Restoration Effectiveness Monitoring and Citizen Involvement

Cheryl Snyder

PA Department of Environmental Protection

Citizens' Volunteer Monitoring Program

Monitoring Projects

Stream Restoration Monitoring

Conservation Reserve Enhancement Project (CREP)Monitoring

Site Specific

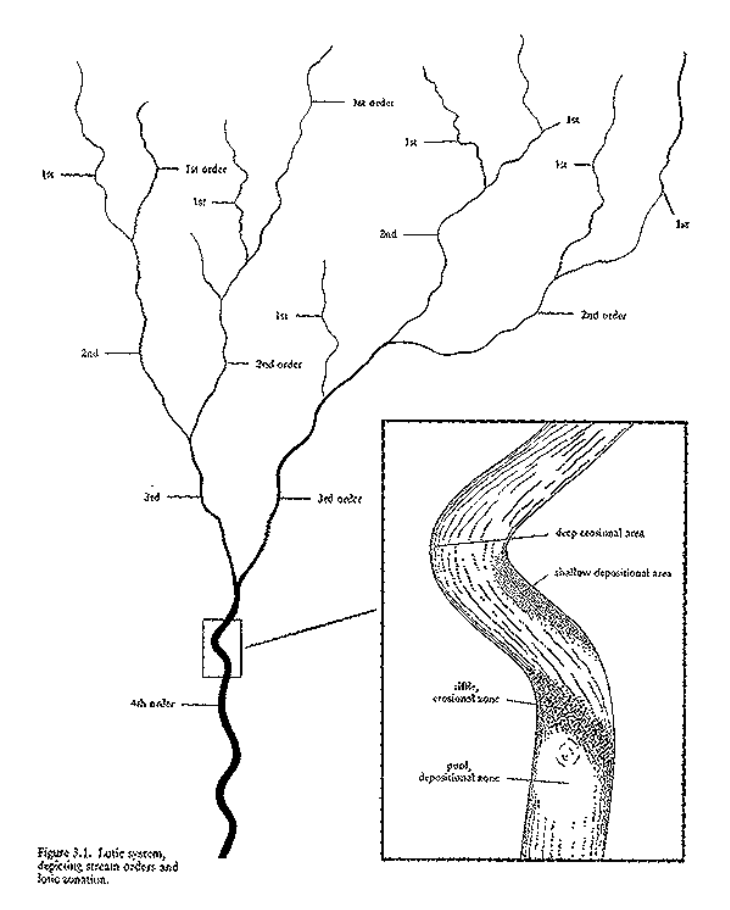


Figure 3.1. Lotic system, depicting stream orders and lotic zonation.

Bracket proposed project reach (above and below project)

Monitor before and after project installation

Reference sites on two CREP projects

Stream Restoration Monitoring

Macroinvertebrates

Habitat Assessment

Physical Characteristics

Photos

Biological / Habitat / Physical Assessment

Macroinvertebrates (order and family)

Habitat – EPA's RBP protocol

Pebble counts

Cross sections

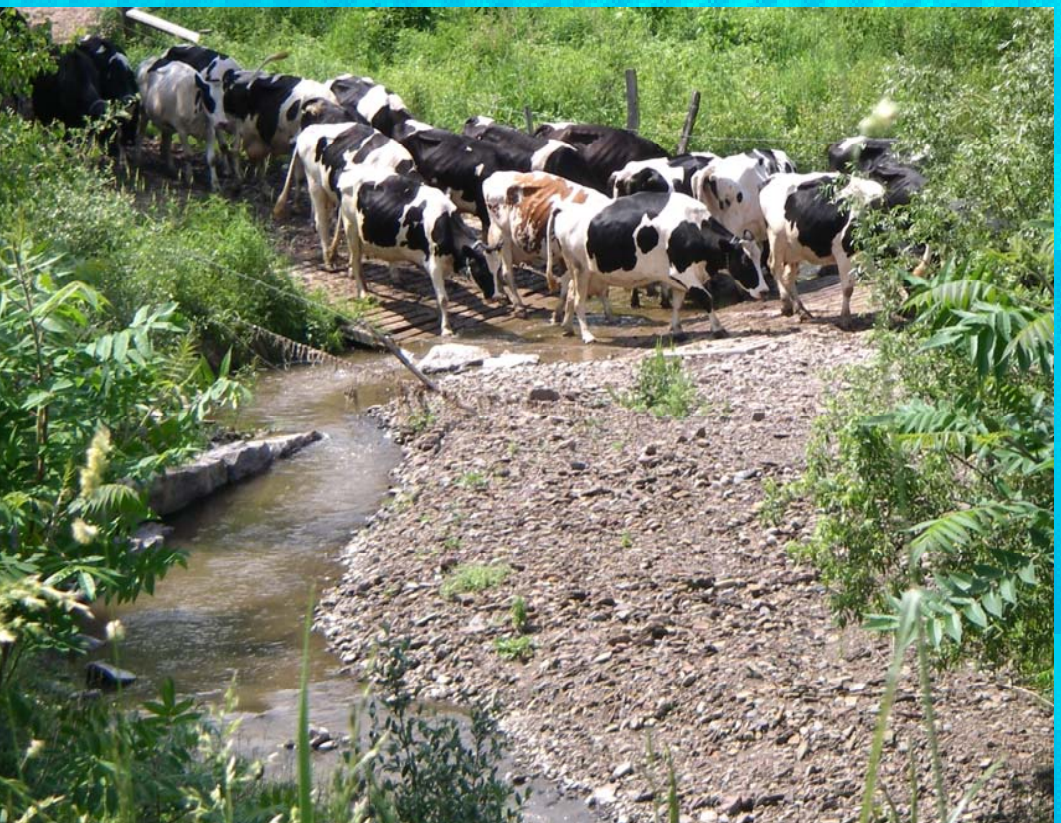
Macroinvertebrate Scores
South Branch Codorus Creek

