SPUNKIAD for

Rosenfeld, J. 2003. Assessing the habitat requirements of stream fishes: an overview and evaluation of different approaches. Transactions of the American Fisheries Society 132:953-968.

Surprising?

I found surprising that Rosenfeld (2003) mentioned that putting in practice habitat restoration by means of designing the "optimal habitat configuration" from a species perspective is something that Rosgen's (2011) Natural Channel Design was missing.

Puzzling?

I found puzzling the last part of Rosenfeld (2003) where he stated that his paper focused only on methods to quantify habitat use, preference and requirements, but did not take into account interactions between species (mutualism, commensalism, parasitism) nor anthropogenic influences (e.g. fishing).

Useful?

I found useful Figure 1 (page 955) where it showed the difference of fish density in Small cutthroat and Large cutthroat between pools, glides and riffles which drives the idea of habitat preference.

New?

I found new the idea that studying a fish population's habitat use in the wild does not tell us the entire story of what their preference and required habitat is.

Knew it already?

The human bias in studying and applying this research on management since it is concentrated on species that are of value to humans (mostly game species), and not to endemic, small range non-game species.

Interesting?

I found interesting the differences between habitat selection (or use), preference and requirement for organisms and the implications in trade-offs of managing using either one of these habitat definitions.

Do you agree or disagree with the findings?

I agree with the Rosenfeld (2003) as he evaluated the models available to determine habitat requirements in stream fishes, recognizing the advantages and disadvantages of different methods, as well as recognizing (towards the end) the limitations of these approaches and inherent biases.

Reflection

The following reflection explores Rosenfeld's (2003) article in comparing habitat selection versus habitat requirements, Rosenfeld's (2003) article in the context of the findings of Palmer et al. (2005), the possible application of Rosenfeld's (2003) habitat models to managers, and the degree of practicality of scientific research to fish stream managers.

Rosenfeld (2003) stated that some studies interpret habitat selection as habitat requirement, but that this is rarely validated.   Habitat selection studies are those where the researchers through observation saw the species (without necessarily distinguishing between life stages) using a particular habitat (e.g. pool, riffle, shore, etc.). Habitat requirement is the habitat needed for species during different life stages so they can be successful reproduction and survival rates. The required habitat is presumably smaller – in space – than the habitat selected or used, which has direct management implications.

Stepping away from Rosenfeld´s (2003) article that focuses mainly on assessing different approaches of stream fish habitat requirements, I was interested to read Palmer et al. (2005) as it provides a review on the effectiveness so far of stream restoration efforts. Perhaps one of the most compelling findings was that restoration efforts that focused on small spatial scales (e.g. reach scale) usually failed because they did not take into account the heterogeneity of aquatic ecosystem, or the relation between streams and the adjacent landscape (Palmer et al. 2005). So even when one species is the target of the restoration effort, looking at the wider landscape scale first or in conjunction, might prove a better strategy.

Going back to Rosenfeld (2003), adaptive management might prove a better strategy to restoring species because it acknowledges different spatial scales in addition to understanding the habitat requirements of species along life stages. In other words, maybe using the several models Rosenfeld (2003) compared to assess habitat use - presence/absence, habitat capacity models, microhabitat suitability models, and bioenergetics models – might prove useful for managers.

From Newbury's (2011) paper of restoring habitat hydraulics, to Rosenfeld's (2003) paper on assessing methods of habitat requirements, I find the research fascinating and highly specialized.   They both seem to take a position that the approaches they present can serve managing stream fish communities and populations. Although, at what degree of specificity or detail does scientific research decrease the degree of application and become either not applicable or too theoretical? At what point is it not practical for managers to incorporate into their restoration designs sophisticated and highly detailed scientific research?

Literature Cited

Palmer, M., E. Bernhardt, J. Allan, P. Lake, G. Alexander, S. Brooks, J. Carr, S. Clayton, C. Dahm, and J. Follstad Shah. 2005. Standards for ecologically successful river restoration. Journal of applied ecology **42**:208-217.