



Macroinvertebrate Monitoring of the Lower West and North Branches of the Susquehanna River- Rock Baskets and Hester-Dendy Sampling



Zach Bassett, Zebidiah Buck, Josh Moore, Lori Smith, Laura Walter, Max Olsen and Dr. Mel Zimmerman



Introduction

During the summer of 2009 the Susquehanna River Heartland Coalition for Environmental Studies (SRHCES.org) began in stream monitoring for chemistry and aquatic macro invertebrates at Danville on the North Branch, Milton and Watsonstown on the West Branch, and Shady Nook below the confluence of the two branches at Selinsgrove. Permanent *Sondes* were placed at water intake points at Danville and Milton to monitor chemistry. Continuous Sonde data from the Danville and Milton sites can be accessed at

<http://www.facstaff.bucknell.edu/mmctamma/research/susquehanna/>.

Along with the *Sondes*, Rock Baskets and Hester-Dendy artificial samplers were deployed to collect macroinvertebrate life in the river. These artificial samplers were placed in the river at the Shady Nook/Selinsgrove, Watsonstown, and Danville sites for a six week incubation period so that population density and diversity of macroinvertebrate populations could be attained. Three sets of each sample were placed along a transect at each site at the right and left banks and middle river. Each set contained 3 Rock Baskets and 3 Hester-Dendy samplers. Rock Baskets encompass 0.3m² surface area while Hester Dendy samplers are 0.1m². During the summer of 2010 these samplers were again deployed at the same sites along with an additional location at Milton State Park. Interns from Susquehanna University and Lycoming College are processing these samples. At each of the locations diatoms were sampled with diatometers incubated in the river for two 3 week periods each summer. These samples are being processed by Susquehanna University.

Methods

Rock Baskets were filled with washed limestone (grade 3-4) and attached to cinder blocks with wire and plastic zip-ties. Hester-Dendy and diatometers were attached to the rock baskets with zip-ties. Deployment and recovery of samplers involves use of snorkeling and scuba diving equipment.



Benthic Macroinvertebrates Collected for SRHCES Project 2009

Order Amphipoda:

- Family Gammaridae
 - Gammarus

Order Coleoptera:

- Elmidae
 - Stenelmis
- Psephenidae
 - Psephenus

Order Decapoda:

- Cambaridae
 - Orconectes

Order Ephemeroptera:

- Caenidae
 - Caenis
- Isonychiidae
 - Isonychia
- Heptageniidae
 - Stenonema
 - Maccraffertium
 - Heptagenia
 - Stenacron

4. Batidae

- Baetis
- Tricorythidae
 - Tricorythodes
 - Potamanthidae
 - Ephemerellidae
 - Leptophlebiidae
 - Chimarra
 - Ephemeridae

Order Gastropoda:

- Pleuroceridae
 - Lymnaeidae

Order Isopoda:

- Asellidae

Order Diptera:

- Chironomidae
- Simuliidae
- Tipulidae

Order Megaloptera:

- Saillidae
 - Sialis
- Corydalidae
 - Croydulus

Order Odonata:

- Coenagrionidae
 - Argia

Order Plecoptera:

- Leuctridae
 - Leuctra
- Perlodiidae
- Taeniopterygidae

Order Trichoptera:

- Hydropsychidae
 - Cheumatopsyche
 - Hydropsyche
- Lepidostomatidae
- Philopotamidae
 - Chimarra
- Polycentropodidae
- Rhyacophilidae

Preliminary Results

Over 35 taxa of macroinvertebrates have been identified to date. Eventually all taxa will be identified to genus and species and processed according to the EPA Rapid Bioassessment protocols for water quality assessment. Distinct density values were observed along transects at each site and between each location. Eventually, macroinvertebrate data will be correlated with water chemistry and diatom diversity and provide an overall water quality evaluation at each location.

Macroinvertebrate Density (org/m ²) Data from River Study Summer 2009					
Site:	Watsonstown		Danville		Shady Nook
Rock Basket Density (org/m ²):					
Left Bank (org/m ²)	342.3	203.7	N/A		2456.7 1016.5
Center (org/m ²)	4104.7	1069.8	7243	6335.68	5690.7 3254.2
Right Bank (org/m ²)	1306.7	1024.42	5818.7	2660.6	1779.0 478.8
Hester-Dendy Density (org/m ²):					
Left Bank (org/m ²)	380	103.92	N/A		*
Center (org/m ²)	686.7	222.79	2943.3	1857.7	*
Right Bank (org/m ²)	416.7	203.06	2133.3	1413.0	*
Grand Mean (org/m ²) Std. Deviation					
Rock Basket Density (org/m ²):	1917.9	1850.2	6388.4	3765.9	2660.7 2427.5
Hester-Dendy Density (org/m ²):	494.4	215.5	2538.3	1541.4	*

* Susquehanna University is processing Hester-Dendy samples

River at Shady Nook



River at Danville

Heartland Coalition Partners



Deployment at Watsonstown



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