



Chesapeake Bay Field Office

Coastal Program

Stream Habitat Assessment and Restoration Training

Approach

The U.S. Fish and Wildlife Service Chesapeake Bay Field Office Stream Habitat and Restoration team (Stream Team) promotes a comprehensive approach to conduct watershed and natural stream restoration activities that preserve trust species of high priority biological habitats of the United States. To achieve this, the Stream Team focuses on three core objectives:

- Training
- Technical Assistance
- Implementation Projects

Training

The Stream Team focuses training and educational opportunities to promote a watershed-level approach to functional-based stream assessment and stream restoration design.

Since 1994, over 1500 participants representing non-profit, local, state and federal agencies have taken part in training courses conducted by the Stream Team. It is projected that the training will be used in implementation of 500 projects and close to 250 miles of stream and riparian habitat restoration in 18 major river basins.

Benefits

Through training, the Stream Team provides resource managers with essential tools needed to improve aquatic and riparian habitat, and provide more comprehensive watershed management, project review, and stream assessment and restoration.

Species Benefits

Improved management and restoration activities will promote the establishment of critical habitat for a variety of trust species including the American eel, Eastern Brook trout and American shad.



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CBFO Stream Team assisting in fluvial geomorphology courses, 2009.

Types of Training

- Project Review
- Watershed and Stream Assessments
- Stream Restoration Design
- Stream Survey Methods
- Stream Monitoring

Training can also be customized to accommodate specific partner needs.

Natural Channel Design Checklist Training

The Natural Channel Design (NCD) review checklist training was developed to provide guidance for stream practitioners and regulators on important items to consider when reviewing stream restoration designs developed using natural channel design methodology.

The checklist is intended as a rapid method for determining whether a project design contains an appropriate level of information and whether the project should move to construction. The NCD review checklist is a valuable tool for practitioners in determining the benefits to trust resources and potential success of proposed stream restoration projects.

The course itself is 3.5 day training on the NCD review checklist and principles of fluvial geomorphology. The training involves class lectures, classroom exercises, and stream restoration project site visits.

The course covers the following topics:

- Overview of fluvial geomorphic principles
- Hydrology and hydraulics
- Sediment transport
- Hydrology and hydraulic models
- Sediment models
- Geomorphology
- Restoration objectives and methods

Participants also review two different proposed NCD stream restoration projects and complete the NCD checklist for each project.

At the end of the course, participants should have the tools they need to determine the potential success of stream restoration projects.

Stream Functions Training

The Stream Functions training course was developed to assist stream restoration practitioners in determining the functional lift and success of restoration projects.

The 3.5 day training course centers on the Stream Functions Pyramid, a five-level hierarchical framework that categorizes stream functions and the parameters that describe those functions.

The stream functions pyramid provides a framework for assessing stream functions, setting design goals, and evaluating performance. The pyramid shows that the restoration of functions must occur in a certain order for maximum functional lift to occur.

The pyramid includes the following parameters:

- Hydrology
- Hydraulic
- Geomorphic
- Physicochemical
- Biological

At the end of the course, stream practitioners will be able to use the stream functions pyramid parameters to set goals to ensure that restoration designs address the appropriate functions. In addition, participants can use the pyramid framework to design monitoring plans that quantify functional lift.

**U.S. Fish & Wildlife Service
Chesapeake Bay Field Office**

April 2013

Current Activities

Courses are presently taught at the U.S. Fish and Wildlife Service National Conservation Training Center and Shepherd University in Shepherdstown, WV, and Anne Arundel Community College in Arnold, MD. The courses can also be taught onsite by request.

The Stream Team can currently provide the following courses:

- Fluvial stream geomorphology restoration design methods
- Stream classification
- Function-based assessment
- Pre and post construction monitoring
- USGS gage surveys
- Stream restoration design review
- Stream Survey Methods

For more information contact:

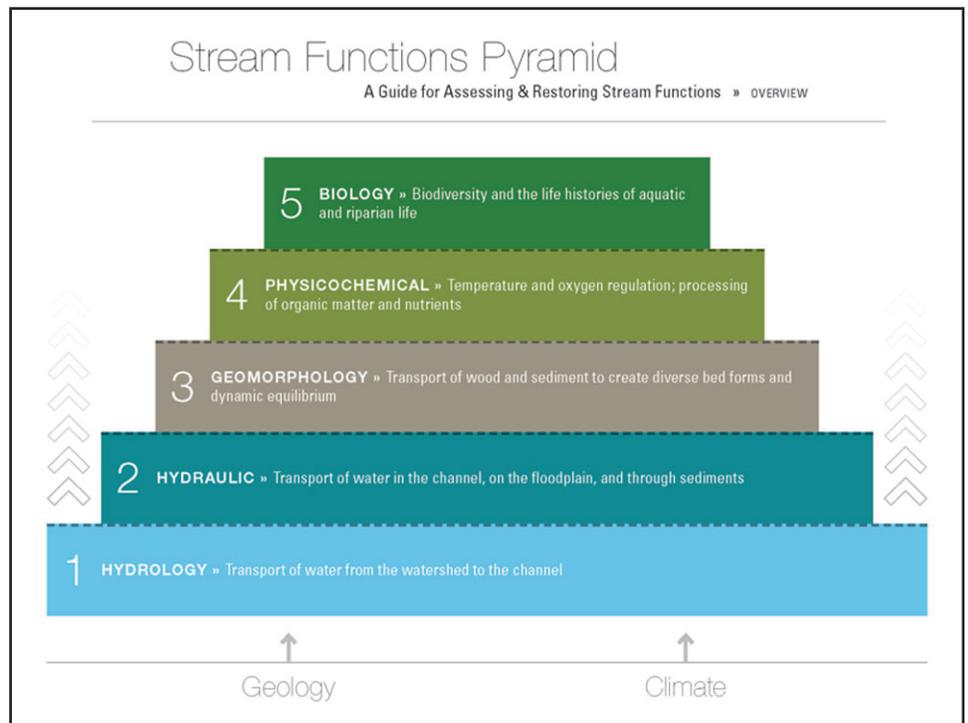
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CBFO Stream team assisting Anne Arundel Community College, 2010

*“We call upon the waters that rim the earth, horizon to horizon, that flow in our rivers and streams, that fall upon our gardens and fields, and we ask that they teach us and show us the way.”
Chinook Blessing Litany*



Stream Functions Pyramid (Harman et al, 2012)