Macroinvertebrate Scores			
	Upstream	Middle	Downstream
8/04	39.0	39.9	40.5
6/05	42.7	46.9	52.9
9/05	44.5	41.9	13.8
5/06	44.0	39.1	27.5
9/06	40.0	34.0	47.3
6/07	42.1	43.7	36.8
8-9/07	21.4	43.7	50.0
9/05 project was completed		Good > 40 Fair 20-40 Poor < 20	6/07 gravel bar developed downstream 8-9/07 project upstream

Habitat Assessment Scores
South Branch Codorus Creek

Habitat Assessment Scores			
	Upstream	Middle	Downstream
8/04	134	113	120
6/05	111	112	117
9/05	120	154	86
5/06	131	131	94
9/06	126	113	89
6/07	110	132	115
8-9/07	105	131	127
EPA RBP Method Possible Total of 200	9/05 Project Completed	Gravel bar developed downstream 6/07 Upstream project 8-9/07	

Conservation Reserve Enhancement Program (CREP) Monitoring



Monitoring effectiveness of conservation practices

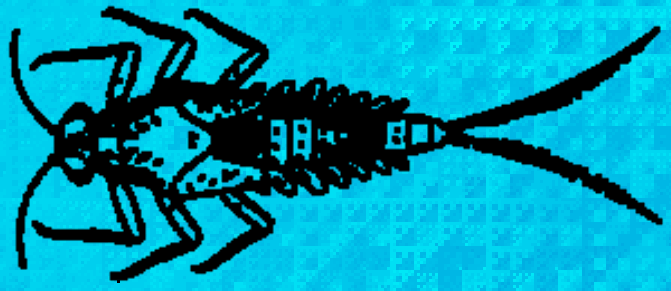
Water chemistry, bacteria, macroinvertebrates, physical parameters, habitat, photos

Chemical/Biological Parameters

Dissolved oxygen, pH

Alkalinity, Conductivity

Nutrients – NO3, PO4, NH3

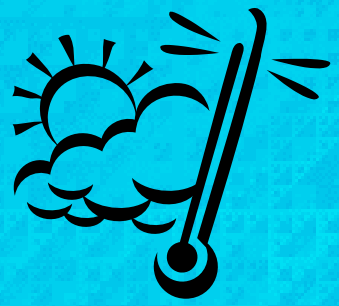


Benthic macroinvertebrates (order/family)

Fish (one site with PFBC)

Bacteria including fecal coliforms and <u>E. coli</u>

Physical/Habitat Parameters



Temperature

Turbidity/TSS

Flow

Stream width/depth

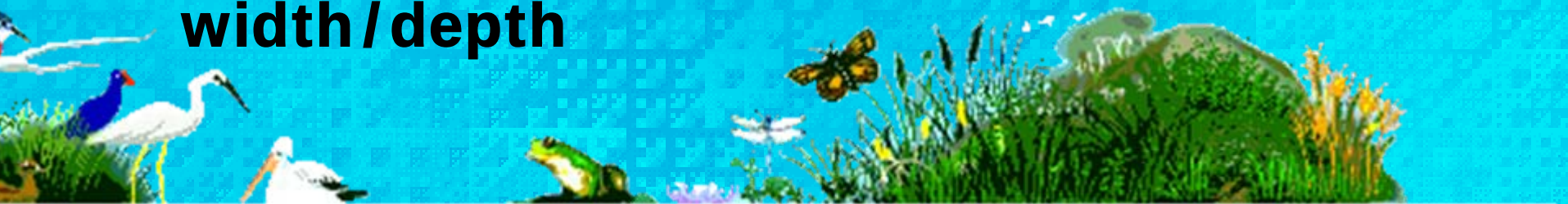
EPA's RBP Method

Riparian vegetation

Bank stability

Instream cover

Substrate



What the Future Holds

Fine tuning stream restoration monitoring and CREP monitoring

Continue liaison with DEP programs and volunteers

Work with EPA/DEP (319 program) /citizens on interim monitoring/ delisting and CREP project monitoring