Interactive comment on "Waning habitats due to climate change: effects of streamflow and temperature changes at the rear edge of the distribution of a cold-water fish" *by* José M. Santiago et al.

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General comments âĂć Since both air and water temperature terms are used in the paper, please specify throughout the manuscript to which term the authors are referring, thus avoiding the use of only the term temperature since in some paragraph it could be confusing. âĂć In the IS notation, there is a non-breaking space between numbers and oC. Please modify throughout the document. âĂć Those are difficult results to present but the presentation could be improved (see specific comments) to help the reader having a better understanding and be able to have a quantitative appreciation

C1

of the differences between scenarios.

Specific comments âĂć P2-L2: physiological functions such as blood. . . can you be more specific? Are you referring to the blood cell formation/maturation? âĂć P2-L13: add by between ecosystems and altering âĂć P2-L15: will be interesting to add with the geographical location a mean increase value. . . âĂć P2-L32: is instead of was. âĂć P3-L10: I will suggest merging the two sentences, directly mentioning changes in fish habitat suitability and availability. âĂć P4-L19: what do you mean by not probable? âĂć P5: were the logger shaded and tested prior to deployment? Did you check if the data from AEMET were corrected for change in instruments or station location trough time? âĂć P9-L19: A table summarizing the different values found across different geographical range will be interesting here. The 7 days period is usually used for incipient lethal temperature (ILT) (it is highly variable depending on acclimation and the rate of change in water temperatures) and the values are higher than the one chose in this study. Studies on thermal tolerances usually use shorter exposure time. . . I feel more explanation is needed to understand if the goal is to assess the changes regarding to ILT so brown trout will be expected to disappear from the habitat or regarding to suitable thermal tolerances linked to growth and other physiological parameters (as the chosen threshold suggest), which implies that the specie may still be found but not be performing. I think the manuscript will benefit from a slightly extended justification. âĂć P14-Figure 6: this figure is difficult to read, text overlap, difficulty to discern the white dots, etc. I am not sure which sites belong to which clusters from the figures. May be split in 2 figures based on RPC4.5 and 8.5? âĂć P16-Figure 8: This figure is also hard to read. May be have different temperature ranges for the 2 scenarios so the results for RCP 4.5 are easier to read. âĂć P18: a table or figure with the water temperature reached (to present not only the consecutive days above the threshold but also by how much this threshold is passed) will give a deeper understanding of the consequences for thermal habitat and strengthen the discussion. âĂć P19-L10: I will suggest use detailed prediction resolution instead of finer (or another synonym). âĂć P20-L20: This does not guaranty model robustness. . . You should present model performance results

C2

or at least explain how you tested the model robustness or change this paragraph. âĂć
P22-L8: do you mean maturation or development instead of their duration?

C3