

Water Quality of Blue Mountain-Cove Lakes

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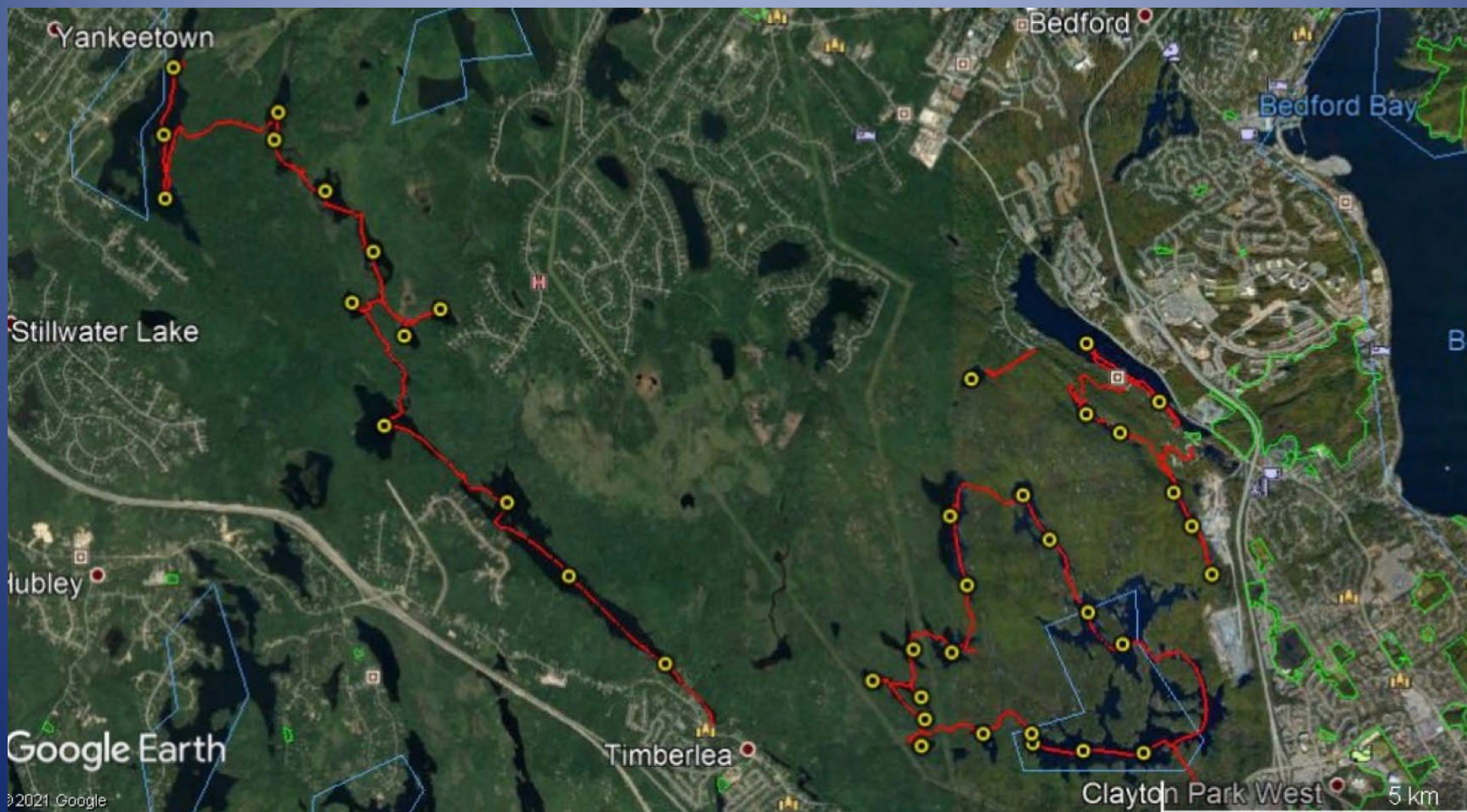
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Friends of Blue Mountain-Birch Cove Lakes
Society

HRM Environment and Sustainability Committee
2 September 2021

- An urban wilderness park in Blue Mountain-Birch Cove area has been under development for many years
- Many players (HRM, province, NSNT, NGOs)
- Need for baseline water quality data of the many lakes
- Team of five volunteers (retired professionals)
- Early April just after ice out when lakes are well-mixed
- Three sampling expeditions by canoe
 - 41 km paddling
 - 7 km portaging
- 21 lakes sampled
 - Nine Mile River Watershed (Shad Bay)
 - Kearney Run Watershed (Bedford Basin)

Routes and Sampling Stations



Charlies Lake



YSI Monitoring Probe (Temperature, Oxygen, Conductivity, pH)



Oxygen

- 70-104% saturation
- No strong stratification at time of sampling
- However, values expected to decrease in deeper water during the summer as lakes stratify
- Normal conditions, no issues

Conductivity

- Measurement of dissolved ions
- Ranged from approximately 20 to 210 $\mu\text{S}/\text{cm}$
- Lowest values in most isolated lakes
- Highest values at lower end of Kearney Lake Watershed
 - Susies Lake (128 $\mu\text{S}/\text{cm}$)
 - Quarry Lake (141 $\mu\text{S}/\text{cm}$)
 - Washmill Lake (200 $\mu\text{S}/\text{cm}$)
 - Kearney Lake (208 $\mu\text{S}/\text{cm}$)
- Primary source thought to be road salt and other chemicals from development in nearby watersheds (e.g. Bayers Lake, Bedford West, etc.)
- Values increasing with time but still below CCME guideline of 500 $\mu\text{S}/\text{cm}$
- Major concern and needs to be closely watched

pH

- Ranged from 3.5 up to 6.15
- Lowest in most isolated lakes
- These lakes are naturally acidic but made more so in recent years due to widespread acid precipitation
- Some recent evidence of recovery
- Values below 4.5 inhibit fish spawning

Total Phosphorus

- Determined by the province in water samples
- Concentrations ranged from 4 to 9 $\mu\text{g/l}$
- All less than the trigger point of 10 $\mu\text{g/l}$
- All lakes fell into the desirable oligotrophic range at time of sampling
- Continuing concern and must be watched carefully in lakes subjected to development, in particular Kearney Lake which has shown evidence of increased levels with time

Summary

- Lakes well within the conceptual boundary appear to remain in a natural state except for depressed pH
- Lakes with water quality most affected by development are
 - Susies
 - Quarry
 - Washmill
 - Kearney

Summary

- Valuable baseline for planning and future park management
- Development affecting the water quality of lake on park periphery
- Need for continuing monitoring as park develops, park use grows and adjacent land use encroaches
- Should involve various partners working together including:
 - Volunteers
 - Universities
 - HRM
 - Province
 - Federal
- Need to expand sampling frequency (seasonal) and variables measured (e.g. suspended sediment, chlorophyll, nutrients, micro-organisms)
- Conduct in collaboration with other regional water quality monitoring programs

Full details with figures and tables plus interpretation are found in the Final Report which has been widely distributed and is available on the Friends of Blue Mountain-Birch Cove website:

bluemountainfriends.ca/reports

Data posted on Atlantic Water Network website

Acknowledgements

- Atlantic Water Network, Saint Mary's University
- Nova Scotia Department of Environment and Climate Change
- Many individuals in government, universities and environmental organizations.

Kearney Lake

