

## ***Interactive comment on “Surface flow types, near-bed hydraulics and the distribution of stream macroinvertebrates” by M. A. Reid and M. C. Thoms***

**M. A. Reid and M. C. Thoms**

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Reviewer 1 All the comments by Reviewer 1 have been addressed in the revised manuscript

Reviewer 2 Reviewer 2 asked that the authors comment on, firstly, the significance of the fact that the study was carried out in a regulated river, and secondly, on the predictive power of flow type mapping with regard to supporting fish stocks. &#8226; We have made comment on these two issues in the expanded conclusions section of the revised manuscript.

Reviewer 3 Reviewer 3 expressed concerns with regard to 3 broad areas 1. Appraisal of the generality of these findings The reviewer asks that the authors include further

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synthesis regarding the appropriateness of the flow type groupings as they pertain to macroinvertebrate communities, asking, in particular that the authors comment on which flow types are well separated faunally. ¶ This issue has been addressed in the revised manuscript in the expanded section 4.1. We also acknowledge that the research by Davis and Barmuta (1989), Young (1992) and Robson et al. (1999) cited by the reviewer provides useful context for the study and has been cited and discussed where appropriate in the revised manuscript.

2. Improving the information content The reviewer asks for additional information in two key areas: a) the interrelationships between the various flow variables. The reviewer suggests this could be provided via a scatterplot matrix. b) The associations between macroinvertebrate taxa and flow types, particularly, which taxa are characteristic of each flow type or which distinguish between flow types. The reviewer suggests two approaches to provide this information: to include the results of a SIMPER analysis or to replace the MDS plots with biplots showing the positions of taxa in ordination space relative to the positions of samples in the same space. The reviewer suggests removing figure 1 and figure 3 to make way for these additional data.

With regard to the first suggestion, we do not see a strong need for such a plot, given that one of the chief reasons cited for the inclusion, to allow the reader to assess the potential for redundancy among these variables, is explicitly addressed with regard to macroinvertebrate assemblages in the forward selection process of CCA. We are willing, however to include such a figure if the editors do not believe it would overly lengthen the manuscript. With regard to the second issue, we have addressed this by including the results of a SIMPER analysis.

We have not removed either figure 1 or figure 3 because we believe they provide useful information: in the case of figure 1, a guide to the position of the study reach within the catchment and relative to the dams along the Cotter River; in the case of figure 3, a useful visual representation of the positions of samples and flow types in ordination space. We have, however, removed the sections in the methods and results on

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the index of multivariate dispersion on the grounds that this analysis adds little to the manuscript and is not subject to further discussion in the remainder of the MS.

3. Multiple Regressions The reviewer expresses concern regarding the presentation of the results of multiple regressions. However, the scatterplots and regression models presented are not part of a multiple regression analysis, they are single regressions and scatterplots presented to illustrate the relationships between some of the independent variables and the macroinvertebrate assemblages.

Minor issues &#8220;p. 1180: please state mesh size of Surber sample net. What is the effective mesh size of the live-sorting method adopted? Was the remainder of the sample preserved after live-picking so that the total abundance could be determined in the lab for subsequent computation of the proportion picked?&#8221;

The mesh size has been included. The total abundance was determined by multiplying the proportion of the sample sorted (from a 100 cell sorting tray) by the number of individuals collected. This section of manuscript has been revised to clarify this point

&#8220;p. 1180, l. 28 Missing date of Nikora and Goring reference; anything else missing from this sentence?&#8221;

This date was not missing, it was on the next line

&#8216;p. 1183 Figure 2: what does a negative value of  $V_y$  signify? I presume negative  $V_x$  means &#8220;upstream&#8221;;, negative  $V_z$  means &#8220;towards the centre of the earth&#8221;;.&#8217;

Negative  $V_y$  is largely irrelevant. The nature of the instrument is such that one transverse direction must be positive and the other negative. Tests of significance were conducted using both absolute values and recorded values to ensure that the inclusion of negative values did not mask any differences between flow types.

&#8220;Does the slight tendency for BSW to have negative values of  $V_y$  mean anything?&#8221;

No

¶p. 1190. ll. 7 ff. may have some impact on torque perceived by an animal. Anyway, torque, drag and lift on an animal are probably combinations of the three components, and would there be reason for them to be linear combinations as implied by the analytical methods used here?¶;

We are unsure what the reviewer is seeking here

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Interactive comment on Biogeosciences Discuss., 5, 1175, 2008.

**BGD**

5, S763–S766, 2008

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