20 August 2023

Dear Editor Michaletz and review team,

Thank you for your second review of our manuscript (UJFM-2023-0050, titled “Evaluation of shoreline rotenone application to control Largemouth Bass recruitment in small impoundments”) submitted to *North American Journal of Fisheries Management*. The second round of comments from the review team helped us make improvements to the manuscript, which we describe in point-by-point responses below. In revising the manuscript, we enabled the Track Changes feature to demonstrate the changes we made for clarification. We also included a clean copy of the revised manuscript (i.e., no Track Changes). In our point-by-point responses, references to specific lines refer to the Track Changes version (with red, revised text visible) unless otherwise noted.

We are excited about the information presented in this manuscript and believe it will be of great interest to *North American Journal of Fisheries Management* and its readership. We thank all members of the review team for the time and consideration in reviewing our work. We appreciate the constructive feedback we received and hope that the revised manuscript provides the needed clarifications requested. Please feel free to contact me if I can be of further assistance.

Sincerely,

Tyler Steven Coleman

**Reviewer 1**

Reviewer 1, Comment 1: Line 83: Need to specify that fall electrofishing removal occurred somehow. Consider… “…rotenone treatments and removal via electrofishing in fall to reduce bass…”

We made this change by adding “removal via” to the sentence as recommended.

Reviewer 1, Comment 2: Lines 104-107: Not sure why I’m having such a hard time with this. Consider something like… “Rotenone was applied to selected impoundments during summer of 2017 and 2018. Electrofishing was used to monitor fish populations in spring of 2017 to 2019. Seine samples were collected during summer of 2017 and 2018 to measure immediate effects of rotenone treatment. A “treatment period” was considered to consist of spring electrofishing, rotenone application if selected, summer seining, and spring electrofishing the following year (Table 1).”

Breaking up the sentences exactly how recommended would not imply what we mean. For instance, the “treatment periods” are only considering the summer rotenone application (if applied) and seine samples, not also the spring electrofishing. Additionally, seine samples were not only collected to measure immediate effects of rotenone treatment, as these samples were also used to calculate our survival index. However, we made changes to this portion of the manuscript using the direction of the reviewer for better explanation of our methods (L106-109): “We sampled impoundments during spring 2017 through spring 2019 for this study by (1) electrofishing each spring, and (2) applying rotenone (if selected) and seining in the summers of 2017 and 2018—which we refer to as “treatment periods” (Table 1).”

Reviewer 1, Comment 3: Line 127: Is this referring to active rotenone? Was there 0.5 liters of Prenfish applied or 10 liters of Prenfish applied? There is some confusion in published literature about whether active concentration is reported. If the former, consider noting that 0.025 liters of active rotenone were applied per 90 m of shoreline. If the latter, consider noting that 0.5 liters of active rotenone were applied per 90 m of shoreline.

From the beginning of Reviewer 1’s comments—I do have some issue with the rotenone application section in the methods not being repeatable. The authors go into detail about how the chemical was applied but miss some key points. Most important is noting active concentration applied. It is unclear if the 0.5 L / 90 m of shoreline represents the Prenfish solution or just the active rotenone in the solution. Secondarily, actual application logistics are confusing to me. I assume total shoreline distance was measured and the appropriate amount of Prenfish was calculated. Was this amount distributed equally between the two tanks and the tanks filled with water before application? How was chemical distributed evenly while ensuring it ran out at the end of a single pass? Writing reproducible methods concisely will be difficult in this instance, but I believe it’s important.

We appreciate this comment and we have clarified in the manuscript what we applied (L132). We hope this is not repetitive now though, as we mention that “we used 5% biodegradable liquid rotenone” in the first line of the rotenone application methods implying that each time we mention rotenone, we are referring to the Prenfish Fish Toxicant (L115). We believe this also helps clarify the response to Reviewer 1, Comment 6 regarding the idea that residual rotenone was present.

We also added a sentence (L126-L129) to clarify how calculations were made to help ensure reproducibility of our application.

Reviewer 1, Comment 4: Be consistent with reporting decimal places with p-values. For example, three are reported in line 226, two in line 228, and four in line 229.

We are consistent with the use of two significant digits, not decimal places, which we believe is more important. The only time we don’t use two significant digits is when “p<0.001”—which is a common use of representing very small p-values. Therefore, p=0.48, p=0.0070, and p=0.017 consistently show two significant digits and should not be changed. If a change is deemed necessary here, we would change “p<0.001” to “p<0.0010” so this too contains two significant digits.

