The Runnins Report 2010

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The Runnin’s Report

Seekonk High School
Biology II
April 2010
The 10th grade Bio 2 classes went to the Runnins River to see how healthy it was. Students investigated microorganisms and phosphate levels.
Site A Location: Woodward Ave
Site B Location: Burr’s Pond
Description of Site A

- Varied canopy (sunnier than B)
- Great variety of plant life
- Water was murky
- Silty river bottom with little flow
- Manicured banks
Description of Site B

- Shallow, clear water
- Overcast weather 9/22.
- Many trees surrounding the river.
- There was dry soil, but wet gravel on the banks of the river.
- Some aquatic life
- 100 yds upstream the shape of the stream bank and the channel was vertical/undercut.
- Waterfall upstream
Grab sampling

- Collected water in bottles
- Filtered into dark bottles
- Froze samples until use
Water Testing for Phosphates

- In class, students added phos-pho-ver reagent to water samples
- Samples were measured using Hach 2010 & Hach 890 specs
- Readings were recorded and then graphed.
Phosphate Lab Results

<table>
<thead>
<tr>
<th>Site</th>
<th>Date</th>
<th>Phos. Mg/L</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>9/22</td>
<td>0.04</td>
</tr>
<tr>
<td>A</td>
<td>9/23</td>
<td>0.03</td>
</tr>
<tr>
<td>A</td>
<td>9/23</td>
<td>0.04</td>
</tr>
<tr>
<td>B</td>
<td>9/22</td>
<td>0.03</td>
</tr>
<tr>
<td>B</td>
<td>9/24</td>
<td>0.12</td>
</tr>
</tbody>
</table>
## Phosphate Load Sites A & B

<table>
<thead>
<tr>
<th>Site &amp; Date</th>
<th>Total phosphate load</th>
</tr>
</thead>
<tbody>
<tr>
<td>A, period A</td>
<td>0.02</td>
</tr>
<tr>
<td>A, period B</td>
<td>0.27</td>
</tr>
<tr>
<td>Average</td>
<td>0.16</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Site &amp; Date</th>
<th>Total Phosphate Load</th>
</tr>
</thead>
<tbody>
<tr>
<td>B, period A</td>
<td>9.15</td>
</tr>
<tr>
<td>B, period C</td>
<td>4.18</td>
</tr>
<tr>
<td>B, period B</td>
<td>6.01</td>
</tr>
<tr>
<td>Average</td>
<td>9.50</td>
</tr>
</tbody>
</table>
Depth & Flow Collection

- Measured depth and flow in 1 ft. segments across the width of river
- Recorded measurements for in class graphing & calculations
Graph of the Riverbed Site A

Woodward Ave (Site A)
Graph of the Riverbed Site B
Macro Collecting

- Found fast and slow current spots in the river
- Collected microorganisms with net
- Rinsed & searched for living organisms
- Put all the organisms into a bottle of ethanol
Counting & ID Description

- First, we took the macros and separated them from the debris.
- Then, we separated the macros into groups to identify them.
- Next, we used identification cards to identify & count each group.
- Lastly, we took pictures of the macroinvertebrates.
Macroinvertebrates Site A

Odanata: PTV 5; 6.06%

Megaloptera: PTV 2: 18.2%

Amphipoda: PTV 7; 45.4%
Macroinvertebrates Site A

Diptera chironomidae: PTV 7: 12.1%

Amphipoda: PTV 7
MGBI Woodward Ave Site A

MGBI is used to estimate the overall health of the river by looking at the macro invertebrates that live in it.

- The MGBI that we came up with for the Woodward Ave site is: 5.08

- The standards for this are:
  
  * <3.75 which is No Pollution
  * 3.76-6.50 which is Moderate Pollution
  * >6.50 which is Severe Pollution.

Based on this scale, Woodward Ave (Site A) is **moderately** polluted.
Macroinvertebrates Site B

- **Trichoptera; PTV 3;**
  - 16.9%

- **Amphipoda; PTV 7;**
  - 49.4%

- **Coleoptera; PTV 4;**
  - 30.1%

- **Gastropoda; PTV 7;**
  - 0.6%
Macroinvertebrates Site B

Hirudinea; PTV 10; 0.6%

Diptera; PTV 4; 1.8%

Chironomidae; PTV 7; 0.6%

Coleoptera: PTV 4: 18.2%
The Major Group Biotic Index for the Burr’s pond site was 5.40.

The MGBI standards are:
- <3.75 no pollution
- 3.76-6.50 moderate pollution
- >6.50 severe pollution

Based on this scale, the river at Site B is moderately polluted.
Thank You:

-Mrs. Cunard
-Mrs. McGovern
-Mr. Bonneau
-Mrs. Borden
-Bridgewater State College
-Seekonk Land Trust