Session G – Lessons Learned

What is a Lesson Learned?

Lessons Learned

A Lesson Learned is a change in behavior as a result of experience

1. **Reflect on Experience**
2. **Identify Lesson**
3. **Analyze**
4. **Generalize**

At this stage we have a <u>Lesson Identified</u>.

Knoco stories: What is a Lesson Learned?
http://www.nickmilton.com/2009/05/what-is-lesson-learned.html#ixzz7VpZzZjxW

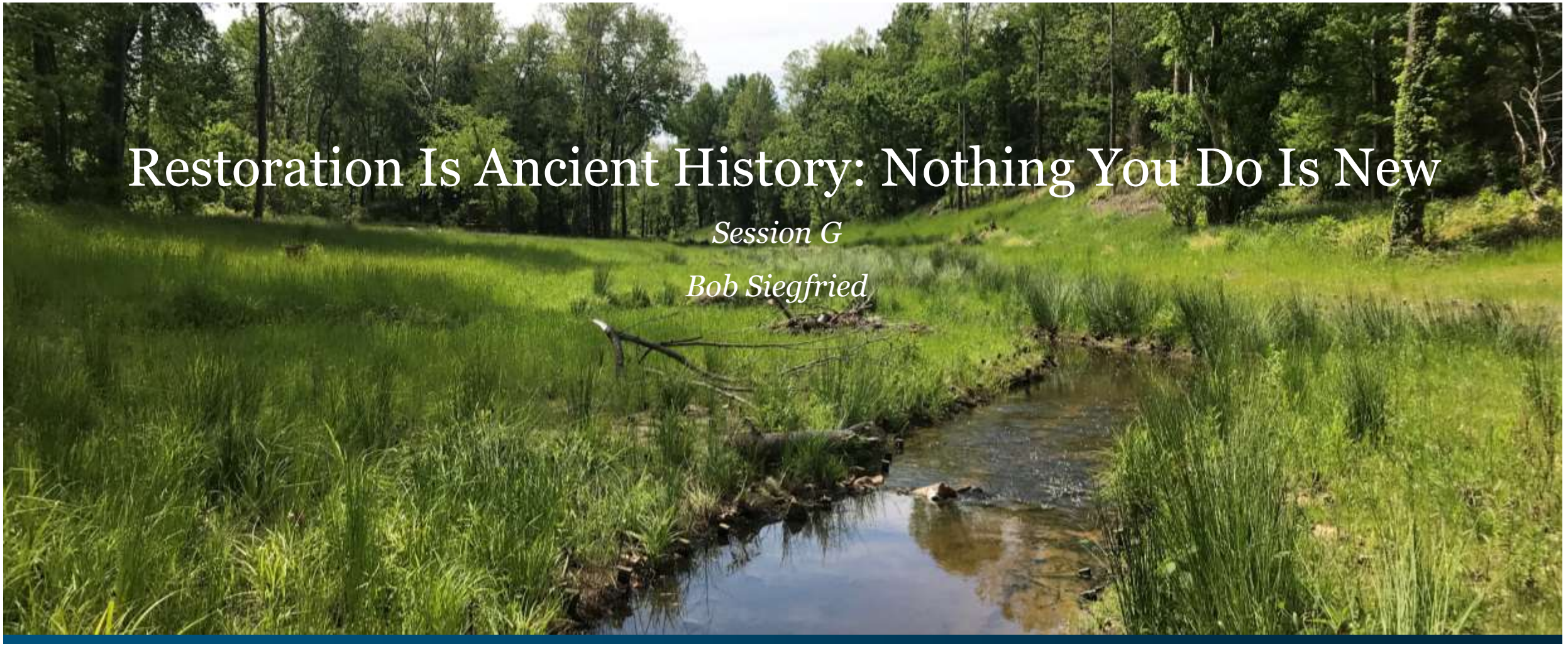
Lessons Learned

What Makes a Lesson Learned?

- **Take Action**
  - Include in Training
  - Change Policy and Procedures
  - Revise Standards or Details
  - Include in QA/QC Reviews

- **If Nothing Is Changed, Nothing Has Been Learned, We Repeat Failure**

Knoco stories: What is a Lesson Learned?
http://www.nickmilton.com/2009/05/what-is-lesson-learned.html#ixzz7VpZzZjxW



