

New York Green Infrastructure: Microbial Composition in Urban Soils

Adam Koling¹, Krista McGuire²

¹ Columbia College, Columbia University, New York, NY, ² Department of Biology, Barnard College of Columbia University, New York, NY

New York City is constructing new parks, tree pits, green roofs, bioswales, and green medians. Known benefits of this green infrastructure include reduced runoff, building insulation, filtered storm water, absorption of excess CO₂, increased habitat for small animals, and mitigation of the urban heat island effect. For this study, we are evaluating the microbial composition of soil in these microhabitats across the city. Specifically, we sampled soil cores from five different parks, ten green roofs, and 47 medians. We extracted fungal and bacterial DNA from the cores and are awaiting the remainder of Illumina sequencing results, which together will indicate how microbial taxa are distributed among green spaces throughout New York City. We also conducted phospholipid fatty acid analysis to assess soil biomass and soil nutrient analysis. While results are not yet complete or conclusive, evidence to date has suggested significant biogeographical clustering. Green roofs and city parks appear compositionally distinct, both across New York City and relative to each other.