

**Chesapeake Bay Program's
Scientific and Technical Advisory Committee (STAC)
Responsive Workshop Proposal - March 1, 2013**

**Workshop Title:
Designing Sustainable Stream Restoration Projects within the Chesapeake Bay Watershed**

Objective:

Create agreement among practitioners, regulators and scientists on a common language and methods for designing sustainable stream restoration projects that improve the functional elements of stream health to address water quality, climatological impacts, physical and biological components within the stream and adjacent riparian zone.

Proposed Workshop Steering Committee:

Bill Stack, Center for Watershed Protection
Neely Law, Center for Watershed Protection
Jeff Horan, Chair Habitat GIT, USFWS
Jana Davis, Vice Chair Habitat GIT, Chesapeake Bay Trust
Rich Starr, USFWS
Denise Wardrop, Penn State (STAC)
Margaret Palmer, UMCES
Stephen Schoenholtz, VA Tech
Ron Klauda, MD DNR
Bill Seger, MD MDE
Jeff Hartranft, PADEP
Dave Goerman, PADEP
Scott Lowe, McCormick Taylor
Ward Oberholtzer, LandStudies
Joe Berg, Biohabitats
Solange Filoso, University of MD

Description of Workshop:

There is a need to create understanding and agreement among practitioners on a common language and methods for designing sustainable stream restoration projects that improve the functional elements of stream health to address water quality, climatological impacts, physical and biological components within the stream and adjacent riparian zone. Understanding and agreeing on the major elements of stream function will allow stream restoration practitioners to create functional lift and sustain the biodiversity of riparian ecosystems and aquatic organisms during stream restoration.

This workshop will specifically target stream restoration practitioners, regulators and scientists who are designing, building, permitting or studying stream and riparian ecosystems. The workshop will address:

- 1) Creating a common understanding and common language among restoration practitioners, regulators and scientists;
- 2) Determine a uniform process for characterizing the degree of functional (biological) lift and/or loss in stream or riparian habitat associated with the various stream restoration protocols;
- 3) Identify best practices that can be incorporated into design to improve functional lift;
- 4) Engage the stream restoration community and provide a document from which to continue to build a consensus and guidance on stream restoration.

Workshop Justification and Urgency:

Approximately 700 miles of stream restoration projects are expected to be implemented as part of the Phase II Watershed Implementation Plans. A recent consensus-based expert panel developed protocols for crediting stream restoration projects sediment and nutrient reduction (Schueler and Stack, 2012). This report and recent research from Harman et al. (2012) identify a need for a common language and agreed upon protocols to measure the resultant functional lift and/or loss associated with design features (e.g., pool riffle spacing). This workshop will work with participants to identify and agree on a standard process that can be used by designers, managers, scientists and permitting agencies to assure these projects are implemented in a way to add functional lift to the elements of the stream ecosystem. In order to accomplish this identified need, the workshop will address the following questions:

1. What are the standards and methods used to determine stream functions that support in-stream and riparian ecosystem habitat?
 - Are the standards and methods adequate to assess stream functions based on the key habitat features, physiographic area attributes and ecotones? If not what additional design standards or methods are needed?
 - Discuss the Index of Biological Integrity (IBI) scores developed to determine biological health and impairment. Discuss how this informs habitat quality and/or quantity? Is this metric adequate? If not, what other habitat metrics can be used to evaluate habitat quality and quantity?
 - How are the standards tied back to measure progress for EPA Chesapeake Bay program or State habitat goals?
2. How does the riparian corridor interact with the stream geomorphology to affect habitat function?
 - What habitat functions should stream restoration projects protect?
 - How is stream instability defined and measured?
 - Review and discuss lateral and vertical stream instability.
 - Review and discuss the implications of timeframes to define instability as well as project success.
 - Review and discuss studies that relate stream instability to stream processes such as sediment loading and Total Maximum Daily Loads (TMDLs), nutrient processing and biological diversity?
 - What stressors affect stream functions, in-stream habitat and riparian corridor condition?
 - How does stream restoration affect the net gain or loss of stream functions and habitat condition?
3. What assessment tools are available to measure net gain or loss of stream functions and habitat conditions associated with stream instability to verify project success at the site, reach and watershed scale.
 - Are these tools adequate?
 - If not, what improvement or additional tools are needed to measure the net gain or loss of in-stream or riparian corridor habitat?
4. What design features are currently present in accepted stream restoration protocols that increase stream functions and habitat condition?
 - What design features can be added to stream restoration projects to protect stream functions and habitat condition during construction and to promote stream function and habitat condition after construction?
 - How can these design features be measured?

- Review and discuss the following design features: 1) bedform diversity/sediment transport; 2) floodplain connectivity; 3) lateral stability; 4) riparian habitat; and 5) additional design features suggested by the workshop attendees.
- 5. How can the workshop facilitate use of stream restoration to support in-stream and riparian habitat goals? How can this workshop facilitate the use of stream restoration to support tracking and verification?
 - What research questions were addressed in the workshop?
 - What additional research questions were raised in the workshop?
 - What do the workshop attendees consider are the immediate next steps?

Workshop Outcome:

The workshop discussions and any consensus reached by workshop participants will form the basis of a guidance document for measuring stream habitat functional lift and/or loss associated with stream restoration and to identify best practices to improve functional lift. The consensus and guidance document will be produced within 90 days of the workshop. The workshop is tentatively scheduled for early December 2013.