Restoration Is Ancient History: Nothing You Do Is New

Session G

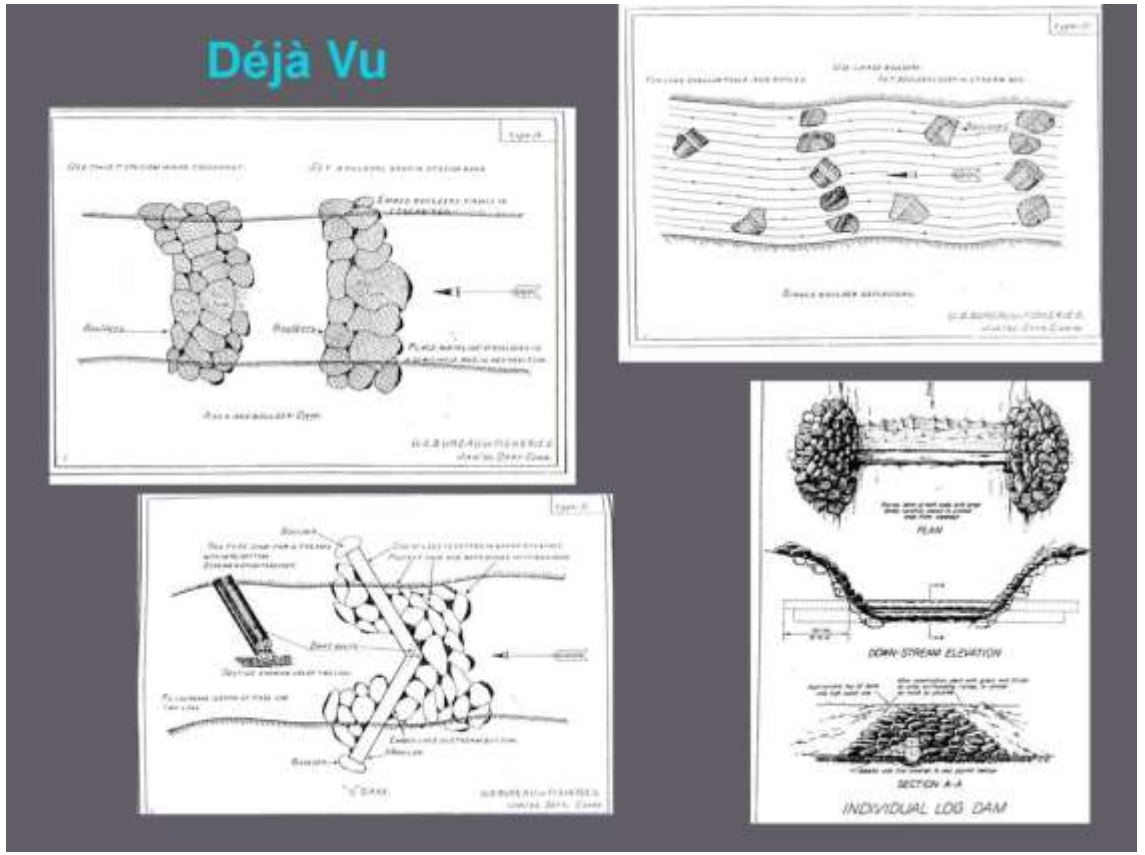
Bob Siegfried

res Restoring a resilient earth for a modern world

First National STREAM RESTORATION Conference

1870- 1920s - Structures to Improve Fishing

- 1870s Fishing Clubs in Catskills build pools for trout
- 1870-1920 US Bureau of Fisheries, American Society of Fisheries
- Focus was on Fish Production, particularly for Recreation



1935 US Bureau of Fisheries

1930 - 'Low Tech' Stream Restoration

- CCC does Stream Restoration
- Used Boulders, Logs, Bioengineering
- In-Channel Improvements
- Mostly Hand Labor
- 31,000+ structures in 406 mountain streams
- 4,800 Miles of Streams

Lessons Identified (Learned?)

Géographie physique et Quaternaire, 2002, vol. 56, nº 1, p. 45-60, 4 fig.

THE DEVELOPMENT AND HISTORIC USE OF HABITAT STRUCTURES IN CHANNEL RESTORATION IN THE UNITED STATES: THE GRAND EXPERIMENT IN FISHERIES MANAGEMENT

Douglas M. THOMPSON* and Gregory N. STULL, Department of Physics, Astronomy and Geophysics, Connecticut College, Campus Box 5585, 270 Mohegan Avenue, New London, Connecticut 06320, U.S.A.