Reviewer 1, Comment 5: Line 227: The word ‘also’ here is throwing me. The previous sentence says that rotenone treatment resulted in immediate reduction of Largemouth Bass. The sentence in question says that Bluegill catch also wasn’t affected. This seems contradictory. Maybe I’m misunderstanding what model was used where?

The word “also” was referring to the application interaction in the first and second sentences of that paragraph. We took this opportunity to move and combine these sentences to make this portion of the results easier to interpret and understand (L229-238).

Reviewer 1, Comment 6: Lines 275-277: What are the odds that the seined areas still had residual rotenone that fish were simply avoiding? This could also explain the reduction in Bluegill (lines 228-230). This is addressed a bit with the day 42 sampling for both species but might be worthy of discussion about interpreting immediate response.

There is a near 0% chance that there is any residual rotenone in the seined areas 24 hours after application (Finlayson et al. 2000; McClay 2000; cited in this manuscript). Due to our extremely low rotenone dosage (now explained clearly in our Methods thanks to Reviewer 1, Comment 3) on the shoreline of small impoundments during the summer in the southeast, the rotenone biodegrades rapidly within a few hours, if not within one hour. We do not feel the need to add these details into the Discussion regarding fish avoidance of the area. If Largemouth Bass and Bluegill both avoided the area at the same high rates, which they did not (96% and 62%, respectively [lines 231]) then this could be something to further investigate and talk about.

Reviewer 1, Comment 7: Lines 355-363: I appreciate that the funding and questions leading to this project differentiate between large and small small impoundments. However, addition of the terms here introduces unnecessary confusion. Perhaps just mention larger impoundments rather than larger small impoundments?

Thank you for this comment. We removed the unnecessary use of “small” here (L366-371).

Reviewer 1, Comment 8: Line 377: Same comment as above.

We removed the use of “sized small” here and now the sentence reads “and in larger impoundments (30–200 ha).” L386

**Reviewer 2**

Reviewer 2, Comment 1: I think this paper looks much improved and I like how you got rid of the small impoundment size grouping for analysis.

Thank you for this note. The first round of comments from the review team regarding impoundment size helped improve this manuscript.

Reviewer 2, Comment 2: My only comment is I think you are still stuck in the writing on specifying “small impoundments” in the Results. The entire manuscript is about small impoundments. You have already established that and now there is no need to point out small impoundments multiple times in the Results. I think this is a residual of how you wrote the Results for the original analysis. With that said, I think it would read much better to simply say impoundments in the Results or treated and control impoundments. You mostly did this for Methods, and did it some in the Results, but Results are still mostly saying small impoundments numerous times. Then when you get to Discussion, you can go back and say how your findings mean or compare to what others have found specifically for small or large impoundments.

We appreciate this comment. We went back through the manuscript and have removed the use of “small” where unnecessarily used for clarity:

L97 – introducing the reader to the use of “impoundment” for “small impoundment”

L170 – removed “small”

L186 – removed “small”

L230 – removed “small”

L241 – removed “small”

L249 – removed “small”

L259 – removed “small”

L263 – removed “In small impoundments,”

Like recommended, we did leave the use of “small” in the Discussion except when referring to the results of our study specifically.

L285-286 – removed “small”

L289 – removed “small”

L358 – removed “small”

L366 – removed “small”

Reviewer 2, Comment 3: Line 224: Change “Small impoundments treated with” to “Impoundments treated with”

Reviewer 2, Comment 4: Line 233: Change “control small impoundments” to “impoundments”

Reviewer 2, Comment 5: Line 241: Change “in treatment small impoundments” to “In treatment impoundments”

Reviewer 2, Comment 6: Line 251: I think you can just say “Largemouth Bass MLA-1 significantly increased on average”

Reviewer 2, Comment 7: Line 255: I think you can just say “We found Largemouth Bass recruitment” to start the sentence.

Reviewer 2, Comment 8: You may want to pay attention to other places in the manuscript that you may have had the same type of language left over from the originally separation of “small and large” small impoundments analysis. Nothing stood out for me like it did in the Results, but would be good to give it a thorough review on your end too.

All of these comments were addressed when reviewing the manuscript for Reviewer 2, Comment 2. Thank you for bringing this to our attention.

**Associate Editor**

Associate Editor, Comment 1: Both reviewers felt you addressed their previous comments well, and had a few more comments to help refine the paper. Remaining revisions are very minor, and we look forward to your revised manuscript. Great work!

Thank you for this comment and the previous comments helping us strengthen this manuscript for publication.