**INTRODUCTION**

Urbanization occurs as a result of a social shift from a rural to an urban way of life. During urbanization, natural spaces are altered to accommodate growing populations within a particular environment. During the 1800’s, industrialization was taking root in Brooklyn, New York, prompting the creation of Prospect Park (PP). PP was commissioned out of necessity to preserve and cultivate green spaces within a rapidly industrializing sector. Since PP’s inception, humans have been utilizing the green space and altering the natural environment within the park, therefore making it critical to question the extent of this human impact. Pollution, industrialization, and socioeconomic disparities influence the wellbeing of the ecosystems within public parks; hence, it is important to investigate how these factors have done so.

**Hypothesis:** We made several predictions surrounding the relationship between factors influencing Prospect Park. We hypothesized that:

- Areas with higher economic status would associate with a higher Water Quality Index (WQI), less litter, less particulate matter, and a greater abundance of birds.

**METHODS**

Four ponds were chosen at PP based upon their proximity to surrounding neighborhoods of varying socioeconomic status. Bird observation and ID: Bird observation surveys were conducted once at each pond site for a duration of 10 minutes. Observation locations were chosen within a 3 meter distance from the perimeter of the pond and covered a 50 meter radius. This consisted of a primary observer, who surveyed the area with binoculars, and a primary recorder, who recorded the birds seen by the observer.

Water Quality: To determine water quality, tests were conducted using La Motte kits for Dissolved Oxygen, pH, Turbidity, Nitrates, and Phosphates. For each test, at least four trials were conducted using a sample of water collected in a jar or bucket.

Litter Survey: At each site, a litter survey was conducted for 10 minutes. During the duration of the survey, all team members collected non-recyclable, recyclable, and biodegradable litter found within a 5 meter radius of the research site.

Air Quality: To measure air quality, we used the Airbeam paired with the Aircasting app and walked around the ponds for 10 minutes. Once time elapsed, we took data from the app on particulate matter in the area (μg/m²).

**RESULTS**

**Water Quality Index and Litter/Bird Presence**

Fig. 4 shows that there is no relationship between bird presence and WQI. We thought that because water is a vital resource to birds, an unhealthy pond ecosystem would directly affect bird presence. Potentially, there is no relationship between bird presence and WQI because factors such as canopy cover or noise pollution that affect bird behavior were not taken into account in our study. However, as shown in Fig. 5, WQI does relate to litter found at each site and hence supports our hypothesis. As WQI increases, the amount of litter observed at each site decreases. Fig. 5 shows that a 57 WQI associates with a litter count of nearly 200 trash items, while an 85 WQI associates with a litter count of less than 60 items.

**REFERENCE**


We can conclude that economic inequality does relate to water quality, concentrations of litter found, and air quality. This is displayed in Fig. 1 which shows the lowest WQI (57) found at Lullwater, with (median income of $39,000) and the highest WQI (85) at Upper Pool (medium income of $120,000). Fig. 2 shows that there is an inverse relationship between median income and the amount of litter found at each pond site. This figure supports our hypothesis regarding income and the amount of litter found at each site, as it shows that the amount of litter found at Lull Water is almost double the amount found at Upper Pond. Additionally, our prediction that as median income increases, levels of particulate matter will decrease is also supported by our data. Fig. 3 shows that there is a direct relationship between socioeconomic status, in terms of median income, and the WQI of a pond ecosystem.

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