- 1930s Science Started to Study Restoration Projects
- 100% of cover structures failed
- 95% cabled LWD failed
- Ehlers (1956) 18 year study of 41 CCC era structures – 76% failure
- Structures failed without maintenance

1940 - 1967 – WWII Command and Control

- Massive COE Water Projects Dam and Divert Rivers
  - 11,000 miles dredged by COE
  - 20,000+ miles by Soil Cons. Ser.
- Flood Control Leads to Concrete Channels

Environmental Movement - Stream Restoration

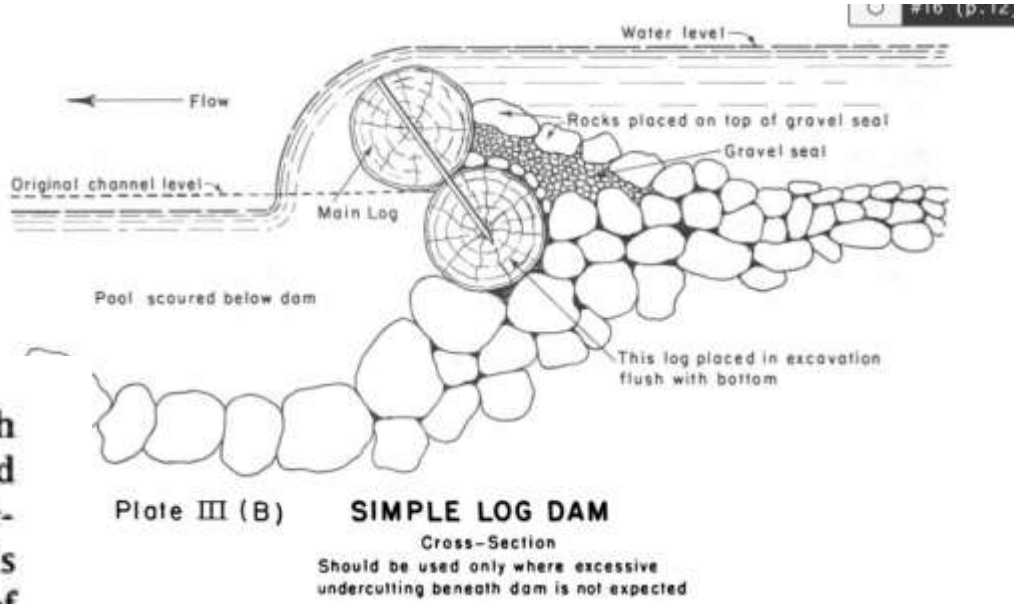
- **1970s – Fishery Scientist Lead the Way (Again!)**
  - Fish Habitat Enhancement
  - 15-20 Years Of In-stream Structures – K Dams, Wing Deflectors, Log Check Dams
  - Abruptly Altered Channel Bedform (Pool Frequency)
  - No Channel Reconfiguration

1952 USFS Manual

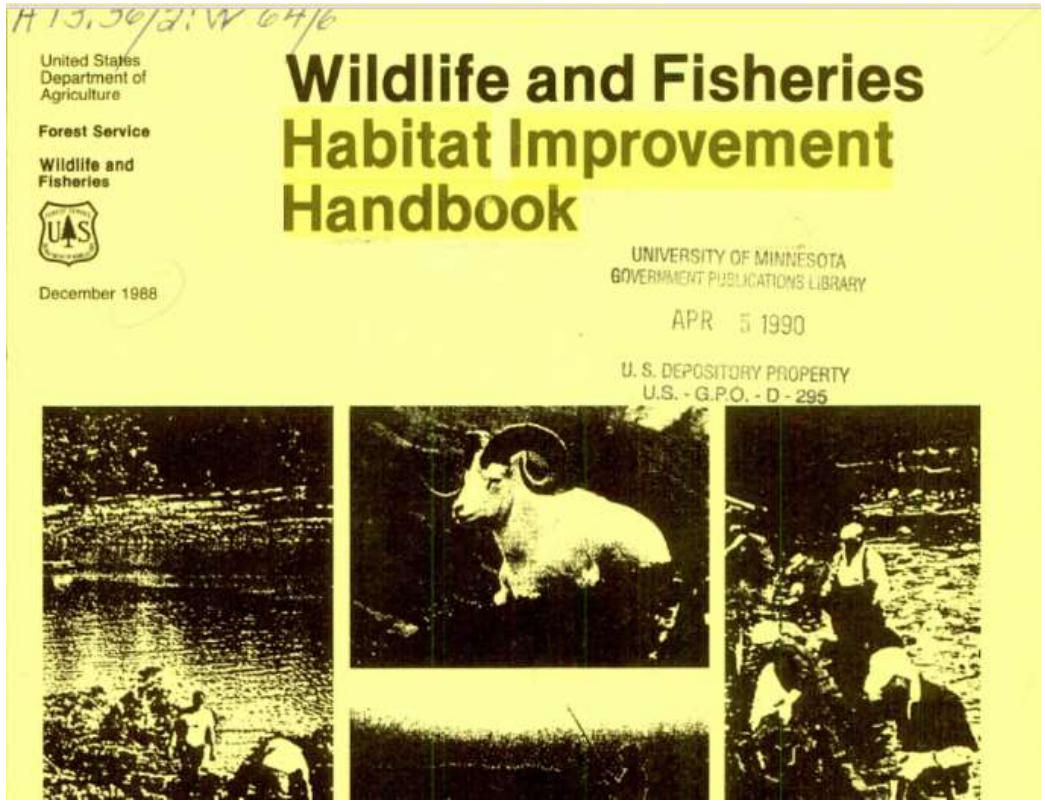
Many mistakes were made in the earlier stages of the work, but much has been learned as a result. At first, considerable emphasis was placed on a large variety of stream improvement structures. Stream improvement was looked upon by some as a cure-all for the environmental ills of a trout stream. Experience showed that only a relatively few types of simply designed structures were necessary and that stream improvement fell far short of making a desirable stream habitat if destructive forces were at work in the watershed.

