The effects of road-salting on the natural environment after Snowpocalypse 2011

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Abstract

Prospect Park, in the heart of Brooklyn, is home to a variety of trees and wildlife that are very sensitive to ecological change. Constant human activity in the park may be contributing to the gradual deterioration of the natural habitat. This winter, Brooklyn received record amounts of snow, requiring tremendous amounts of road salt to be applied to public roads to ensure safety. Every year, this salt is left in the soil and lake at Prospect Park, and does major damage to the local ecosystem. In this study, we collected soil samples at various distances from the road running through the park, and at different times of year, to see how road salt affects our natural forest. We hypothesized that the highest accumulations of road salt would be near the road, and that concentrations would be higher after the winter. Our preliminary results confirm our hypothesis, and suggest that the use of road salt in Prospect Park may have negative effects on the local environment.

Methods

Salt Concentration In Soil Vs. Distance From Road Side

Results

Over a period of time (late fall-late winter) our group at Science, Technology, and Research Early College High School (S.T.A.R.) collected soil samples from the roads of Prospect Park to test the concentration of salt in the soil. In November, the average salt concentration adjacent to the road equaled 0.1ms. After the two snowstorms that pummeled New York City in December, our group returned to Prospect Park and once again took samples. The average salt concentration adjacent to the road in March equaled 0.3ms. We figured that on the side of the road where cars drive the amount of salt concentration averaged 0.35ms while on the non-driving side of the road, the salt concentration averaged 0.25ms.

Discussion

• Soil samples adjacent to the road had significantly higher salt concentrations than the samples further from the road.

• Approximately 20 m away from the road side conductivity measurements were essentially down to background concentrations.

• Salt concentration does increase in the soil as a side effect of road salting.

• High volume of vehicular traffic elevates salt pollution in neighboring soil by pushing the salt flush off of the road.

References


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