

Hydrol. Earth Syst. Sci. Discuss., referee comment RC2 https://doi.org/10.5194/hess-2021-196-RC2, 2021 © Author(s) 2021. This work is distributed under the Creative Commons Attribution 4.0 License.

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

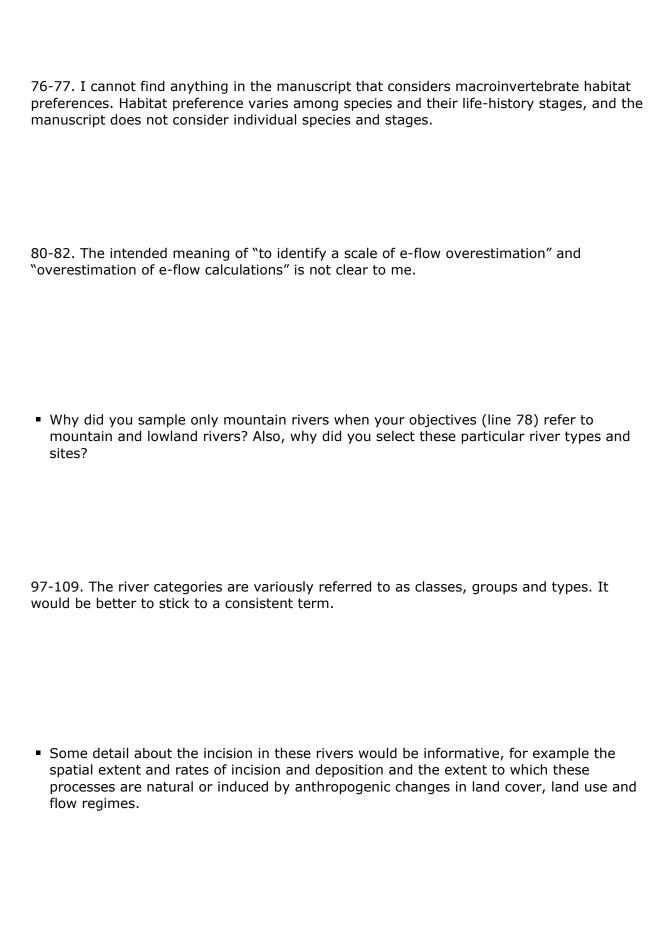
The authors used macroinvertebrate sampling, environmental measurements, and hydraulic habitat modelling to compare calculated environmental flow requirements between incised rivers of various types and rivers with sediment deposition. The topic is novel and interesting, but the methods are inadequately 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.

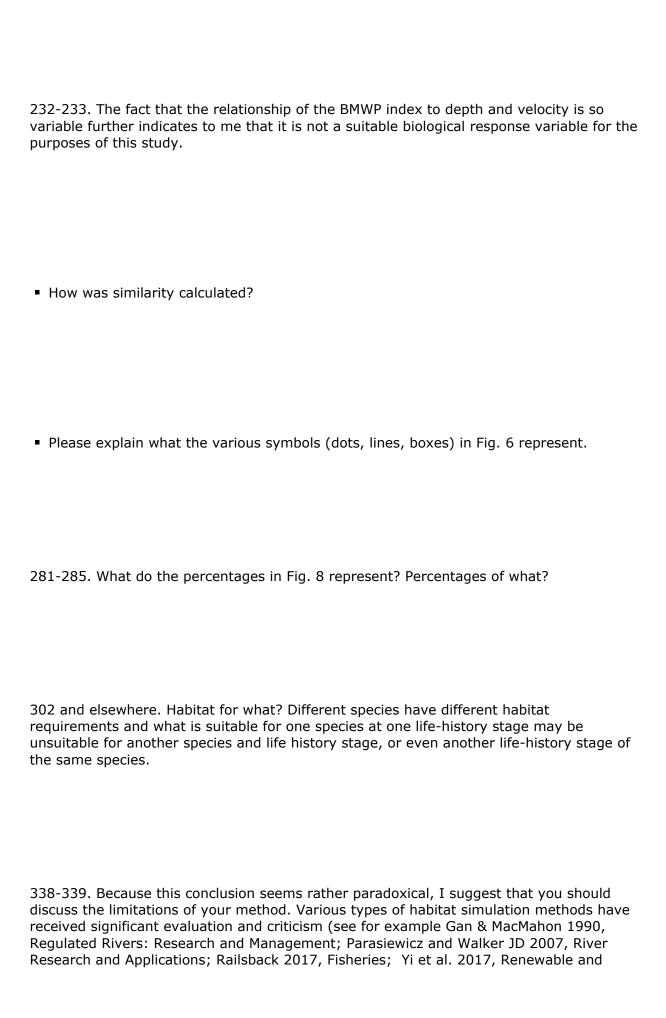
(2) The use of a pollution-oriented biotic index (BMWP) as a biotic response variable rather than a flow-oriented index such as LIFE (Lotic-invertebrate Index for Flow Evaluation).
(3) Reference to WUA (presumably weighted usable area) without explanation of which species and life-history stage it was 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, and 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.



	Please explain what the substrate index measures and how it is calculated.
	I do not understand the reason for using the BMWP index because it is related to pollution rather than flow velocity. Why did you not use a flow-specific index such as LIFE (Lotic-invertebrate Index for Flow Evaluation)?
•	KsiÄ Å¼ek et al. (2019) is in Polish and therefore will not be accessible to most potential international readers. You could perhaps refer to Gippel and Stewardson (1998, Regulated Rivers: Research and Management).
	How did you define low flow? What threshold was used and why?
	What procedure did you use to ensure the choice was random.
	For Fig. 2, please tell the reader what delta h and F represent and how they were calculated.

■ For Fig. 3, please explain what the error bars represent.
The acronym WUA (presumably referring to weighted usable area) needs to be explained.
How did you calculate weighted usable area? It is normally defined with respect to a particular life-history stage of a particular species, and calculated from its preferences for velocity, depth and substratum.
What thresholds were used to classify depth and velocity as low, medium and high, and on what basis were the thresholds chosen?
Did you apply any transformation to raw abundance values before calculating the Bray- Curtis index?
219-229. Text in this paragraph is often hard to follow. In addition, there is statistical problem of multiple testing (32 separate tests in Table 2), which increases the type I error rate. Also, it is very well known that stream invertebrate assemblages vary according to velocity and depth, and unclear why all of these analyses are need to fulfil the study aims.



Sustainable Energy Reviews).