Unless stream improvements are carefully planned much damage may result. One of the first things learned in the earlier stream improvement work was that it could be easily overdone.

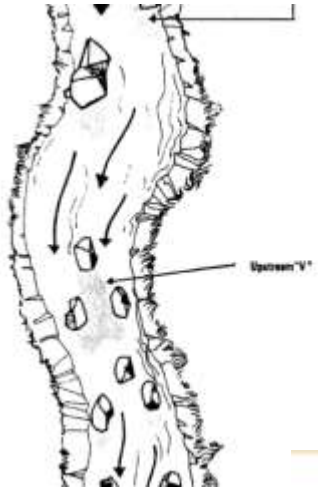
SIMPLE Log Dam

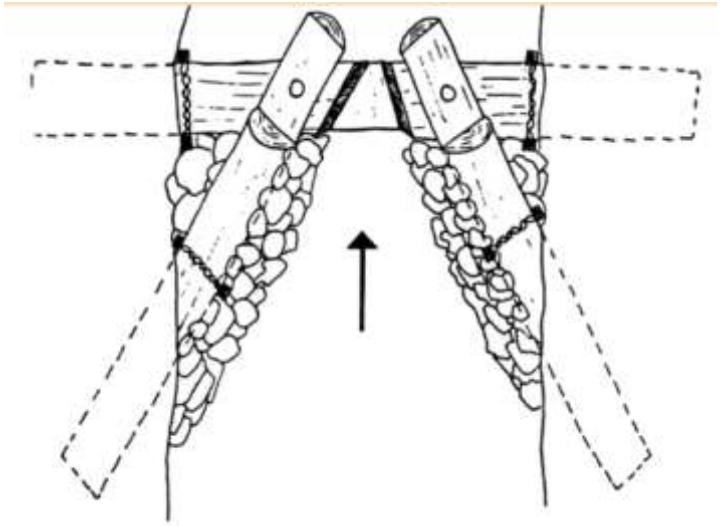


1986 USFS Manual

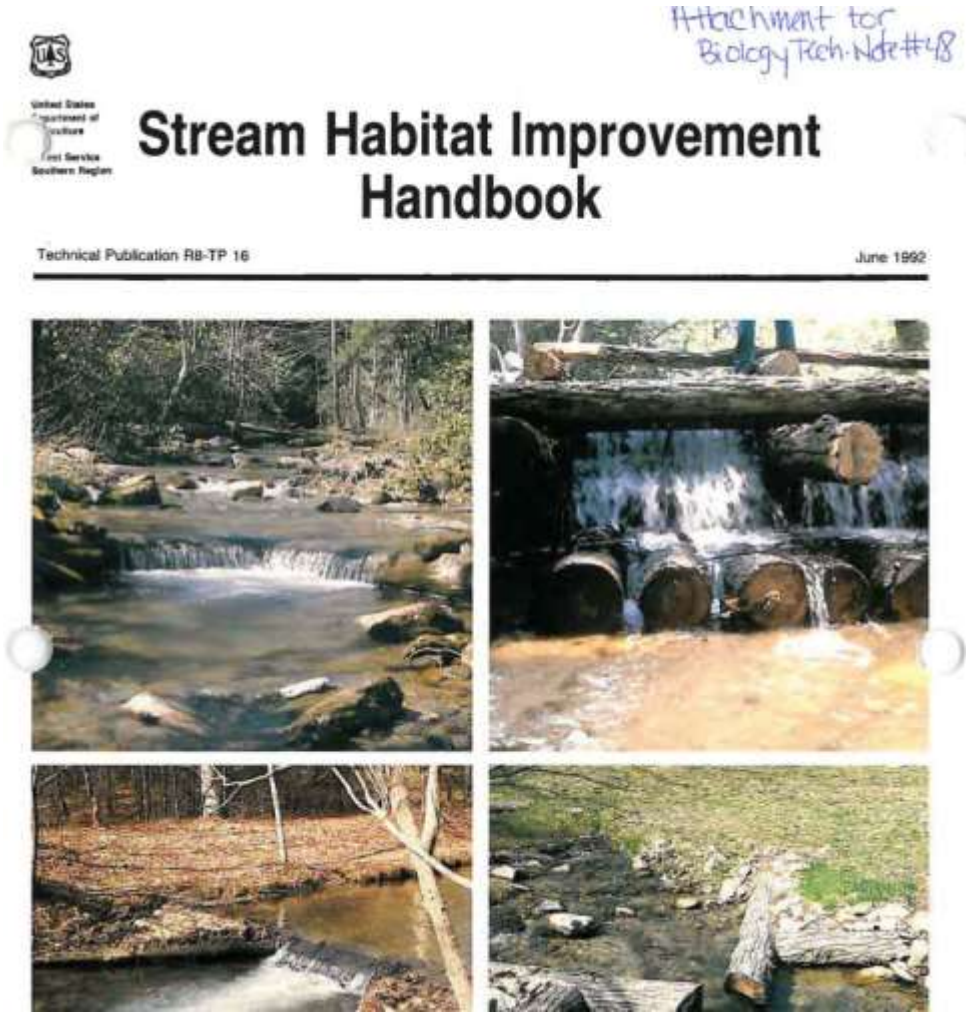


