Biogeosciences
Discussions

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Interactive comment on "Nematode diversity, abundance and community structure 50 years after the formation of the volcanic island of Surtsey" by K. Ilieva-Makulec et al.

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The authors thank reviewer 3 for many constructive and very helpful comments and suggestions on the manuscript. We have now made A MAJOR REVISION on the final version paper to meet those comments/suggestions (see a list with all comments and changes made found here below).

GENERAL COMMENTS OF REV 3: The MS reports the dynamics in abundance and diversity of nematode communities 50 years after the formation of the volcanic island of Surtsey. I believe that the study was important in revealing the succession of biota, particularly nematodes during the formation and development of soil. The importance

of the study becomes clearer as new nematode genera were found. AUTHOR'S RESPONSES/CHANGES MADE: No changes/responses needed

GENERAL COMMENTS OF REV 3: However, the MS need major improvements in the introduction and M&M sections. AUTHOR'S RESPONSES/CHANGES MADE: This was done (see later)

GENERAL COMMENTS OF REV 3: The introduction did not clearly explain why nematodes? Why not other soil fauna or microbes? AUTHOR'S RESPONSES/CHANGES MADE: Authors added some sentences to the Introduction to better explain this choose

GENERAL COMMENTS OF REV 3: In the abstract as well, the research gap and how this study contributes to ïňĄll the gap was missing. AUTHOR'S RESPONSES/CHANGES MADE: The Abstract was rewritten (see also later comments)

GENERAL COMMENTS OF REV 3: The M&M part is difficult to follow probably because some important procedures such as soil sampling are not well described, and some results are discussed there. AUTHOR'S RESPONSES/CHANGES MADE: The M&M chapter was changed according to these and later Specific comments of Rev 3 (see later)

GENERAL COMMENTS OF REV 3: I believe the statistical analysis (particularly anova) was not done properly. AUTHOR'S RESPONSES/CHANGES MADE: We have redone the statistical analysis – always using the same statistical method for all parameters. See later response to Specific comments of Rev 3

GENERAL COMMENTS OF REV 3: The discussion part appears well explained and critically discussed the main ïňĄndings except that some parts are missing (e.g. no discussion on plant parasitic nematodes) and that others appear not relevant (e.g. comparison to Krakatau). AUTHOR'S RESPONSES/CHANGES MADE: We added a short paragraph on the parasitic nematodes (see later). We also removed the paragraph on the comparison to Krakatau

SPECIFIC COMMENTS OF REV 3: P14240: L8 indicate why the study was important and a brief statement how you did the study L8-18 merely present the results and the abstract ended with some results. I would rather try to give brief interpretation and conclusion. AUTHOR'S RESPONSES/CHANGES MADE: The Abstract was rewritten in accordance to this

SPECIFIC COMMENTS OF REV 3: P14242: L11 Before mentioning the objectives, the novelty of the study should be made clear. AUTHOR'S RESPONSES/CHANGES MADE: Authors rewrote parts of the Introduction and highlighted better the novelties of the study

SPECIFIC COMMENTS OF REV 3: P14243: L15-25 the nematode sampling lacks details how it was done. Did the authors collect composite sample? If so, how many augerings per sample? What is the size of the permanent plots? To me, two cores per plot is not really representative. Moreover, are the two depths (0-10 and 10-20) selected arbitrarily? Or was there any reason to do so. In order to follow up the evolution of nematode abundance and diversity over time, sampling should be basically done according to previous similar works such as by Frederiksen (2001). AUTHOR'S RESPONSES/CHANGES MADE: Most of the requested information about the sampling was actually found further back in the M&M. The authors did, however, change the M&M so this info came in the more correct order and additional information was given about the site conditions. The deeper samples were required now e.g. because the vegetation communities had changed since last survey. Also, the 20 cm samples are more common – and are therefore preferred when comparing Surtsey with data with other studies. If this deeper coring was indeed needed was one of the research questions; this was better explained in the Intro and M&M now.

SPECIFIC COMMENTS OF REV 3: P14244: L14-20 these information should be mentioned in the discussion part. See also the previous page: L1-4. AUTHOR'S RESPONSES/CHANGES MADE: This has now been moved to the Discussion part

SPECIFIC COMMENTS OF REV 3: L21-25 Which ANOVA? One way or two way? Given two factors ('plot type' and soil layer), two way anova should be applied. Did you test the assumptions (homogeneity of variances and normality)? Why did you use non parametric test to test mean differences?, There is no need to do post hoc test unless there is significant interaction between the factors, because of the presence of only two levels in each factor. This was not clear enough in the previous version of M&M. AUTHOR'S RESPONSES/CHANGES MADE: We originally used ANOVA and pairwise ad hoc tests for transformed abundance data (where they then did the meet the tested assumptions of normality and equal variances), but Kruskal-Wallis test + Mann-Whitney U tests to test for differences in all other parameters (because lack of normality, occurrence of zeros, etc.). We now changed the statistical analysis, so we use the same statistical method for all data; the non-parametric Kruskal-Wallis test instead of ANOVA and the Mann-Whitney U tests instead of pairwise Tukey-test comparisons.

SPECIFIC COMMENTS OF REV 3: L15: Did you test this with anova? If so mention this in M&M L20-25 use two digits (e.g. 0.77). Beware that the variation explained by the two axis is low (e.g. 22.9%) thus the conclusions based on this data should be done carefully. AUTHOR'S RESPONSES/CHANGES MADE: The CCA eigenvalues were tested with A Monte Carlo permutation test (it is stated in the M&M). Decimals have been reduced to two. The reviewer is correct that the 22.9% explaining power of the 1st axis is not very high; but if we take into consideration the degree of similarity in generic composition between the two habitats (the index of similarity about 70%), it should be enough to draw general conclusions. More important and informative is the variation explained by the two axes together, for species- environmental relation, but there the power is higher.

SPECIFIC COMMENTS OF REV 3: P14250 L1-3 This sentence is not clear L10-11 here and throughout the discussion, it would be easier to follow for the reader, if you refer the table or figure which are basis for the discussion. See also p14251 L1.

AUTHOR'S RESPONSES/CHANGES MADE: After checking a fair number of articles in BG without finding examples where Figures or Tables from Results are cited in the Discussion, we decided not to do so; to avoid violating the convention of the journal. We, however, cite Fig. 5 (summary figure highlighting published results) and Table 1 (summary table with published results) in the Discussion.

SPECIFIC COMMENTS OF REV 3: P14251 L26-27 Explain more how the results on bacteria support your ïňĄnding. AUTHOR'S RESPONSES/CHANGES MADE: We elaborated this a little more and added info on published values of bacterial counts at S1 and S2 into Table 1 in the M&M.

SPECIFIC COMMENTS OF REV 3: P14253 L6-10 An important index, PPI is missing. In ïňĄgure 3 as well, the plant feeders are more than three fold in relative abundance in the lower layer than the top. Because the plant diversity and biomass is different in and outside the seagull, plant parasitic nematodes are worthy of further discussions. AUTHOR'S RESPONSES/CHANGES MADE: We added this Index as requested and added a paragraph on this issue in the Discussion.