SPUNKIAD for

Schmetterling, D. A. and R. W. Pierce. 1999. Success of Instream Habitat Structures After a 50-Year Flood in Gold Creek, Montana. Restoration Ecology 7:369-375.

White, S. L., C. Gowan, K. D. Fausch, J. G. Harris, W. C. Saunders, and J. Rosenfeld. 2011. Response of trout populations in five Colorado streams two decades after habitat manipulation. Canadian Journal of Fisheries and Aquatic Sciences 68:2057-2063.

Surprising?

I found surprising that Schmetterling and Pierce (1999) explained that the biggest uncertainty and main concern when adding large woody debris to streams was to estimate how long it lasted.

Puzzling?

I found puzzling that in Schmetterling and Pierce's (1999) study they would have found that B channel types were more successful at maintaining the structures than C channel types. I wonder how much of this has to do with land use patterns adjacent, or the geomorphic natural of C channel types?

Useful?

I found useful in White et al.'s (2011) study that in Figures 1 and 2 they compared not just the biologic component (trout biomass and abundance), but also the geomorphic component – pools – to show that having added in-stream structures did improve habitat metrics and had a biological response.

New?

I found new in both White et al.'s (2011) and in Schmetterling and Pierce's (1999) study that they both had the same conclusion that in-stream structures did have a positive geomorphic and biological response, while the previous studies we've seen – Palmer et al. (2009) – showed the contrary.

Knew it already?

I already knew – taking from White et al.'s (2011) and Schmetterling and Pierce's (1999) study - that the context of where these types of structures are added have to meet some initial condition in order for the intervention to be successful.

Interesting?

I found interesting that neither of the two articles mentioned the purpose behind putting in those in-stream structures beyond documenting the impact these structures have through time to the geomorphology and biology of the stream.

Do you agree or disagree with the findings?

I agree with the findings of both papers - White et al. (2011) and Schmetterling and Pierce (1999) – as they demonstrate that in-stream structures did improve geomorphology and biology of the stream, and both caution their audience not to take their experiment as a cookbook recipe for other streams.

Reflection

Below I provide a reflection on Schmetterling and Pierce's (1999) study and White et al.'s (2011) study alluding to their common conclusions, questioning the real need for long term monitoring, looking at their long-term monitoring results from a density-dependent perspective, missing the bigger context behind doing these interventions in the first place and applying this methodology to places where fish abundance/biomass would not be a goal.

Despite the 12 years between Schmetterling and Pierce's (1999) study and White et al.'s (2011) study, they both reported the same conclusions. They conclude that in-stream structures do increase the number of pools in a stream which has positive impacts on trout abundance and biomass, and that these structures actually last a long time in the stream, even after major storms and climatic events.

However, they both documented that the greatest response in both pool formation and trout abundance/biomass was seen 5 years after intervention, and not 14 years later. This contradicts the need for long-term monitoring. If we can see positive impacts in the stream right after intervention, monitoring is important, but the positive impacts will not necessarily escalate with time.

Furthermore, I wonder why the response of trout is not escalating with time, and whether it has to do with trout life history. Would the decrease in trout abundance/biomass be due to a density-dependent population regulation? This would seem like a possible hypothesis because in-stream structures are increasing habitats for these fish, but there comes a moment where there ends up being not sufficient habitat for all. This decline that is seen after 14 years of monitoring trout abundance/biomass might be explained by density-dependent regulation.

An issue that neither paper addressed was the reason why they were adding in-stream habitat structures. Is it to just prove a method that works for those types of streams? Or is it to increase the number of trout to increase the capacity of trout fishing? They both document their success stories, but missed informing the reader about the bigger context.

If the goal is just to stabilize the channel, would this also be the approach? I am interested in applying this approach to a stream that is highly impaired, and thus my measure of success

would not be trout biomass/abundance, or any type of macroinvertebrate richness metric. Instead, I would be interested in just improving the geomorphology of the stream.