2009

Burr’s Pond and Runnings River: An Annual Watershed Survey, 2009

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Burr’s Pond & The Runnins River: An Annual Watershed Survey
AP Biology Students
Seekonk High School
2009
Our Summer at Burr’s Pond

- Pond visits – 4 to 5 visits over summer
- Observations were made at each visit
- All observations were recorded in notebooks with:
  - Time of day
  - Weather
  - Date
Our Summer at Burrs Pond, cont.

- Observations included:
  - Organisms seen – plants, animals
  - Pollution factors
  - Relationship between all factors
  - Photos taken to record species
Biodiversity is actually short biological diversity. It is made up of three components.

1. One is genetic diversity, which is the variety of genes between and within populations.

2. Also, there is species diversity, which is the difference within a species in a particular ecosystem or throughout the world.

3. Third, is ecosystem diversity; in which each ecosystem has different characteristics, such as their energy flow and chemical cycling.

If these are changed, it could affect the whole biosphere.
## Biodiversity at Burr’s Pond

<table>
<thead>
<tr>
<th>Species</th>
<th>Scientific Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mute Swan</td>
<td><em>Cygnas Olor</em></td>
</tr>
<tr>
<td>Honey Mushroom</td>
<td><em>Armillariella mellea</em></td>
</tr>
<tr>
<td>Blue Green Algae</td>
<td><em>Gomphospaeria wichurae</em></td>
</tr>
<tr>
<td>Poison Ivy</td>
<td><em>Toxicodendron</em></td>
</tr>
<tr>
<td>Creek Chub</td>
<td><em>Semotilus atromaculatus</em></td>
</tr>
<tr>
<td>American Sycamore Tree</td>
<td><em>Plantanus occidentalis</em></td>
</tr>
<tr>
<td>Red Maple Tree</td>
<td><em>Acer rubrum</em></td>
</tr>
<tr>
<td>Oak Tree</td>
<td><em>Quercus rubra</em></td>
</tr>
<tr>
<td>Swamp Candle Loose Strife</td>
<td><em>Lysimachia terrestris</em></td>
</tr>
<tr>
<td>Blue Flag</td>
<td><em>Iris versicolor</em></td>
</tr>
<tr>
<td>Eastern Stone Fly</td>
<td><em>Neophasganophora capitata</em></td>
</tr>
<tr>
<td>Bog Mosquito</td>
<td><em>Culiseta melanusa</em></td>
</tr>
<tr>
<td>Red Harvester Ant</td>
<td><em>Pogonomyrmex barbatus</em></td>
</tr>
<tr>
<td>Unidentifiable Spider</td>
<td><em>Arachnid</em></td>
</tr>
<tr>
<td>Common Bullet Dragonfly</td>
<td><em>Enallagma.erbium</em></td>
</tr>
<tr>
<td>Cooter Turtle</td>
<td><em>Pseudemys floridana</em></td>
</tr>
<tr>
<td>Common Garter Snake</td>
<td><em>Thamnophis sirtalis</em></td>
</tr>
<tr>
<td>Canadian Geese</td>
<td><em>Branta canadensis</em></td>
</tr>
<tr>
<td>Rainbow Trout</td>
<td><em>Oncorhynchus mykiss</em></td>
</tr>
<tr>
<td>Sponge</td>
<td><em>Meynia Mulleri</em></td>
</tr>
<tr>
<td>Water Parsnip</td>
<td><em>Sirum Suave</em></td>
</tr>
<tr>
<td>Boat Leave Moss</td>
<td><em>Sphagnum Palostre</em></td>
</tr>
</tbody>
</table>
Factors Affecting Site A at Burr’s Pond

- **Pollution**
  - The cars that drive by site A exhaust heavy amounts of carbon monoxide, suffocating the surrounding environment

- **Run off; fertilizer, gases**
  - Run off from the road pours gasoline, oil and various fertilizers into the water source, which increases the levels of nitrogen creating an algae bloom, ultimately halting photosynthesis production

- **Waste; plastics, toxins, etc**
  - Trash is discarded along the surrounding site, depleting certain species of animals when digested due to its toxic matter

- **Environment; crowding trees, little water circulation**
  - The high intensity of shade reduces the amount of available sunlight that is reaching the organisms and poor water circulation means little to none dissolved oxygen
Site B’s Effect on Dissolved Oxygen

- The canopy of trees blocked the entrance of sunlight for the plants to use in photosynthesis, thus creating oxygen.

- There was a steep slope leading down to the stream from ground level. With the water farther away from the sunlight, photosynthesis was not as productive as site A’s.

- There is a waterfall that flows into site B, but at the beginning of the data collection the water was not high enough to flow over the waterfall and over the rocks below. This limited the movement of dissolved oxygen.

- After the storm, the water was rapidly flowing, creating movement in the water, thus stirring the dissolved oxygen.

- Due to the lack of silt, there were fewer plants growing, and therefore less dissolved oxygen was produced.

- The main road was parallel to site B and there was a pipe from the road entering the stream. This run-off would effect the plants growing in the area.

- Time ranges from 1200 hrs to 1200hrs, one full day of results
Comparison of Runnins River Sites A and B

- Temp A °C
- DO A mg/l
- Temp B °C
- DO B mg/l

The graph shows the temperature and dissolved oxygen levels at Sites A and B over time.

- Temp A and DO A levels are generally lower, with some fluctuations.
- Temp B and DO B levels are higher and show less variation.

The data suggests that Site B has a more stable environment compared to Site A.
Factors Affecting the Dissolved Oxygen at Burr’s Pond and Runnings River 2006-2008

- Trees created a dense canopy that covered site A.
  - This affected the amount of sunlight that reached the water, which affects the temperature of the water and DO in the water.

- There was a waterfall from the pond to the river.
  - The waterfall allowed for the movement of water, therefore aerated the water allowing for more DO in the water.

- Water temperature
  - The warmer the water temperature the more DO there was.

- Amount of sunlight
  - Plants in the water need sunlight to undergo photosynthesis and if there is little light, then oxygen, produced by the plants, is reduced and therefore affecting the DO in the water.
Thank you for making this possible!

- Kim McCoy
- Dr. Curry
- Ms. McGovern
- Seekonk Land Trust