

Hydrol. Earth Syst. Sci. Discuss., referee comment RC2
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Comment on hess-2021-196

Anonymous Referee #2

Referee comment on "Macroinvertebrate habitat requirements in rivers: overestimation of environmental flow calculations in incised rivers" by Renata Kędzior et al., Hydrol. Earth Syst. Sci. Discuss., <https://doi.org/10.5194/hess-2021-196-RC2>, 2021

General comments

The authors used macroinvertebrate sampling, environmental measurements, and hydraulic habitat modelling to compare calculated environmental flow requirements between incised rivers of various types and rivers with sediment deposition. The topic is novel and interesting, but the methods are inadequately explained (please see detailed comments below) and sometimes appear inappropriate. In addition, parts of the manuscript are quite difficult to understand.

Areas of particular concern are:

(1) Insufficient background information, such as the nature and causes of the incision and sedimentation.

(2) The use of a pollution-oriented biotic index (BMWP) as a biotic response variable rather than a flow-oriented index such as LIFE (Lotic-invertebrate Index for Flow Evaluation).

(3) Reference to WUA (presumably weighted usable area) without explanation of which species and life-history stage it was calculated for and how.

(4) Incorporation of multiple statistical testing that is likely to increase type I error and does not seem necessary to address the stated study aims.

(5) Lack of discussion of limitations of the methods used.

Specific comments referenced by line number(s)

15-29. The abstract is quite poorly written and structured and often difficult to understand.

- Which measurable variable(s) does "water flow intensity" refer to? Discharge? Velocity? Stream power?

- There is no need to include "multispecies". By definition, an ecological community comprises multiple species.

- The morphology of what?

- What is an "incision dam"?

- Perhaps "characteristics" rather than "values".

56-57. Q should be defined and a citation should be provided for the use of discharge curves.

- The methods referred to have also been applied to other organisms, particularly fish.

76-77. I cannot find anything in the manuscript that considers macroinvertebrate habitat preferences. Habitat preference varies among species and their life-history stages, and the manuscript does not consider individual species and stages.

80-82. The intended meaning of "to identify a scale of e-flow overestimation" and "overestimation of e-flow calculations" is not clear to me.

- Why did you sample only mountain rivers when your objectives (line 78) refer to mountain and lowland rivers? Also, why did you select these particular river types and sites?

97-109. The river categories are variously referred to as classes, groups and types. It would be better to stick to a consistent term.

- Some detail about the incision in these rivers would be informative, for example the spatial extent and rates of incision and deposition and the extent to which these processes are natural or induced by anthropogenic changes in land cover, land use and flow regimes.

Sustainable Energy Reviews).