

Migrating through the Neighborhood: Cape May Warbler and American Woodcock Abundance Variation across New York City Green Spaces



Kimora Nixon¹, Chris Acevedo², Naima Hossain³
¹KAPPA International, ²Fordham Leadership Academy, ³Fordham University

Research Questions & Hypotheses

Question 1: How does the bird abundance of *Setophaga tigrina* (Cape may warbler) and *Scolopax minor* (American woodcock) differ across 4 green spaces in the Bronx and Manhattan during spring migrations of the years 2020–2025?

- **Hypothesis 1:** Central Park and Pelham Bay Park will have the highest abundance of *Setophaga tigrina* (Cape may warbler) and *Scolopax minor* (American woodcock).
- **Hypothesis 2:** Governors Island and Woodlawn cemetery will have the least abundance of *Setophaga tigrina* (Cape may warbler) and *Scolopax minor* (American woodcock).

Introduction

Urban green spaces are spaces within a city that contain more natural elements than the surrounding areas. This includes parks, residential yards, meadows, and green roofs (Paudel & States, 2023). These spaces are important for cities as it helps lessen the stressors of everyday city life for residents and provide beneficial effects on people's overall wellbeing. (Cameron and Hitchmough 2016). These areas also act as crucial habitats for wildlife. One study in the southwestern U.S. showed urban green spaces functioning as surrogate habitats for birds (Zwartjes and Delong 2005).

Migratory birds especially use urban green spaces as stopover areas for food (Buron, Hostetler, & Andreu, 2022), habitat, and essential activities like nesting (Dong et al., 2024). Birds' behavioral activity connects them to their rural counterparts due to their dispersal inside urban areas during migration (Skjelvik & Dale, 2024). Migratory birds move around depending on their need for resources, changes in climate, or are genetically predisposed to certain migratory routes (Cornell Lab, 2007).

In this study we aimed to find the varying abundance between *Setophaga tigrina* (Cape may warbler) and *Scolopax minor* (American woodcock) among four green spaces in New York City, from 2020–2025. These two species were chosen because they are known to be among the earliest spring migrants that uses urban green spaces as stopover sites. (Allen, 2017) (Nikula, 1982).

The objective for this study was to see if there is an observable variation between these two species' abundance and the different sites studied.

Methodology

We used citizen science data requested from eBird, a platform created by Cornell Lab of Ornithology, that document bird sightings and their locations. From their database, we used migratory data from the American woodcock (*S. minor*) and Cape May warbler (*S. tigrina*).

We requested data from NYC, New York, and filtered it for observations collected from two boroughs, Manhattan and the Bronx, and aimed to only include the data that contained the dates (2020–2025), months of spring migration (March – June), and the sites of interest: **Central Park, Governors Island, Woodlawn cemetery, Pelham Bay Park**

These parks were selected given their varying sizes and geographical features, such as bodies of water present and levels of human activity. For the larger sites such as Central Park and Pelham Bay Park where they have multiple locations within them marked for bird watching, most sites reported in eBird observer data were grouped into their larger park names ("Pelham Bay Park" and "Central Park", respectively) to standardize the data. After filtering the data, it was then further organized within Google Sheets and Microsoft Excel for later analysis.

Data & Figures

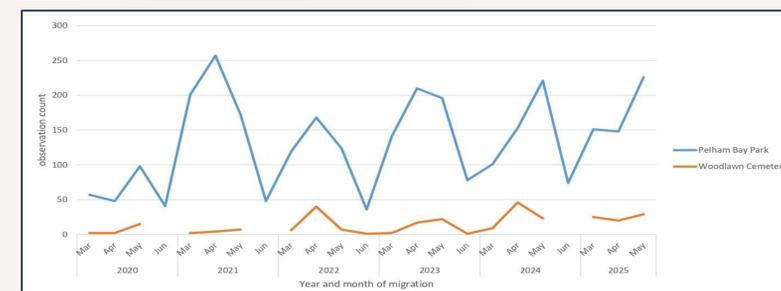


Figure 1: Cape May Warbler sightings in Bronx sites (Pelham Bay Park and Woodlawn Cemetery) from March to June of the years 2020–2025

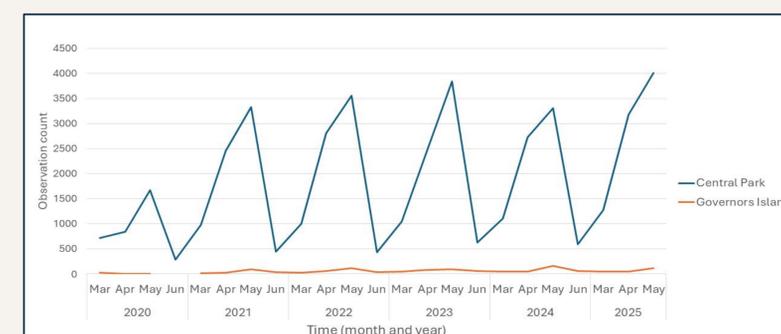


Figure 3: Cape May Warbler sightings in Manhattan sites from March to June of the years 2020–2025.

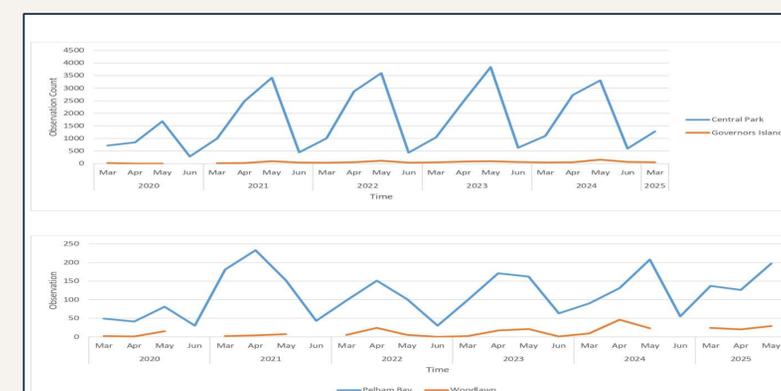


Figure 2: American Woodcock sightings in Manhattan sites (A.) and Bronx Sites (B.) from March to June of the years 2020–2025. Note the difference in scale between Manhattan and Bronx sites.



