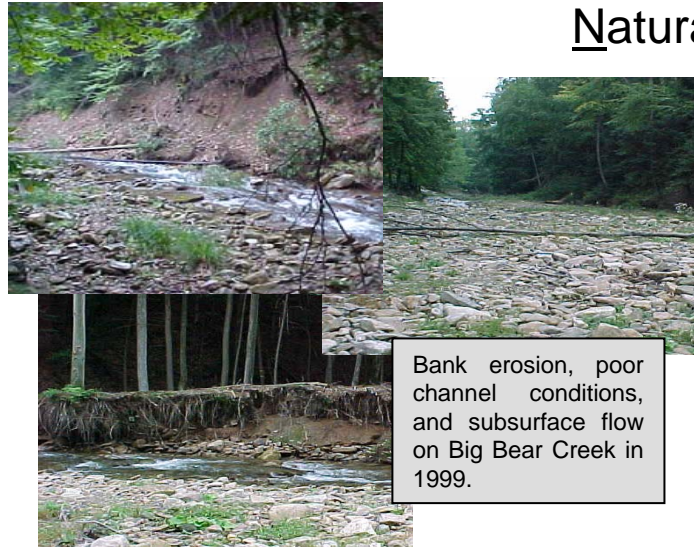


Big Bear Creek

Natural Stream Channel Design Project



Bank erosion, poor channel conditions, and subsurface flow on Big Bear Creek in 1999.

Causes of Channel Instability on Big Bear Creek

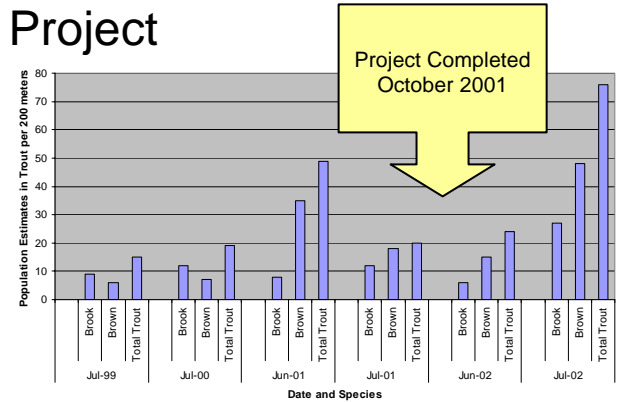
- ❖ Hurricanes Agnes (1972) and Eloise (1976)
- ❖ Removal of a 100 year old dam on the main stream and release of large sediment deposits
- ❖ January 19, 1996 flooding
- ❖ Sediment from inappropriate road maintenance
- ❖ Installation of inappropriate fish habitat structures

The Big Bear Project

Big Bear Creek is a tributary of Loyalsock Creek in the Big Bend Watershed of Lycoming County, Pennsylvania. Historically, Big Bear Creek has been modified by human activities that have destabilized the streambed, promoted erosion, and degraded the trout fishery which could only be sustained through regular stocking.

The purpose of the Big Bear Creek restoration project was to stabilize the stream channel, reduce erosion potential, and restore a self-sustaining trout population.

Using FGM and NSCD techniques, much of Big Bear Creek was stabilized. Trout stocking was suspended and, subsequently, studies of the trout population have demonstrated a tendency toward stable, self-sustaining populations of brown and brook trout (see graph). Macroinvertebrate densities have increased 200-300% and trout populations appear to be



Trout population densities before and after remediation

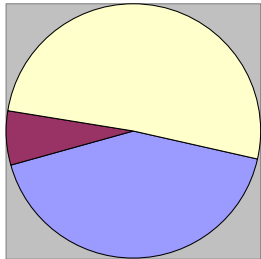
responding to increased food and improved habitat conditions. A more detailed report is available here:

<http://www.lycoming.edu/biology/cwi>

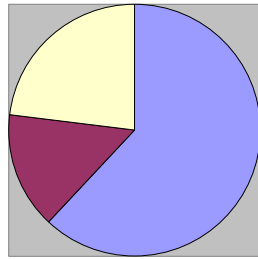
For more information on Natural Stream Channel Design, please visit the Keystone Stream Team:

<http://www.keystonestreamteam.org>

Stream macrohabitat conditions in July 1999 (before remediation)



Stream macrohabitat conditions in June 2002 (after remediation)



■ Riffle 42% ■ Pool 7% ■ Run 51% *

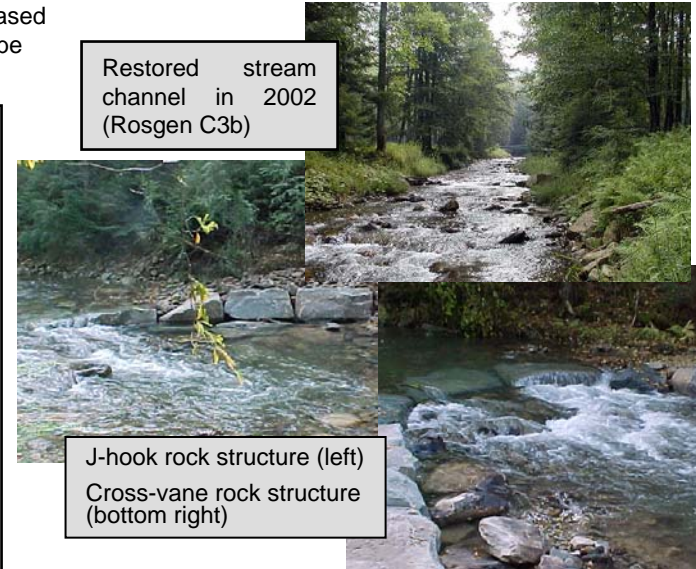
■ Riffle 62% ■ Pool 15% ■ Run 23%

* 6% of Run Section was dried up with subsurface water flow

This project was supported by:

- ❖ U.S. Fish and Wildlife Service
- ❖ PA DEP – WRAP & Growing Greener Grants
- ❖ Dunwoody Club (esp. Bill Worobec and Bob Wayne)
- ❖ Sunbury Grouse Club PPL
- ❖ Penn State University
- ❖ Gleim Environmental Group
- ❖ Lycoming College Biology Department
- ❖ Lycoming College Clean Water Institute

Restored stream channel in 2002 (Rosgen C3b)



J-hook rock structure (left)
Cross-vane rock structure (bottom right)