Value of Pooled Monitoring Program & Practitioner Stream Restoration Research Needs

CBT Pooled Monitoring Forum
June 2020
www.chesapeakestormwater.net
Thanks a ton!

- Past research from the pooled monitoring consortium was “just-in-time” for our most recent round of stream restoration expert panels... and much of it was used to support new protocols and best practices to minimize unintended consequences.

- Pooled research will be critical step to revisit other CBP expert panels in the future
Revisiting Stream Restoration

- All 5 Groups of Experts Have Come to Consensus!
- Last Memo (group 4&5) out for External Comment til 6/19
- Seek USWG Approval in July
- Develop Consolidated Crediting Guidance in Fall
- State by state SR crediting outreach (upon request)
- Further CSN work on practice resilience to climate change
Floodplain Restoration: Legacy Sediment Removal
Floodplain Profiles, before and after restoration
Floodplain Restoration
Raised Stream Bed
Environmental Considerations

Credit: Mike Rahnis, UNAVCO, Dorothy Merritts and Robert Walter
## Unintended Environmental Consequences of Stream Restoration Practices

### Project Stream Channel
- Depleted Dissolved Oxygen
- Iron Flocculation
- Warmer Summer Stream Temperatures
- More Instream Primary Production
- Turbidity During Project Construction
- Initial Decline in Benthic IBI

### Floodplain/Downstream
- Project Tree Removal
- Post Project Tree Loss
- Vector for Invasive Plant Species
- Shift in Wetland Type/Functions
- Increased Flooding
- Initial Decline in Downstream IBI
- Upstream Blockage for Aquatic Life
Best Practices (BP) for TMDL Stream Restoration Projects

• Choosing the Right Stream Restoration Projects
• Project Design Principles
• Good Construction Practices
• Post-Construction Practice for Inspecting, Verifying and Maintaining Projects
Perhaps a shift to more applied engineering research?
G 1/2 Research Recommendations

- Good field guides to train crews on how to rapidly inspect projects to ensure they are meeting their performance objectives

- How to cost-effectively integrate stream restoration projects into municipal asset management systems

- How to assess functional uplift in gullies and zero order streams that lack many traditional stream metrics (bugs/fish/flow)
G3 Research Recommendations

• Update Regional Curves to improve predictions of the BANCS method

• Bay-wide standardization of all methods to measure bank retreat for Protocol 1

• Better environmental guidelines for working in zero-order streams and gullies in the stream network
G4/5 Research Recommendations

• Long-term, interdisciplinary studies on innovative floodplain restoration projects, like BSR in PA

• Effect of best practices to minimize UIC for stream restoration projects (e.g., tree removal and riparian nutrient concentrations)

• Forensic investigation of “failed” stream restoration projects

• New metrics to measure functional uplift in the floodplain, as well as the stream channel
Other G4/5 Engineering Recommendations

• Numeric triggers for unacceptable inundation or pooling for floodplain restoration projects

• Standard process for analyzing USGS glow gage data to support downstream diversion modeling
**Existing Urban BMP Expert Panels that might be good candidates for pooled research**

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Assessing How Vulnerable Urban BMPs are to Future Climate Change
Focus on Extreme Rainfall
Stream Restoration, Ponds, and LID Practices
Comments and Feedback

Photo Credit: G. Noe, USGS