

Jack Gallagher, Fordham University. An Investigation of the Tree Diversity and Distribution Found in Calder Forest. Mentors: Mr. Steve Kutos and Dr. JD Lewis

Abstract: Since the turn of the century, researchers have mapped the world's biodiversity in hopes of establishing predictable patterns and relationships of ecological communities. From this research, we know that different environments contain different types of life because of their unique characteristics such as elevation, moisture, and air quality. In contrast to these vast efforts, this research focuses on the ecological differences found within a local scale, the Calder Research Station Forest, in Armonk, NY. To map this local forest, I examined DBH, species identity, and overall physical health in two distinct areas: a dry area on a ridge and a marsh-like moist area. I examined close to 700 trees in both areas. To display spatial patterns within the forest, I utilized ArcGIS to computationally map the area. The areas that I sampled were dominated by American beech, sugar maple, and red maple which matches the historically predicted successional age of the forest. A majority of the Calder forest falls in a DBH range of 5 and 7.5 cm which suggests the forest is relatively young. This data is also alarming because a healthy forest has a lush understory housing many species of a DBH below 5 cm which Calder forest lacks. Additionally, the data show that oaks and hickories are found strictly within area 1 and absent in area 2. To continue my research, I plan on examining microbial communities in soil matched with this tree map. By combining tree map data with soil data, this will allow me to examine abiotic and biotic factors influencing microbial communities.