

## ***Interactive comment on “Understory vegetation relationships with soil element contents in a northern boreal forest ecosystem near a phosphate massif” by Laura Matkala et al.***

### **Anonymous Referee #1**

Received and published: 15 August 2019

Soil nutrients and stoichiometry is an important topic in forest ecosystems. The manuscript studied the relationships between understory vegetation species abundance in a boreal forest and soil /leaf nutrients. However, there are several major concerns about the statistical methods, the data presented in the figures and tables and shortage of basic information regarding the study site. Additionally, there are also grammatical issues and inappropriate descriptions of the results. The discussion cannot fully support their hypotheses and results.

Statistical analysis: One-way ANOVA were chosen in the manuscript, it implies that the plot was the only factor. However, tree species plays an important role in soil nutrients

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as well, thus tree species should be considered as a confounding factor. Due to high spatial heterogeneity in soil samples, when you determine the difference in different plots, the block effects also should be considered in the statistical analysis;

2) Considering the relationships between species composition and soil nutrients, besides the species, the authors also should treat age classes as the second factor. For the same reason, soil layer also should be considered in the analysis.

shortage of basic information: the authors provided the basic tree and other species composition in the Table 3. The tree age and biomass also affects the soil nutrients. The author should provide the mean basal area, leaf area index and mean DBH. These basic information would be useful to estimate the effects of tree species on the understory species composition and on soil nutrients. As to the weather information, the min and max temperature should also be provided in Table 1.

Problems with presentation the data in figures and tables. 1) Authors should add a new table/Figure to show the mean soil nutrients in the birch, scots pine and spruce plots in each layer and make stat analysis.

2) In Fig 5, there were no adj-R2 value to show which factor possessed the most weight. At the same time, these correlations could be better presented in Table not in fig.

3)the confusing plot numbers in table A2/A3 /A4 and Table B2. In the Table A, the plot number was in alphabetical order while the Arabic number was adopted in table B2.

4) we cannot find the stats evidence support the data. For example: “Foliar N:P ratio did not show any differences in either species between plots.....green leaves compared to other species.” (3.2)

Writing issues:

1) In the results section, the first sentence in each sub section provides meaningless information for the data and these sentences can be deleted. For example: “ The average contents. .... In fig 4” (3.1 soil element contents). The same was also found

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in each paragraph.

2) There were some grammatical issues in each paragraph. There was no deep discussion to support the hypotheses and results.

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Interactive comment on Biogeosciences Discuss., <https://doi.org/10.5194/bg-2019-110>, 2019.

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