Simplified Details and Design Criteria





USFS 1992



Attachment for Biology Tech. Note #48

United States Department of Agriculture
Forest Service
Southern Region

Stream Habitat Improvement Handbook

Technical Publication R8-TP 16 June 1992

Schematic Drawings

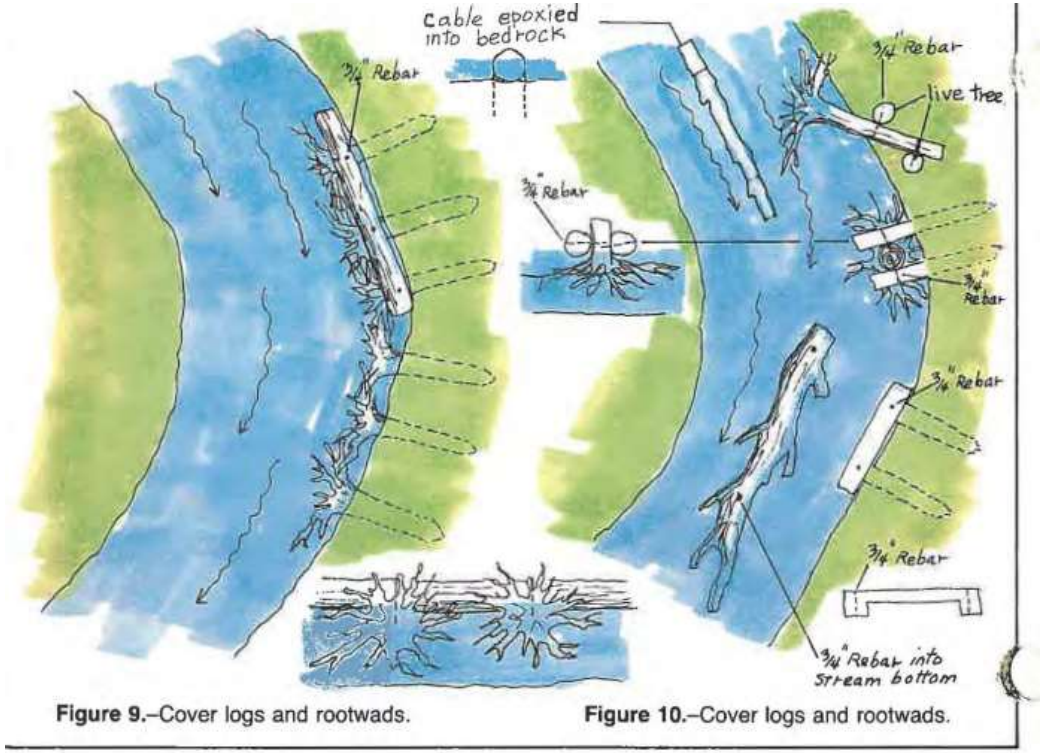
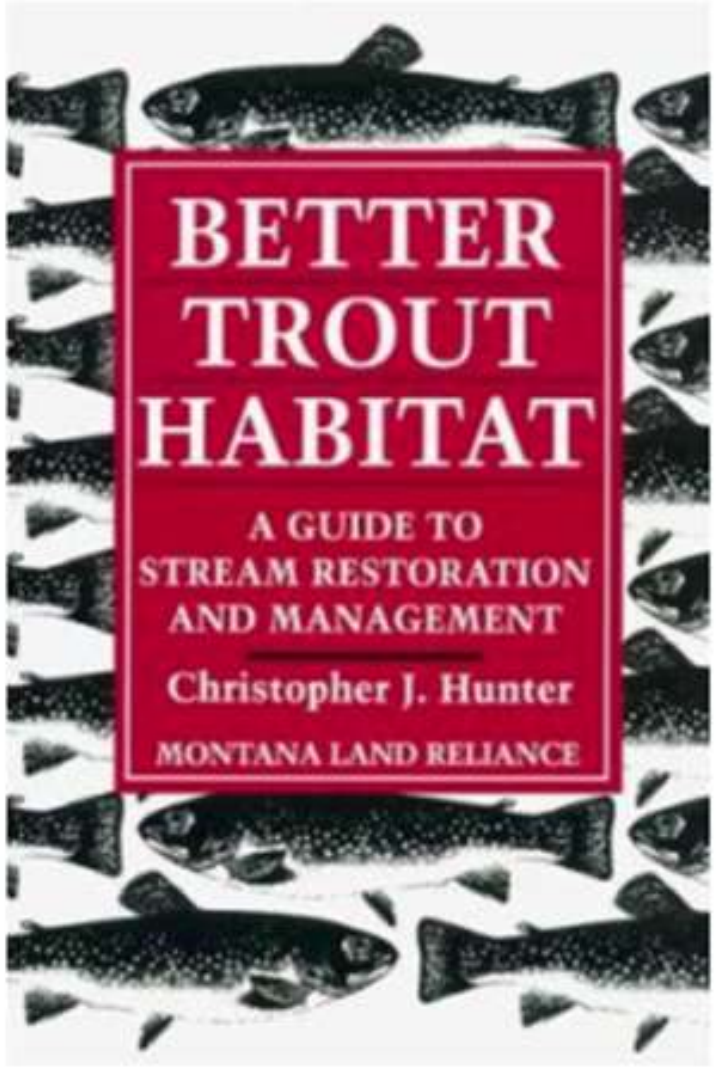


