The Coastal Research Volunteer Program: Engaging the Community and Empowering Research

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Who are the Coastal Research Volunteers?

The Coastal Research Volunteers are a non-advocacy group whose mission is to support and enhance local research and to participate in meaningful science and stewardship relevant to the NH Coastal Watershed.
Who is CRV?

• Working side by side with researchers
• Creating meaningful, authentic experiences
• Increasing research capacity
CRV assisted in restoring more than 250,000 healthy oysters to Great Bay.
Salt Monitoring and Restoration

CRV assisted in salt marsh vegetation surveys, planting efforts and harvesting of *Phragmites* for biofuel.
Horseshoe crab observations made by CRV comprised more than 50% of the total.
Stormwater Monitoring

Can local citizen volunteers be engaged to effectively monitor storm drain discharges?

1. Develop plan
2. Train volunteers
3. Monitor in dry and wet weather
4. Conduct public outreach
5. Evaluate success
Stormwater Monitoring
Stormwater Monitoring

Training
• Sampling methods
• Site and weather conditions
• Meter calibration and measurements
• Sample processing
• QA/QC
## Stormwater Monitoring

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Indicator</th>
</tr>
</thead>
<tbody>
<tr>
<td>E. coli</td>
<td>Sanitary wastewater</td>
</tr>
<tr>
<td>Total N</td>
<td>Sewage, animal waste, fertilizer</td>
</tr>
<tr>
<td>Ammonia</td>
<td>Sanitary wastewater</td>
</tr>
<tr>
<td>Chlorine, total residual</td>
<td>Potable water</td>
</tr>
<tr>
<td>Chloride</td>
<td>Road salt, sewage, estuarine water</td>
</tr>
<tr>
<td>pH</td>
<td>Natural &amp; polluted water</td>
</tr>
<tr>
<td>Turbidity</td>
<td>Natural &amp; runoff material</td>
</tr>
<tr>
<td>Dissolved oxygen</td>
<td>Oxygen demand</td>
</tr>
<tr>
<td>Specific conductance</td>
<td>road salt, polluted water</td>
</tr>
<tr>
<td>Salinity</td>
<td>Road salt, estuarine water</td>
</tr>
<tr>
<td>Temperature</td>
<td>Many factors</td>
</tr>
</tbody>
</table>
## Stormwater Monitoring

### Violations of Standards

<table>
<thead>
<tr>
<th>Exeter</th>
<th>Greenland</th>
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</thead>
<tbody>
<tr>
<td><em>E. coli</em></td>
<td><em>E. coli</em></td>
</tr>
<tr>
<td>Total nitrogen</td>
<td>Total nitrogen</td>
</tr>
<tr>
<td>Chloride</td>
<td>Chloride</td>
</tr>
<tr>
<td>Specific conductance</td>
<td>Specific conductance</td>
</tr>
<tr>
<td></td>
<td>pH</td>
</tr>
<tr>
<td></td>
<td>Dissolved oxygen</td>
</tr>
</tbody>
</table>
Stormwater Monitoring

Total Nitrogen

EXETER

GREENLAND

State standard

State standard
Stormwater Monitoring

*E. coli* Concentrations
Stormwater Monitoring

*E. coli* Concentrations

- Dog feces concentration: 44 million *E. coli* cells per gram wet weight feces
- *E. coli* concentration in runoff water increased by a factor of 31 after flowing by feces in ditch

<table>
<thead>
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<th></th>
<th>State Standard</th>
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</thead>
<tbody>
<tr>
<td>Pipe discharge</td>
<td></td>
</tr>
<tr>
<td>downstream of feces</td>
<td></td>
</tr>
<tr>
<td>dog feces</td>
<td></td>
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</tbody>
</table>
Stormwater Monitoring

Can local citizen volunteers be engaged to effectively monitor storm drain discharges?

Yes!

Full report: http://www.seagrant.unh.edu/crv-results
Stormwater Monitoring

Benefits of a citizen science stormwater monitoring program

- Engage community
- Low-cost
- Model partnership of town personnel, volunteers, scientists and labs
- Consistency in sampling and analysis
- Comparable results
Coastal Research Volunteers

Continuing projects
• Oyster restoration
• Salt marsh
• Horseshoe crabs
• Stormwater monitoring?

New Projects
• Phenology
• Eel monitoring
• Beach microplastics
• Sand dune restoration?
“Knowing CRV is there, committed and engaged, has become an inseparable component of my research planning since my first meeting with this well organized group some two years ago.”

-Gregg Moore, UNH Research Assistant Professor