Compositional novelty of plant, fungal and bacterial communities across urban habitats

# Editor

I have completed my evaluation of your manuscript. The reviewers recommend reconsideration of your manuscript following minor revision and modification. I invite you to resubmit your manuscript after addressing the comments below. Please resubmit your revised manuscript by Sep 12, 2025. Please address R1’s comment about the suitability of using a PCA rather than PCoA, in addition to the other comments by both reviewers. When revising your manuscript, please consider all issues mentioned in the reviewers’ comments carefully: please outline every change made in response to their comments and provide suitable rebuttals for any comments not addressed. Please note that your revised submission may need to be re-reviewed.

Thank you for your positive decision on our manuscript. We have addressed all minor changes, including testing the alternative of using PCoA for the ordination. Please find below our detailed response to each comment. We also uploaded a track-changes version of the manuscript.

# Reviewer 1

I am uncertain whether PCA with Hellinger transformation is appropriate for community data, particularly presence/absence data. Principal Coordinates Analysis (PCoA) may be more suitable in this context, as it is an eigenanalysis technique (similar to PCA) and also a distance-based ordination method (like NMDS).

As suggested, we have repeated the analysis using PCoA. The alternative method did not affect the final output of the analyses in a significant way. Therefore, we have decided to keep our original choice of NMDS, which to our knowledge is the reference method in the field. We have changed the methods section to indicate that we tried PCoA in addition to PCA and NMDS.

Regarding lines 254-255, although the author mentions referencing each axis by its most explanatory variable (e.g., PC1 = Pb, PC2 = organic matter (OM), PC3 = Mg), this can still lead to confusion for readers, as seen in lines 280-283. It would be clearer to revise this statement to: “Environmental fitting of the soil property axes PC1, PC2, and PC3 onto the ordination indicated that only PC1 (mainly explained by Pb) had a significant correlation (R² = 0.29, p = 0.008) with the fungal community composition.”

We have revised the sentence as suggested, and also revised similar sentences throughout the text.

In the Methods section, it is stated that “When using NMDS for calculating novelty, we fitted the analysis to 4 dimensions”, while “when using NMDS for assessing variation in taxonomic composition, we fitted the analysis to 2 dimensions”. However, Line 335-337 show novelty index calculated from the ordinations in Fig. 3D-F that based on two dimensions NMDS.

It is as explained in the Methods: we used 4 dimensions to calculate the novelty index, and 2 dimensions for biplot visualization of the variation in taxonomic composition. We agree with the reviewer that the sentence “(calculated from the ordinations in **Fig. 3D-F**)” in lines 335-337 could cause confusion. Therefore, we have removed this sentence.

Lastly, it would be beneficial to include detailed results of the Linear Mixed Models (LMMs) in the Supplementary Material.

We have created a new Supplementary material 3 with full details of the LMM.

# Reviewer 2

I appreciate the care the authors have taken to thoroughly address my comments, and specifically, clarifying how they define the concept of natural ness in this paper. A couple of edits would improve the grammar of the paper: Line 207-210 Replace “less” with “fewer” so the sentence reads: “Choosing NMDS or PCA did not affect in any way the final output and interpretation of the analyses, and therefore we decided to use NMDS for the final presentation of results, since it makes fewer assumptions about data and is therefore a more flexible technique that can be applied to a wider variety of datasets.” Line 232 add “the to read:”… the forest soil…” Line 254 Replace “like” with “as” Line 260-261 Revise to read, “For simplicity, we will refer to each axis by the name of the explanatory variable most strongly associated with that axis…” Once these few edits are made, I recommend acceptance of the article, and have no further comments or edits to suggest.

Once again, we would like to thank reviewer 2 for his/her constructive comments on our manuscript, and for the suggestions to improve the writing. We have implemented all suggestions.