

Executive decision 08 Jun 2026

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Citizen science as a long-term environmental baseline: assessing impacts of a small dam removal in Montana, USA

This manuscript addresses a highly compelling and timely topic at the intersection of river restoration and community engagement. I appreciate the hardwork of the authors and dedicated volunteers of this multi-year citizen science initiative, as well as the author engagement in the peer-review process. However, in its current form, the manuscript requires significant restructuring until publication. The main concern to me is the unbalanced structure of the manuscript, with over-explained background and methods versus a complete lack of granularity in results. The results section is critically underweight and lacks the quantitative rigour required for a peer-reviewed publication. Further, new results are presented in the discussion (brand new data or numbers shouldn't go in the discussion if they weren't presented in the results section first).

Re methods: on lines 300–302, the authors explicitly state that they chose not to analyse the chemistry, temperature, or turbidity data, and on line 308 they admit they dropped the cross-section data due to missing values. The authors cannot spend two pages explaining the exact field protocols for data that they didn't even use in the study...this is completely irrelevant text and should be deleted. Methods are in general over-explained and can be simplified. E.g. lines 233-238: The Wolman pebble count is one of the most standard protocols in river hydrology. The authors do not need to explain that the volunteer looked away, picked up a rock by the tip of their right wader, and called the measurement out to someone on the bank. A single sentence citing Wolman (1954) is all that is required.

The results section states no data (i.e. does not state statistical values in this entire section). A reader should be able to understand the main findings of a paper by reading the text alone. Saying "there is no discernible trend" is an opinion until it can be backed up with the actual numbers. The results essentially say "We looked at the data, nothing changed, look at the graphs." This is completely unacceptable for a peer-reviewed journal. Even when a study finds "no significant change" (null results), those results must be thoroughly described, quantified, and presented in the text. E.g. line 345 instead of writing "our calculated WAV Biotic Index shows no discernible trend", you would include data from your figures like "The average WAV Biotic Index score downstream of the dam site remained in the "Good" threshold (2.5-3.5) across both the pre-removal ( $3.1 \pm 0.7$ ) and post-removal ( $2.5 \pm 0.3$ ) periods (Fig. 3)". (Note: I made up this data because you haven't actually provided these numbers in the text). The authors present numerous graphs across 4 figures, which means they have a wealth of data by site and by year. Yet the findings appear to be lumped into a few vague sentences (even lines 338-342 are not really results, but literature citations and explanations that belong in other sections). Did all downstream sites show zero change? Did the site closest to the blasted dam show a temporary spike in fine sediment before clearing out (it was even briefly mentioned as a possibility in your background line 61)? Even if the overall BACI analysis is non-significant, the year-by-year or site-by-site spatial patterns must be described. Also, I would think that your results for efficacy of citizen science are more a discussion point than results.

The discussion section is not where results should go (the authors present new data currently that wasn't in the results). The discussion needs to explain why nothing changed and what this teaches the broader scientific community. The finding you discuss about timing is really interesting but it only gets a few lines (line 357-359). You could expand on this, perhaps noting that the physical dam removal in 2020 was likely an ecological "non-event" because the river had already done the hard work of adapting when the sluice gates were permanently opened in 2012. In the discussion you need to draw a link to your stated literature e.g. with this timing thing, you could pull in literature on staged vs. instantaneous dam removals. Staged removals (where a dam is lowered gradually over months or years) are known to minimise downstream sediment shock. Rattlesnake Creek accidentally became a multi-year "staged removal" perhaps? Maybe you could argue that leaving sluice gates open for a decade prior to removal is a highly effective management strategy to eliminate downstream ecological trauma. Your water flow findings could be placed in a broader geomorphic context- discuss how rivers require a certain amount of energy or hydraulic competence to entrain and move specific grain sizes (you can insert some bedload grain sizes from the literature for comparison). If the post-removal years lacked a major bankfull discharge event, the sediment trapped behind the old dam structure might've just sat there so the null result might not mean the dam removal had no effect but maybe there is a temporal lag. The river might change drastically the next time it gets a massive, 50-year flood event. You could frame the 2021–2024 data as a "low-flow baseline" rather than a permanent state. Why I think your results blurb about citizen science should be moved to discussion is that since the second research question is about whether citizen science works, you need to critically evaluate why some of their data succeeded while other data failed (maybe critique robustness of certain citizen science protocols, like why did WAV index work but the cross section failed). The quotes could be worked into this part of the discussion because currently they seem a bit randomly placed- like where the scientific analysis should be is replaced with an anecdotal "human-interest" story, using un-analysed volunteer quotes instead of explaining the ecological and geomorphic reasons why the data showed a null result. Currently it reads more like a non-profit organisation's promotional newsletter than a journal article.

Technical corrections: Check the reference list entry for Hart, DD (title seems to include part of abstract and DOI does not work). The 2 Blakey DOIs do not seem to work either. I would recommend checking over the whole list for errors and links that don't work. Line 387 doesn't end in a period.

Given these technical errors, I am also concerned that overall quality of presentation needs polishing and would appreciate a thorough proofread before submission. The core data here is very valuable and an eight year dataset is very impressive...even publishing well-documented "null results" where no trends are detected is incredibly important for setting realistic expectations for future restoration projects. This work has great potential to demonstrate how grass-roots community programs can provide scientifically rigorous, long-term monitoring that would otherwise be cost-prohibitive for researchers. It just needs some more work and deeper data reporting before it is ready for publication. I highly encourage the authors to undertake these revisions, I would love to see a final version make it to the journal.