

Response to Reviewer 3

We would like to thank the reviewer for the constructive comments on the manuscript. We have considered the reviewer's comments and provide the following responses.

1. An important area of research - I don't think the impact of sand dams on invertebrates has been studied before and there is much that we don't know about such a popular technology in general. The authors are right to ask questions and I would like to see more, more rigorous research.

Thank you. We hope this first foray into studying a sand dam's impact on macroinvertebrates leads to further research on the topic and, generally, on macroinvertebrates in semi-arid, ephemeral streams.

2. My main feedback relates to the main claim that sand dams are detrimental to macro invertebrates. In order to make this assertion I would have expected to see some sort of comparative study between river beds that are suitable for sand dams but where sand dams have not been built, vs. river beds with sand dams.

The manuscript is careful to not claim that sand dams are detrimental to macroinvertebrates, because the study did not include legitimate control sites due to limitations in implementing the planned research. Rather, the manuscript uses the phrasing that sand dams "are not suitable habitats" for macroinvertebrates. This was explicitly clarified in the manuscript.

P7L25-28 has an additional statement: The absence of macroinvertebrates in the sand dams might suggest that sand dams have a negative impact on macroinvertebrate habitat, but it is also likely that sandy streambeds in semi-arid regions are simply inhospitable to macroinvertebrates. Further studies comparing macroinvertebrate assemblages in undammed sandy riverbeds with sand dams are needed to make this distinction.

3. I would not expect to see a great deal of macro invertebrates in a semi arid dry riverbed, if sand dam levels are not 'normal', what level are they comparing it to?

We believe this point is answered by our response to point number 2, above.

4. The authors claim a lack of quantitative research skews perceptions towards a rosier picture of sand dams than is true, but their study has a small sample size, over only one season (although intensively studied). There were probably practical limitations - research is expensive, but this could be acknowledged.

Thank you for noting this point. We added a statement acknowledging the limits of our study.

P2L 29-32 now has an additional statement: The study is limited to only three sand dams, because the study design relies on the active participation of local community water groups. Most of the community water groups formed during sand dam construction had disbanded at the time of this study. The breadth of the study was further limited by long travel times between sites and difficulties related to equipment access.