Figure 9.–Cover logs and rootwads.

Figure 10.–Cover logs and rootwads.

1991 – Better Trout Habitat



- Targeted to Public Groups
- TU / Watershed Groups
- Fish Habitat / Structures
- Less Details than earlier Manuals

Modern History of Stream Restoration

1980-2010s

- 1980s Other Disciplines Arrive
- Hydraulic Geometry Relationships
- Stage Set For Full Scale Reconfiguration Of Rivers
- Stand Alone Use Of Instream Structures Fell Out Of Favor
- BUT Nearly All “Restored” Streams Include “Structures”
- Most Structures are a Point of Failure

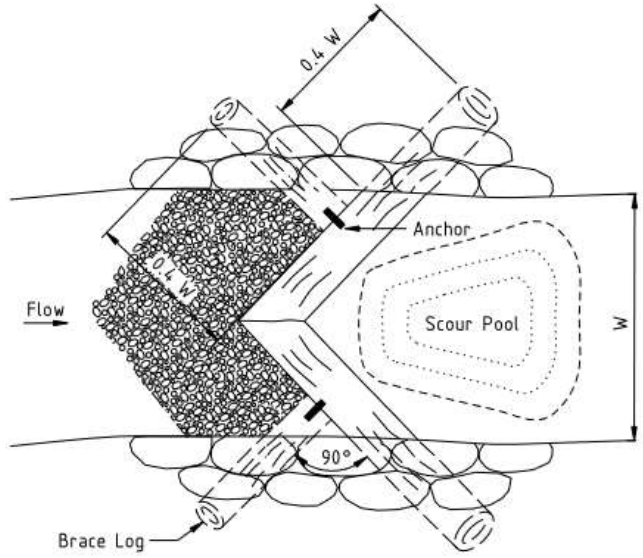
Failed J Hook

2004 Virginia Manual

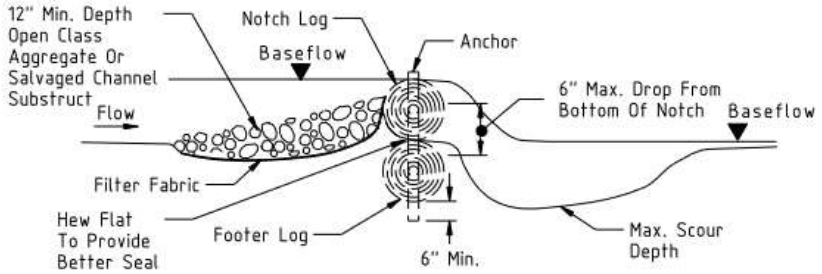
The Virginia Stream
Restoration & Stabilization
Best Management Practices Guide

