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OPINION

for the PhD dissertation of Tiba Jassam Kaison Al-Imari, entitled „TRAIT-BASED APPROACHES IN FRESHWATER BENTHIC MICROALGAE COMMUNITIES"

Trait-based approaches to study the responses of ecological communities in relation to environmental constraints is of great interest for the international scientific audience. Thus, I think the topic that this work aims to discuss is important and relevant. Working with trait-based approaches on microalgae has its challenges as it is less developed than trait-based frameworks used for macroorganisms (e.g. terrestrial plants), which fact further increases the importance of the work.

In my previous review for the version of the dissertation prepared for the pre-defense I highlighted that although the title suggests that the trait-based approach is in the main focus of the entire work, important aspects and details are missing. In the new version, significant development has been made in this regard, but I still think that it could have been even better elaborated. The 3-pages general introduction has been developed into a 4-pages one where traits are better presented but the definition of basic terms, like guilds or functional groups are still missing.

The objectives have been restructured as demanded and now they are organised in a more structured way.

In my previous review I also highlighted that the conclusion in its present form is only three very short summary of seemingly three different studies without any link between them and a general discussion with a "storyline" explaining the relevance of the findings in a larger context than the specific discussions of the three chapters, would be welcome. Although the candidate worked on the rephrasing of the 1.5-pages conclusion, a general discussion is unfortunately still missing.

I like the idea that the work is composed of three different types of research, one review, one experimental study conducted with a mesocosm system, and one conducted on field observation and data. Each of the three studies deals with important topics which is proven by the fact that they are all published in relevant international journals. Small forest ponds represent unique and endangered freshwater habitats that are understudied in the literature. Climate change-

induced warming and salinization are among the top environmental risks and their analysis is of great importance.

The methods used in the three studies are up-to-date and sufficient to address the objectives. They were conducted using adequate methodology, with suitable qualitative and quantitative analyses. The applied biostatistical methods also meet the standards of modern ecological research.

The dissertation is based on one first-authored and two co-authored articles that are published in high-quality, refereed journals, so the doctoral candidate has fulfilled the requirements of the Doctoral School in this regard.

The candidate included a “Contribution to the research” chapter what I was missing in my previous review, which explain those tasks that were performed by the candidate herself.

The doctoral dissertation is written in English, generally with good grammar but even after highlighting them in the previous version of the dissertation, it still contains typos, grammatical mistakes or sometimes unclear sentences. I also noted that some of my suggestions were not corrected in the new version of the work. For instance, no improvement in the quality of figures have been made, although some of them are distorted and would be important to improve the quality of the work.

I also have some additional questions to the candidate:

1) Mesocosm experiments represent an interesting transition between laboratory experiments and research based on field sampling. Based on your experience and knowledge, what are the advantages (or disadvantages) of such mesocosm experiments compared to the other two kinds of research methods and for which purposes are they the best solution to use?

2) You write about how small forest ponds are important and unique habitats and that understanding the functions and response of diatoms could be helpful in formulating effective conservation strategies. What are the most important threats endangering these habitats? Can you detail or give some highlights about how your findings can help in the formulating of conservation strategies for these habitats?

To summarise, I think that the final version could have been better improved based on the reviewers’ suggestions, but I still think that the work presented in the dissertation is a valuable and important contribution to research and I support the release of the dissertation for public defense. In the event of a successful defense, I support the awarding of the PhD title to the doctoral candidate.

Dr. Tapolczai Kálmán 2024.08.20

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