

Interactive comment on “Influence of groundwater on distribution of dwarf wedgemussels (*Alasmidonta heterodon*) in the upper reaches of the Delaware River, northeastern USA” by D. O. Rosenberry et al.

Anonymous Referee #1

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General Comments

The authors used a variety of techniques to measure groundwater discharge at locations where dwarf wedgemussels (DWM) are known to be present or not present. While there is natural uncertainty in several of the measurements made, and in some cases conflicting results, generally the DWM are located where cold groundwater discharges. Overall, the paper is well written, but the supporting figures require some attention to bring the paper up to publication standards.

I must admit that I was somewhat underwhelmed with the paper. While numerous

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results were reported, and shown to be generally supportive of the hypothesis that DWM are located in areas of greater-than-normal groundwater discharge, I was hoping for some interesting comparison of the measurements. It wasn't until the conclusions that such a comparison was made. While the broad range of techniques adds value to the paper, I find it somewhat narrow in scope, and essentially a case study.

Specific Comments

Figure 2 – the text (lines 172-175) refers to locations where seepage meters were installed. However, the figure itself only mentions seeps, which I take to mean actual locations where seepage was observed. Moreover, on line 175, the authors mention locations S1 and S2, but no such locations are shown on the figure.

Line 181 – the opening paragraph indicates that pressure is measured in streambed piezometers. Actually, this is incorrect. Head is measured. The authors say this later in the paragraph (line 187) – vertical head differences.

Figure 4 – The locations of the seepage meters and 1D temperature sensors cannot be seen on this figure. Some other symbol color (blue?) is needed to differentiate from the conductivity. However, I don't think that the instrument locations should be shown in this figure anyway – see my next comment. The EMI results are quite separate from the thermal results and are not even discussed together.

Figure 2 should be modified or a new figure included to show the locations of measurements of seepage (numbered according to Table 1). Note, locations M4 and M5 are also referred to in the text (line 260) but are not shown anywhere. This figure could also show the 1D sensor locations.

Line 314-315, and Line 323-324 – stronger justification is needed about the cross-sectional area. Why 10 to 20 m. Where is the evidence of this? I realize that a range is given, but thickness seems like a rather important parameter.

Technical corrections

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Line 53 – low flows – there is no need to hyphenate here.

Line 79 – 100s

Line 94 – relate groundwater – surface-water

Line 107 (Fig. 2A). Bracket missing.

Line 110 – (Fig. 2B). left bracket missing.

Line 125 – lower case for header

Line 135 – two furthers.

Line 143 – data were

Line 160 – some explanation of how A was assessed is needed. How large was the vertical plane? Given that the volumetric seepage rate is being compared between sites, it might be better to compare the flux.

Line 179 – lower case for header

Line 218 – (July 25 to July 27, 2012)

Line 243 – perhaps put (or magnetic susceptibility) in brackets or don't mention it at all, as this property was not measured in this study.

Line 267 – why weren't the river slope and water depths measured at Site 1?

Line 280 Groundwater – surface-water exchange

Line 275 – authors should refer to Fig 2 which shows the seep locations.

Line 323 – should spell out three.

Line 529 – groundwater – surface-water

Line 357 – iv should be defined earlier in line 191.

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Line 389 – four not 4

Line 392 – four days

Line 399 – two days

Line 433 – three specific locations

Line 503-504. This sentence is repeated again in point 4 of the conclusions.

Table 1 – what are all the green triangles in the table. This looks like an excel table that has been cut and pasted into the text.

Table 2 – include the units in the table headers rather than at the bottom as this is inconsistent with the other tables.

Figure 7 – units should be cm d⁻¹ for consistency with unit notation used elsewhere.

Figure 8 – the line width is much larger for this figure than the other figures. It should be reduced.

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