling errors and typos, but more importantly, very numerous errors of grammar and style. A substantial improvement is here in order. I would urge the English-language native speakers from among the authors to review the manuscript thoroughly, correct the errors and bring the text to an appropriate linguistic level.

*Answer: The text has been extensively reviewed and shortened.*

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*Responses to reviewers*

**Reviewer #1**
The manuscript has been greatly improved; it is clear that the authors have devoted a good deal of time to adjusting the language and content. I hope the feeling is mutual. I have very few outstanding comments; otherwise the work is well-suited for publication once these have been addressed.
*Answer: It is mutual, thank you!*

215: Use micron or millimetre notation instead as you do later on in L218.
*Answer: Changed. Thanks.*

L220: Use consistent quotition marks.
*Answer: Corrected thorough the text. Thanks*

L222 : Not necessarily evolutionary biologists, just biologists.
*Answer: We changed by "organismal biologist" since we want to emphasize the difference between ecologist who perform analyses at a community level and other scientist who focus on single organisms.*

L322: Microscopic, not minute.
*Answer: Corrected, thanks.*

L501: Correct to "patterns".
*Answer: Corrected, thanks.*

L600: Correct to "phylogenetisists"
*Answer: Corrected, thanks.*

L783-784: Correct to "disturbance" and "abundance"
*Answer: Corrected, thanks.*

L792: Correct to "life cycle"
*Answer: Done, thanks.*

L800: Correct to "disturbance"
*Answer: Done, thanks.*

L902: Correct to "abundance"
*Answer: Corrected, thanks.*

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**Reviewer #3**

The authors did a great job in revising and streamlining the manuscript, and I congratulate them. The manuscript, as it stands now, is more concise and reads much better than before.
*Answer: Thank you!*

For me, however, there are just a few points that I am not comfortable with and would still ask the authors to correct and/or explain:

Lines 190-191: "Responses were only marginally affected by the voters' areas of expertise, gender, and age, explaining less than 11% of the total variance" – this sentence requires correction, as it is not known what exactly explained less than 11% of the total variance
*Answer: Changed thanks.*

Lines 196-198: "We position the 5 highest-scoring questions per panel, within future meiofaunal research: - please remove the comma between "panel" and "within"
*Answer: Changed, thanks.*

Line 207: "the assignment of correct species hypotheses to DNA sequences"- while I don't know what "correct species hypotheses" are, I would suggest rephrasing, e.g. "the correct assignment of hypothetical species to DNA sequences"
*Answer: Changed, thanks.*

Lines 268-269: "Although comprehensive databases do exist for certain groups (e.g., acoels104, platyhelminths105, tardigrades106,107, gastrotrichs108), geographical areas20,109–114 and habitats13,110." – this sentence is either unfinished, or is a part of the previous sentence. It shouldn't be left dangling like this
*Answer: We have now completed the sentence. Thanks.*

Lines 170-271: "global datasets remain unavailable for nematodes, copepods, and foraminifera, despite their abundance in sediments worldwide74." – pardon my saying so, but no dataset is ever available for nematodes & co.; I would suggest rephrasing, e.g., global datasets have few available records of nematodes….. etc.
*Answer: Changed, thanks.*

Lines 277-280: "Because the entire meiofaunal organism and its internal contents can be studied simultaneously with high resolution microscopy, the case can be made that they are particularly well-suited models to spearhead this research." – this sentence requires rephrasing as it is not known what ("they"?) is a particularly suitable model (the entire meiofaunal organism?) or are particularly suitable models (internal contents of the said organism?)
*Answer: We have reworked this sentence for clarity and hope it is now more understandable.*

Lines 398-399: "in so far as stablishing those links require to develop understanding" – this phrase definitely needs to be corrected as it is not understandable
*Answer: We have now rephrased this sentence for improved clarity.*
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Line 435: "timely field" – please find another adjective for 'field', as 'field' cannot, in and of itself, be 'timely'
*Answer: Indeed, thank you! We have replaced 'timely' with 'relevant'—while not exactly the same, we believe it conveys the intended idea*

Lines 446-447: "influence in the cycling of other macronutrients: - please change to "influence on the cycling of other macronutrients"
*Answer: Done, thanks*

Lines 498-499: "toughness41 bdelloid rotifers" – please insert a comma between "toughness" and "bdelloid"
*Answer: Done, thanks*

Line 545: "Implementing these methods though, requires" – please insert a comma between "methods" and "though"
*Answer: Done, thanks*

Line 589: ", Andrew Klein and as members" – this part of the acknowledgements is not understandable; most likely you meant to say "to members", but I'm not sure.
*Answer: This reference was a remnant from a previous version of the manuscript, where we included a plate illustrating various societal aspects of meiofauna. Since that plate has been removed, we have also deleted the corresponding acknowledgments. Thank you for pointing this out!*

Finally, what requires clarification is the subject of the manuscript. The overall impression is that the authors focus on the marine (or more generally aquatic) meiofauna; and yet, they make references to Caenorhabditis elegans (Lines 301-302; 313-314; 477-478), a soil nematode that, admittedly, is a well-known biological model; and there are some references to soil meiofauna (Lines 413-440; 479-480). As this may introduce some confusion, the authors might like to clarify why they refer to C. elegans and to soil meiofauna (incidentally, in terrestrial studies, the soil meiofauna is referred to as the mesofauna)
*Answer: Thank you for bringing up this important point. We have addressed this in the introduction (Lines 160–164) to provide further clarification. Additionally, we have explicitly stated that* **C. elegans** *is a soil nematode (Line 309; Lines 483–487) to avoid confusion.*

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