Proposed Sessions

Day 1 (Formal Panel Presentations – please note: not all speakers have been contacted)

1. **Stream Ecosystems and the Elements of Stream Function**
(Invited Speaker Panel: Margaret Palmer-UMCES and Scott Stranko-MD DNR)
2. **Finding Common Ground – Determining Design Objectives Prior to Stream Restoration**
(Invited Speaker Panel: Rich Starr-USFWS and Will Harmon-USEPA)
3. **Differing Approaches to Designing Sustainable Stream Restoration Projects**
(Invited Speaker Panel: Rich Starr-USFWS, Ward Oberholzer-Land Studies, Joe Berg-Biohabitats, Scott Lowe-McCormick, Taylor & Schmidt)
4. **Stream Habitat Standards**
What are the standards and methods used to determine stream functions and habitat condition? (Invited Speaker Panel: Bill Stack-CWP, Bill Seger-MDE, David Goreman-PA DEP, Joe DeVita-USACE)
5. **Tools for measuring stream functions and habitat condition associated with stream restoration?**
What are the tools available to measure habitat? Are these tools adequate?
(Invited Speaker Panel: Denise Wardrop-Penn State, Margaret Palmer-UMCES, Scott Stranko-MD DNR, Jeff Hartranft-PA DEP)
6. **What are the links between riparian corridor habitat and stream geomorphology?**
Are the habitat assessment tools adequate to measure loss in function associated with stream instability? What stream functions and habitat condition are lost as a result of stream instability? (Invited Speakers: Will Harmon-USEPA, Anne Hairston Strang-MD DNR , Rich Starr, USFWS, Jess Thompson-VA Tech)

Day 2 (Panel Presentation and Group Exercise)

1. **Summary of Day 1 Sessions**
2. **Panel: What design features can be added to stream restoration projects to increase stream functions and habitat condition. How can these design features be quantified?**

The review and discussion will include existing practices to address stability (e.g., cross vanes) and highlight practices that are specifically designed to improve stream functions and habitat condition (e.g., riffles, pools). (Invited Speaker Panel: Rich Starr-USFWS, Ward Oberholzer-Land Studies, Joe Berg-Biohabitats, Scott Lowe-McCormick, Taylor & Schmidt)

3. **How can these tools be applied?** This workshop session includes four break-out groups. Each group will be associated with the different stream restoration design types (e.g., Regenerative Stormwater Conveyance, Legacy Sediment, Natural Channel Design, and X) where each group would estimate habitat functional loss for pre-restoration condition and then suggest design approaches to improve functional lift.
4. **Group Report-out and Wrap-up**

Workshop venue: We expect the two-day workshop to be focused on a specific audience of 60-80 participants. The venue should be centrally located possibly a Baltimore-Washington DC- Annapolis area hotel where participants can spend the night if needed.

Proposed Timeframe: Early December 2013

Funding Request: \$10,000 Total

\$5,000 Participant Travel/\$3,000 Catering and Facilities/\$ 2,000 Facilitation (Institute for Env. Neg.)

Previous STAC Workshops:

The Habitat GIT will be holding a STAC Responsive Workshop on “Designing Sustainable Coastal Habitats” on April 16-17, 2013 in Easton, MD.

The Habitat GIT (former LRSC) sponsored a STAC Responsive Workshop titled "Quantifying the Role of Wetlands in Achieving Nutrient and Sediment Reductions in Chesapeake Bay", held April 4, 2007 (report issued November 2008, STAC publication # 08-006). The outcomes were to fine-tune the efficiencies credited for wetland establishment and re-establishment based on the latest science in response to the BMP Re-Assessment led by Tom Simpson, and to determine whether there was enough scientific validation for crediting wetland enhancement as a BMP in the Chesapeake.

The Habitat GIT was a supporter, but not a sponsor, of the Crediting Conservation workshops funded by STAC in 2011 (the Maintain Healthy Watersheds GIT was the sponsor).

Workshop Product: The development of a conceptual framework that can be used to develop a guidance document to determine the degree that stream restoration practices can improve the stream habitat functional lift.

References

Schueler, T. and Stack, W. 2012. Recommendations of the Expert Panel to Define Removal Rates for Individual Stream Restoration Projects. Prepared for the Urban Stormwater Work Group Chesapeake Bay Partnership.

Harman, W., R. Starr, M. Carter, K. Tweedy, M. Clemmons, K. Suggs, C. Miller. 2012. A Function-Based Framework for Stream Assessment and Restoration Projects. US Environmental Protection Agency, Office of Wetlands, Oceans, and Watersheds, Washington, DC EPA 843-K-12-006.



Habitat Goal Implementation Team

March 1, 2013

Christopher Pyke, Chair
Chesapeake Bay Program
Scientific and Technical Advisory Committee

Dear Chris:

On behalf of the Habitat Goal Implementation Team (GIT) we are pleased to support the request for funding under the STAC Responsive Workshop Proposal RFP for "Designing Sustainable Stream Restoration Projects within the Chesapeake Bay Watershed". This workshop endeavors to create agreement among practitioners, regulators and scientists on a common language and methods for designing sustainable stream restoration projects that improve the functional elements of stream health to address water quality, climatological impacts, physical and biological components within the stream and adjacent riparian zone.

This workshop will specifically target stream restoration practitioners, regulators and scientists who are designing, building, permitting or studying stream and riparian ecosystems. Under the Bay TMDL, approximately 700 miles of stream restoration are expected to be implemented as part of Phase II Watershed Implementation Plans. Currently the standards and methods used for design, review and construction of stream restoration projects within the Chesapeake Bay watershed differ greatly.

This workshop endeavors to bring these disciplines together to agree on crucial stream functions and how we can better design stream restoration projects that achieve both water quality and habitat benefits.

Thank you for this opportunity.

Sincerely,
Jeff Horan
Chair, Habitat Goal Implementation Team