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Jihočeská univerzita
v Českých Budějovicích
University of South Bohemia
in České Budějovice

OPPONENT'S REVIEW ON BACHELOR/DIPLOMA* THESIS

Name of the student:

Thesis title:

Supervisor:

Referee:

Referee's affiliation:

	Point scale ¹	Points
(1) FORMAL REQUIREMENTS		
Extent of the thesis (for bachelor theses min. 18 pages, for masters theses min. 25 pages), balanced length of the thesis parts (recommended length of the theoretical part is max. 1/3 of the total length), logical structure of the thesis	0-3	2
Quality of the theoretical part (review) (number and relevancy of the references, recency of the references)	0-3	2
Accuracy in citing of the references (presence of uncited sources, uniform style of the references, use of correct journal titles and abbreviations)	0-3	2
Graphic layout of the text and of the figures/tables	0-3	1
Quality of the annotation	0-3	2
Language and stylistics, complying with the valid terminology	0-3	2
Accuracy and completeness of figures/tables legends (clarity without reading the rest of the text, explanation of the symbols and labeling, indication of the units)	0-3	1
Formal requirements – points in total		12
(2) PRACTICAL REQUIREMENTS		
Clarity and fulfillment of the aims	0-3	2
Ability to understand the results, their interpretation, and clarity of the results, discussion, and conclusions	0-3	2
Discussion quality – interpretation of the results and their discussion with the literature (absence of discussion with the literature is not acceptable)	0-3	1
Logic in the course of the experimental work	0-3	2
Completeness of the description of the used techniques	0-3	2

* Choose one

¹ Mark as: 0-unsatisfactory, 1-satisfactory, 2-average, 3-excellent.

Experimental difficulty of the thesis, independence in experimental work	0-3	2
Quality of experimental data presentation	0-3	1
The use of up-to-date techniques	0-3	3
Contribution of the thesis to the knowledge in the field and possibility to publish the results (after eventual supplementary experiments)	0-3	2
Practical requirements – points in total		17
POINTS IN TOTAL (MAX/AWARDED)	48	29 ²

Comments of the reviewer on the student and the thesis:

See my separate review

Suggestions and questions, to which the student has to answer during the defense.

Mistakes, which the students should avoid in the future:

See my separate review

Conclusion:

In conclusion, I Keith Edwards
r e c o m m e n d

the thesis for the defense and I suggest the grade 2/3 .³ I reserve the right to change my mind after the defense.

In ČB date 16.01.2023

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signature

² Enter the number of points awarded.

³ You can suggest a grade, which can be modified during the defense based on the presentation. However, if the reviewer is not present at the defense, the grade will not be counted. Grades: excellent (1). Very good (2), Good (3), Unsatisfactory/failed (4).

Review of BS Thesis Eliška Daňková

Keith Edwards

The thesis describes the work done by Eliška as part of her bachelor studies, which was to compare two methods of DNA extraction, determine a possible ammonia-oxidizing enrichment method and to identify the composition and abundance of potential nitrifying bacteria in samples from two peatlands. She met the aims of her study, which are described well in the abstract. The thesis follows the required format and is within the required limits in terms of length.

The Introduction provides a short description about nitrification, the microbes involved in that process as well as the usual methods for determining these. There is then a description of peatlands. All nice but a bit underwhelming. The recommendation is that the introduction is supposed to comprise about a third of the total thesis, but Eliška falls a bit short. I would have expected a bit more about nitrification in general and some short summary of past studies investigating nitrification in general if not in peatlands. It is stated that ammonia availability is limited at low pH, but it is not stated at which pH that limitation may begin. Finally, there should have been a citation in the first paragraph of section 1.2. The description of the common methods seems quite general and only near the end of paragraph two does it focus on nitrifiers.

The aims seem okay.

The Methods section is, in my opinion, the best of all sections in the thesis. Eliška explains clearly how the samples were collected, the analyses conducted and how the data were analyzed. There are instances where Eliška repeats herself (beginning of section 3.2.1 for example) and she sometimes is leery of using articles. More concerning is that she does not seem to know that data are plural (sections 3.4 and 5), because she repeatedly states that data was!

Contrary to the methods, the Results section, while providing some of the results, is the weakest in the thesis. The figures need to be edited and improved. The legend is not needed in Figures 4.1 or 4.4, as that information is already given in the body of the graphs. Also, it would seem to me to be more logical to have the graphs for the upper layers above those for the lower layers. The depth of the upper and lower layers should be given in the caption for the respective figures. The p-values have too many significant numbers; three should be the maximum. More importantly is that there seems to be much more information in the figures that should have been mentioned in the text. For example, the means and standard deviations for the two extraction methods should have been provided for each site and depth layer, as well as the p value (which should be $p < 0.001$). In addition, there is little explanation given about the NMDS results. What factors may have caused the separation between the two sites on axis 1 and between the two layers in the spruce site along axis 2?

Even more striking is the confusion at the start of section 4.4. Figure 4.5 is not cited at all. Also, the information for which figure 4.4 is being cited seems more suitable for figure 4.5. I would even contend that figure 4.4 is not even needed. Eliška then lists the most abundant phyla, then gives a citation on which this was based. The results section is where you give the results of your work ONLY!! There should be no need for any citation. Such a statement is better in the Methods or the Discussion, but not in the Results.

Finally, the paragraph at the end of section 4.4 describes which nitrifying microbes were found. The statistical analyses seem to show a weak effect of soil depth for *Nitrosospira* in the spruce site ($p = 0.052$), while there seems to be no such depth effect for *Nitrobacter* in the fen site ($p = 0.349$). However, it is stated that this genus was more abundant in the upper layer. That may be so, but you can only state that there were no differences based on the statistical analysis.

The Discussion is not a bad explanation of the results, but again more could have been stated. For instance, what does it mean that the two nitrifying genera seem to be found almost exclusively in different sites? Are there past studies that also show this relationship? It is stated that there was not enough time to properly conduct the ammonia oxidizing experiment as well as there being quite low activity due to possible reasons. If you could conduct this experiment again, how would you do it to have a better chance of success?

The Conclusions are okay, but some of the information should also have been given in the Discussion.

The bachelor thesis by Eliška is good in some ways, but lacking in others, which is probably par for the course. I will grade the thesis based on the results of the defense.