Trout Brook Study

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Trout Brook Study
Eco 6
Presenters: Simon Schultz, Hadassa Sossou, and Shane Swanton
Purpose of Study

- The purpose of our study was to investigate the water quality of Trout Brook through collection and identification of macroinvertebrates.

- We also wanted to determine if 2 sites in Trout Brook with different bottom substrates contained different types and amounts of macroinvertebrates.
Trout Brook
Brockton, MA
Taunton Watershed

- 43 Towns
- 2nd largest in MA
- 500,000 people
Trout Brook
Site 1

- Near busy road
- Rocky and sandy bottom
- Steep west bank
Trout Brook
Site 2

- Sand and mud bottom
- Similar riparian zone
- 40-50% plant cover
- Slightly wider
Trout Brook Flow Rate

Flow (feet/second) vs. Segment Distance (feet)

- Site 1 avg
- Site 2 avg
Trout Brook Site 1

Depth Profile
Trout Brook Site 2

Depth Profile

Depth Profile Chart

Depth (feet)

Distance (feet)

-1.5

-1

-0.5

0
Macroinvertebrate Sampling

- 2 sites
- Fast/slow flow combined at each site
- Entire sample of each site identified
Site 1
Trout Brook Brockton, MA
10/17/2011

Plecoptera: 20%
Trichoptera: 1%
Diptera:Other: 4%
Odonata: 3%
Megaloptera: 3%
Amphipoda: 3%
Oligochaeta: 68%
Site 2
Trout Brook Brockton, MA
10/17/2011

- Ephemeroptera: 2%
- Trichoptera: 17%
- Diptera:Other: 2%
- Coleoptera: 62%
- Amphipoda: 2%
- Oligochaeta: 15%
**MGBI (major group biotic index)**

<table>
<thead>
<tr>
<th>Biotic Index Score Range</th>
<th>Water Quality</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-3.75</td>
<td>Excellent</td>
</tr>
<tr>
<td>3.76-4.25</td>
<td>Very Good</td>
</tr>
<tr>
<td>4.26-5.00</td>
<td>Good</td>
</tr>
<tr>
<td>5.01-5.75</td>
<td>Fair</td>
</tr>
<tr>
<td>5.76-6.5</td>
<td>Fairly-Poor</td>
</tr>
<tr>
<td>6.51-7.25</td>
<td>Poor</td>
</tr>
<tr>
<td>7.26-10.00</td>
<td>Very Poor</td>
</tr>
</tbody>
</table>
## Functional Feeding Group

<table>
<thead>
<tr>
<th>Scrapers</th>
<th>Collectors</th>
<th>Shredders</th>
<th>Predators</th>
</tr>
</thead>
<tbody>
<tr>
<td>Site 1</td>
<td>Site 2</td>
<td>Site 1</td>
<td>Site 2</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Trichoptera</th>
<th>Collector-filterer</th>
<th>Trichoptera</th>
<th>Collector-filterer</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oligochaeta</td>
<td>Collector-gatherer</td>
<td>Oligochaeta</td>
<td>Collector-gatherer</td>
</tr>
<tr>
<td>Amphipoda</td>
<td>Several Feeding Groups</td>
<td>Diptera</td>
<td>Collector-filterer</td>
</tr>
</tbody>
</table>
Oligochaeta

- 170 species of freshwater worms
- Oligochaeta means “long hair”
- Inhabit silt and mud
- Collector gatherers
- Red worms are pollution tolerant
- Able to live in water with low oxygen
Diptera

- “True Flies”
- 17,000 species
- Aquatic in larvae stage
- 3,500 Aquatic species
- One proleg on thorax
- Diptera means “double wings”
Trichoptera

- Most Plentiful in Trout Brook
- Common name: Caddisfly
- 149 species
- Shredders, collectors and scrapers
Family: Hydropsychidae

- 3 Distinct Plates
- Prominent Brush of long Hairs
- Gills
- Curled up in a “C” shape

Image from www.chdiagnostic.com
Trout Brook Water Quality Study Summary

- Minimum suggested Macroinvertebrate sample size = 200.
  - Trout Brook Site 1 sample size = 71
  - Trout Brook Site 2 sample size = 53

**Major Group Biotic Index**
- Trout Brook Site 1 = 5.070423
- Trout Brook Site 2 = 5.818182

**Diversity of Functional Feeding Groups**
- Dominated by Collector Feeding Groups

**Physical Observations**
- Little/No Riparian Zone
- Pollutants observed
What next?

- Placement of Bug Nets
- Continue monitoring of Trout Brook in Fall 2012
- Research repairing/building of Riparian Zone
- Letter Writing to City of Brockton
Acknowlegdements

We would like to thank Dr. Curry and Kim McCoy for making this project possible.