Images 5, 6: The Cape May Warbler (*Setophaga tigrina*), left, and the American Woodcock (*Scolopax minor*), right. Photo credit: Keenan Yakola / Macaulay Library; Louis Brodeur / Macaulay Library

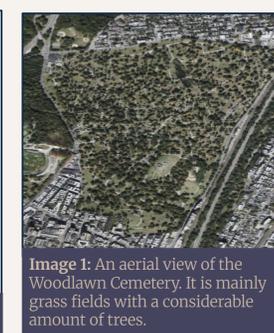


Image 1: An aerial view of the Woodlawn Cemetery. It is mainly grass fields with a considerable amount of trees.



Image 2: An aerial view of Pelham Bay Park. Its main characteristics are a large amount of trees, and one large field in the center.



Image 3: An aerial view of Governors Island. There are minimal trees with the land mainly being flat grass fields.



Image 4: An aerial view of Central Park. It is mostly comprised of tree coverage, grass fields, and different bodies of water.

Results & Discussion

These results partially support our hypothesis that Central Park and Pelham Bay Park will have the highest abundance of Cape may warbler and American Woodcock, while Governors Island and Woodlawn cemetery will have the lowest abundance. In our data, we found that the peak months for the Cape May Warbler are between April and May with the American Woodcock having similar sightings but leaning more towards May (American Woodcock, 2015). Generally, we saw more sightings in our Manhattan sites, most notably Central Park. This site has sightings for the American Woodcock reaching as high as 3,700 in May 2023 compared to Pelham Bay Park peak of 230 sightings in April 2021. This can be due to factors like vegetation and size of the park that influenced such variation between these sites. The data collected shows a trend of areas with greater vegetation having a higher abundance of our selected birds. This is because birds value a space that's away from noise pollution and high amounts of foot traffic (Dong et al., 2024).

This can be also seen with Pelham Bay Park and Woodlawn Cemetery, where both sites are a similar size but Pelham Bay Park has a significantly greater amount of foliage. There is also the factor that some of these sites are popular bird watching areas, especially around migration seasons. It should also be noted that people are most likely to not bird watch in a cemetery. Because of this, we cannot be completely certain that the same amount of birds aren't in the Bronx solely through citizen science data. Our original intention with our project was to compare several more species of migratory birds and see how different sites affect abundance. However due to time constraints and data logistics, we weren't able to go through with this plan. Solely using citizen data for our research limited the amount of knowledge we were able to have for our sites and getting our data from eBird meant we were potentially getting biased observations. This study highlights the importance of conserving urban green spaces for migratory birds as they utilize such spaces for rest and refuel during their long journeys.

Acknowledgements

We would like to thank The Pinkerton Foundation and the Wildlife Conservation Society for supporting our project. We would also like to thank our supervisors Max Falkenberg, Lowell Andrew Iporac, Brian Saville as well as our mentor Naima Hossain for guiding us through the creation of our project.

References

- Allen, Brian B. "American Woodcock Migration Ecology at an Important Stopover, Cape May, New Jersey" (2017). Electronic Theses and Dissertations. 2769.
- American Woodcock. (2015). Retrieved December 13, 2025, from Department of Environmental Conservation website: <https://dec.ny.gov/nature/animals-fish-plants/american-woodcock>
- Buron, R., Hostetler, M. E., & Andreu, M. (2022). Urban forest fragments vs residential neighborhoods: Urban habitat preference of migratory birds. *Landscape and Urban Planning*, 227(227), 104538. <https://doi.org/10.1016/j.landurbplan.2022.104538>
- Dong, L., Ma, Q., Sun, Z., Wang, J., Ding, Y., & Zhao, D. (2024). The value of residential green spaces for birds: A comparative study with urban parks of different scales. *Urban Forestry & Urban Greening*, 102(102), 128562–128562. <https://doi.org/10.1016/j.ufug.2024.128562>
- eBird. 2021. eBird: An online database of bird distribution and abundance [web application]. eBird, Cornell Lab of Ornithology, Ithaca, New York. Available: <http://www.ebird.org/>. (Accessed: Date [e.g., February 2, 2021]).
- Nikula, Blair. "The Spring Migration March 1–may 31, 1982." *American Birds*. Vol. 36–36, 1982. https://digitalcommons.usf.edu/american_birds/vol36/iss5/7.
- Paudel, S., & States, S. L. (2023). Urban green spaces and sustainability: Exploring the ecosystem services and disservices of grassy lawns versus floral meadows. *Urban Forestry & Urban Greening*, 84(127932), 127932. <https://doi.org/10.1016/j.ufug.2023.127932>
- Skjelvik, C. E., & Dale, S. (2024). Bird population changes in urban green spaces explained by regional population trends. *Urban Ecosystems*, 27(4), 1339–1347. <https://doi.org/10.1007/s11252-024-01527-z>
- SWANWICK, C., DUNNETT, N., & WOOLLEY, H. (2003). Nature, Role and Value of Green Space in Towns and Cities: An Overview. *Built Environment* (1978–), 29(2), 94–106. Retrieved from <https://www.jstor.org/stable/23288809>