



Review of USB FFPW PhD thesis

First name(s), surname, titles of the PhD student: Viktoriia Malinovska, Ing.	First name(s), surname, titles of supervisor: Pavel Kozák, prof. Ing. Ph.D.
Title of PhD thesis: Monitoring of crayfish reaction to the different stimuli: are the crayfish good bioindicators?	

REVIEWER:

Surname: Stoeckel	Institution: Auburn University College of Agriculture, USA
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Please describe your professional relationship to the PhD student:	Please describe your field of expertise:

QUESTIONNAIRE

Originality, scientific importance, perspectives and impacts of results presented in the PhD thesis for basic and/or applied research

Evaluate competitiveness of the PhD thesis in the international context and compare its level with the current state of the art in the field (**extent ¼ – ½ page**):

This Ph.D. Dissertation is very competitive within an international context. There are three experimental chapters – all of which have been published in reputable peer-review journals – and a review chapter that is very thorough but has not yet been published. In addition, there is a short general introduction and a short summary. In my experience, this dissertation would be considered quite strong at a U.S. R1 research institution such as Auburn University. The research is of strong scientific importance. It uses a really nice combination of sublethal behavioral and physiological endpoints to test for effects of commonly observed aquatic contaminants (pesticides and organic UV filters) at ecologically relevant concentrations. It also assesses crayfish as a bioindicator for brewery wastewater treatment facilities. In the past, ecotoxicology studies tended to focus on exposure at constant levels per concentration, across a range of concentrations that often far exceeded what animals would typically encounter in the natural environment. There is increasing recognition that many contaminants are seasonal in nature and organisms may be subjected to pulses rather than constant concentrations. A real strength of this dissertation is that it tests for effects of contaminants under realistic conditions and focuses on sublethal effects rather than lethal effects. Because many common contaminants do not frequently reach lethal levels in the environment, similarly, sublethal effects are more relevant to assessment of aquatic animal health than lethal effects in many instances and may be of greater use to managers and regulators. Similarly, the Brewery study is very strong because it tests for lethal and sublethal effects on-site, using the actual treated water at the brewery rather than a simulated laboratory experiment. All in all, I think this is a strong, original dissertation with real-world practical application and results that competes very well in an international context.



Elaboration of the PhD thesis, objectives of the work and deliverables

Evaluate the overall level of elaboration of the PhD thesis (structuring of the main text, comprehensibility, logicity of the chapters and their ordering) and the originality of the selected approaches to solve the objectives; evaluate publications and whether the results described correspond to objectives of the PhD thesis (extent ¼ – ½ page):

Structure of the PhD dissertation is very strong. It starts out with a thorough review of existing studies regarding effects of environmentally relevant concentrations of aquatic contaminants on crayfish. This sets the stage for what has been done already, provides convincing evidence that environmentally relevant concentrations (ERC) can have important sublethal effects on crayfish, and points out the need for additional studies. The next three chapters focus on effects of pesticides at ERC, effects of organic uv filters at ERC, and an in-situ study examining effects of a water treatment system at a commercial brewery on crayfish. The dissertation ends with a brief discussion/summary. The ordering is very logical, and easily comprehensible. The studies are original. They focus on ERC, and they type of exposures animals are subjected to in the real world (i.e. short term pulses of pesticides, exposure to actual water from a water treatment system). The experimental chapters logically follow from the review and correspond strongly with the overall objectives of the dissertation as stated in at the end of Chapter 1.1.

OVERALL COMMENTARY ON THE PhD THESIS

Please write in the box specific comments concerning the PhD thesis in extent of 1-2 pages:

Overall, this is a very strong PhD Dissertation. I did not comment on Chapters 2, 3, and 4 since they have already been published in good journals and gone through the peer review process. I have read them over and they are very nice studies.

The majority of my comments are confined to Chapter 1.2 since this is the only major chapter that has not been published. In general Chapter 1.2 is good in that it provides a nice review of the current effects of ERC of aquatic contaminants on freshwater crayfish. The tables are great and will be extremely useful to crayfish researchers. I have attached a track changes version of the dissertation with multiple comments and suggestions. Hopefully they will be useful. Great job on the dissertation!



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FINAL RECOMMENDATION

- XX ☒ PhD thesis can be recommended for defence
☐ PhD thesis can be recommended for defence with reservations
☐ PhD thesis cannot be recommended for defence

...June 27, 2023, Auburn University, USA
Date and place

James Stoeckel
Name and signature