INFLUENCE OF NYC PARKS' PHYSICAL ATTRIBUTES ON BIRD SPECIES RICHNESS

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Background & Hypothesis

- Parks have varying habitat types → varying bird species richness (BSR: the number of bird species in a location)
- Past research: diverse shrubbery, trees, woodlands, and mixed habitats → greater BSR
- Focus on Van Cortlandt Park (VCP) and Brooklyn Bridge Park (BBP) because of their natural differences
- VCP: large amount of woodland; extremely diverse; 1,146 acres
- BBP: less diverse habitat makeup; waterfront; 85 acres
- Hypothesis: VCP will have a greater BSR than BBP due to its larger size and the greater amount of habitats found within the park

Research Question

Do the physical characteristics of BBP and VCP, such as habitat types and size, have an effect on the BSR within the parks?

Methods

- Used BioBlitz bird data at VCP and BBP; bird images taken throughout parks during BioBlitz(s) and identified on iNaturalist; data was put together on a sorted spreadsheet.
- Parks' official websites and maps for descriptive park information.
- Two different BSR values from each park → one using raw bird data, other using main park sites' data.
- Two-sample t-test used to see if there was statistically significant difference in the mean BSR between the two parks
- Not all collected data was used for t-test (only used sorted data) → some data points did not have labelled locations; some sites had few observations → excluded to avoid misrepresentations
- Results of raw data and t-test helped provide insight into the potential effects of the parks' physical characteristics

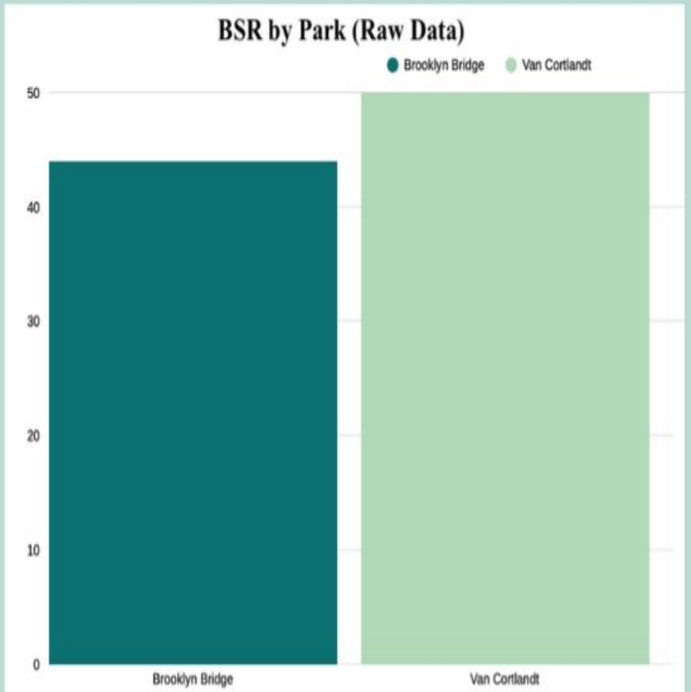

Figure 1. This chart measures the number of different bird species found in each park, also known as species richness. It indicates how diverse the bird community is. Van Cortlandt Park has more unique species than Brooklyn Bridge Park overall based upon the raw data.

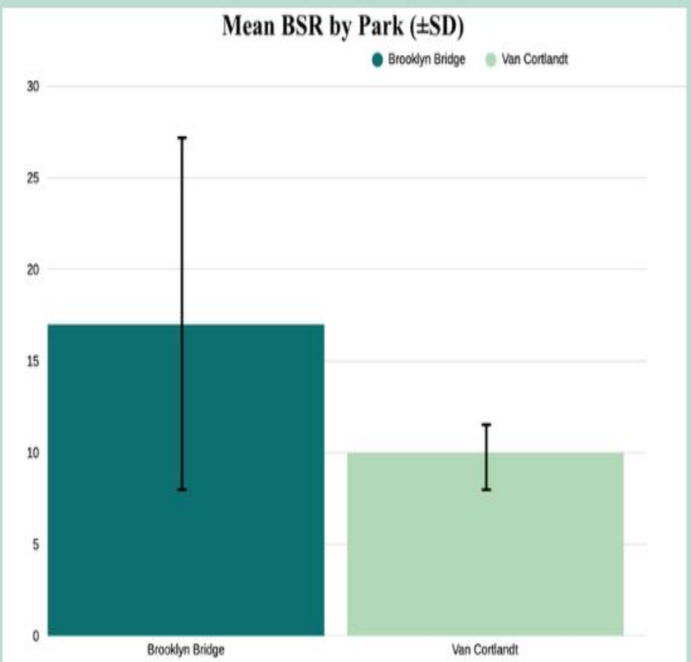

Figure 2. This chart measures the mean BSR and standard deviation at each park using t-test results. Results were not significant---the variation in BSR most likely was a random occurrence rather than there being a true difference between both parks.

Results

- Figure 1: overall BSR in BBP compared to VCP (raw bird species data) → VCP has greater BSR than BBP
- Figure 2: t-test results: BSR of VCP (M = 10.00, SD = 2.76, n = 6) was hypothesized to be greater than the BSR of BBP (M = 17.00, SD = 10.35, n = 6.00), difference was not significant, t(10) = i2.23, p = .07 (1 tail) → BBP has greater BSR than VCP
- Hypothesis that VCP has a greater BSR than BBP is therefore partially rejected → raw data results support hypothesis, the statistical analysis results do not

Discussion

- Raw data collected from either park showed that VCP had greater variety in bird species than BBP; t-test results show variation in BSR that was likely due to a random occurrence
- Raw data results aligns with past BSR research; main site (sorted) data does not
- Most likely reason for difference is that much of data from VCP was excluded → missing details (location, specificity, etc.)
- Limitations → data used for t-test was sorted by hand → possible miscounting issues (systemic error)

Conclusions

- Findings show that larger and more diverse parks could support greater BSR → necessity of preserving biodiversity in urban areas
- Further research necessary for more comprehensive findings (inconsistency in results between raw data and main site data)
- Scope of this research was limited to only two parks in NYC → useful to explore other parks, boroughs, and other species

Bibliography →