Department of Conservation and Recreation
Division of Soil and Water Conservation
203 Governor Street, Suite 206
Richmond, Virginia 23219-2094
Phone: 804-786-2064

The Virginia Stream Restoration & Stabilization Best Management Practices Guide
DETAIL 3.5(b): V LOG DROPS



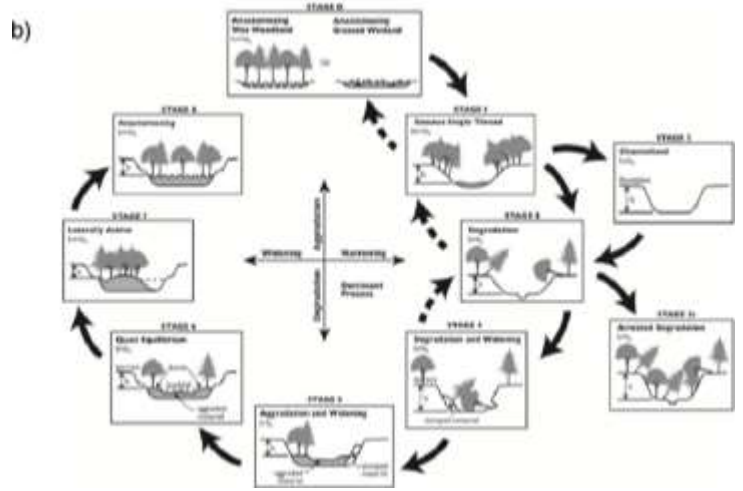
PLAN



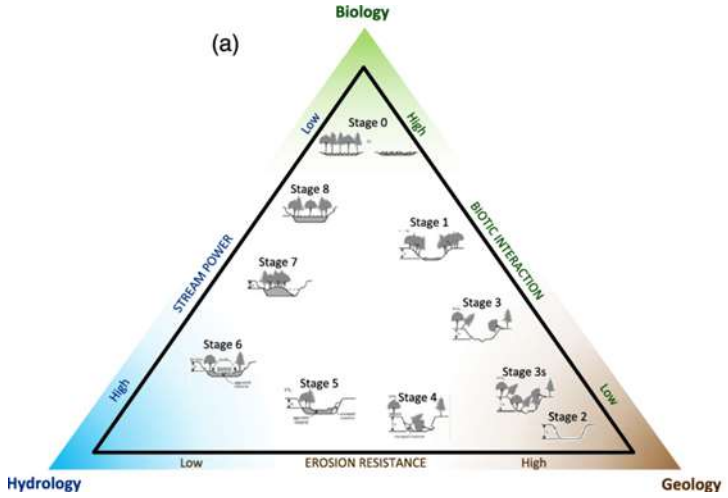
PROFILE

Broadening the Concept of Restoration

- **2010s:**
  - Legacy Sediment Removal Design
  - Stage Zero Design
    - Incorporation of More Ecology
  - Beaver Analog Designs
    - Low Tech or Process Based
  - Messy River Design Concepts (Wohl)
    - Dynamic, Complex, Self Healing,
    - Floodplain Wetland/Stream Complexes



