An Analysis of Water Quality vs. Land Use for Seven Streams

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Vermont ESPCoR Streams Project
Hypothesis

• If water quality data from different stream sites are compared, there should be a correlation between the water quality indicators and the percent land use.

• Prediction: The less disturbed land should have higher water quality.
<table>
<thead>
<tr>
<th>Name of Stream</th>
<th>% Forested</th>
<th>% Urban</th>
</tr>
</thead>
<tbody>
<tr>
<td>Deerfield River North Branch</td>
<td>96.9</td>
<td>0.0</td>
</tr>
<tr>
<td>Miller’s Run Tributary A</td>
<td>96.5</td>
<td>0.1</td>
</tr>
<tr>
<td>Southwest Branch</td>
<td>93.0</td>
<td>0.2</td>
</tr>
<tr>
<td>Sleeper’s River</td>
<td>76.5</td>
<td>1.7</td>
</tr>
<tr>
<td>Sheldon Brook</td>
<td>75.3</td>
<td>1.2</td>
</tr>
<tr>
<td>Bartlett Brook</td>
<td>24.2</td>
<td>34.3</td>
</tr>
<tr>
<td>Potash Brook</td>
<td>18.3</td>
<td>38.2</td>
</tr>
</tbody>
</table>
E Coli vs. Land Use

- **R² = 0.653**
- **R² = 0.6521**

- % Forested
- % Urban

Land Use (%)

E Coli (MPN)

- Linear (% Forested)
- Linear (% Urban)
Coliform vs. Land Use

\[ R^2 = 0.831 \]

\[ R^2 = 0.868 \]
Phosphorus vs Land Use

- $R^2 = 0.8121$
- $R^2 = 0.8774$

Land Use (%) vs Phosphorus (µg/L)

Legend:
- % Forested
- % Urban

Linear (% Forested)
Linear (% Urban)
\[ R^2 = 0.5221 \]

\[ R^2 = 0.5498 \]

TSS vs Land Use

- % Forested
- % Urban
- Linear (% Forested)
- Linear (% Urban)
EPT & Chironomid vs Land Use

$R^2 = 0.8254$

$R^2 = 0.8566$

- % Forested
- % Urban

Linear (% Forested)
Linear (% Urban)
Conclusion

• The data supported the hypothesis that the higher quality water (low coliforms, low phosphorus, low total suspended solids, and high EPT & Chironomid indices) came from the more forested, less urbanized sites.
References


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