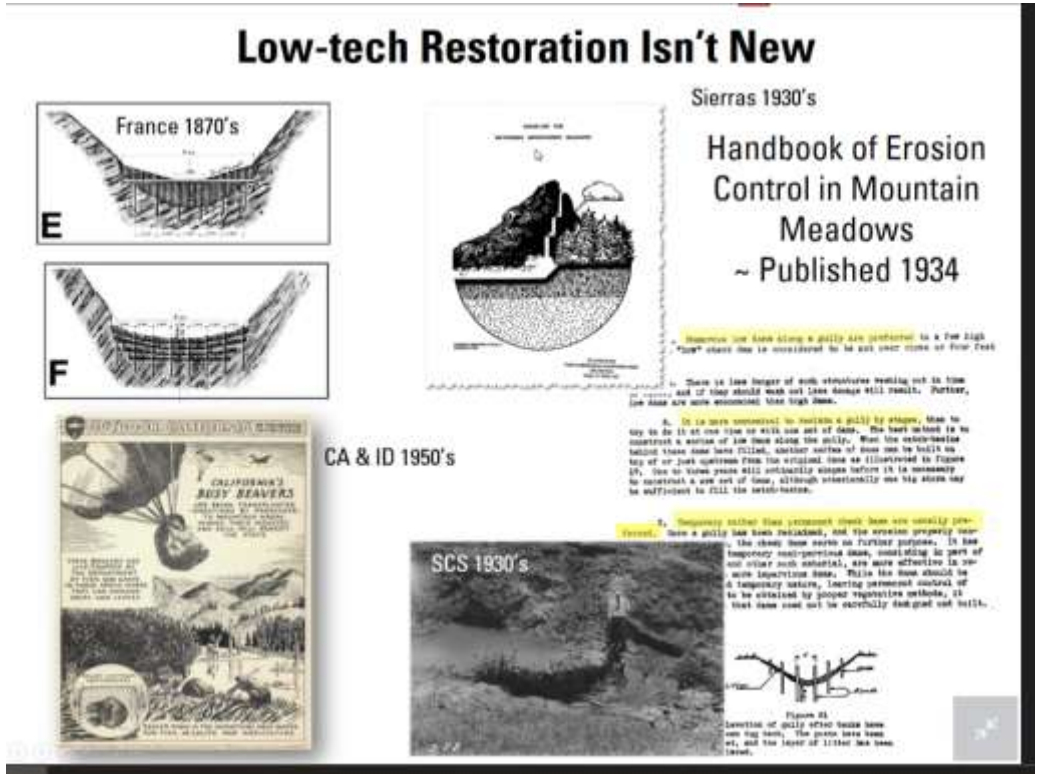
Stream Evolution Model (Cluer and Thorne 2013



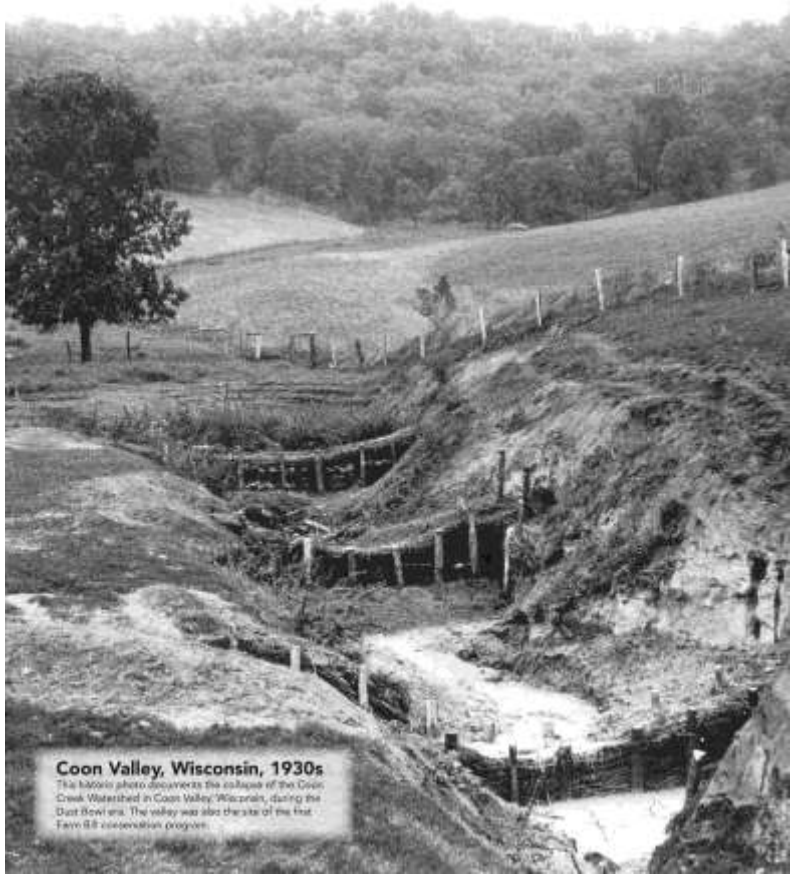
Stream Evolution Triangle (Castro & Thorne 2019)

Lessons Learned from History of Beaver Analogs?

1870, 1930s, 1950s



Beaver Analog on 1930s Gully



Where are We Going ?

Moving Away From

- “Structures” in Channel
- Reconfiguring Single Channels
- Annual Floods
- Dynamic Stability
- Conveyance and Competency

Moving Toward

Where are We Going ?

Moving Away From

- "Structures" in Channel
- Reconfiguring Single Channels
- Annual Floods
- Dynamic Stability
- Conveyance and Competency

Moving Toward

- Let Channel Build Itself
- Multiple Channels
- Frequent Flooding
- Messy Rivers – Embracing Instability
- Aggradation/Retention/Avulsions

Questions & Answers

For more information:

bsiegfried@res.us

res.us

Stop by booth #20

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