



Effect of Wind Speed on Bird/Building Collisions

Angelina Barto and Logan Sharp
Natural Science Technology Academy



Introduction

For our project, we decided to research the effect that tall buildings have on avian animals in urban areas based on wind speed. A lot of the time, birds have a hard time flying with high wind, which makes it difficult to follow a strict flying path (Nilsson, 2018).

With buildings being so tall, these birds will often times fly into them without understanding the danger that is ahead of them. In Manhattan, at least 1,000 birds were injured due to this (Maldonado, 2019). Since most buildings are made of glass and polished metal, it causes a reflection: which for birds makes it look as though there is no building in front of them at all. During migration seasons, there is a lot more bird activity, which could mean that this problem is likely to be seen more during these times. (Loss, 2019)

Hypothesis

Birds are more likely to strike buildings on days the wind is stronger because it makes it harder for them to control balance.

Objective

The purpose for this research is to identify the factors that lead to the number of bird/building collisions in urban areas and to test whether or not wind speed can actually contribute to their death rate.

Methods

- To collect our research data, the first thing we did was travel to downtown Toledo every morning to walk around tall, reflective buildings to look for dead or injured birds.
- To collect wind speed data, every twenty minutes we would use an anemometer, which collects precise wind speed measurements.
- With the data we got from this, we would write it down from times 7:00 to 9:00 AM, for a total of 6 measurements per day.
- With any dead bird we found, we would collect it in a plastic bag and write information such as species and time it was found.
- Any injured bird that we found would be put in a paper bag to ensure they can breathe and they would then be sent to a local wildlife rehabilitation center.

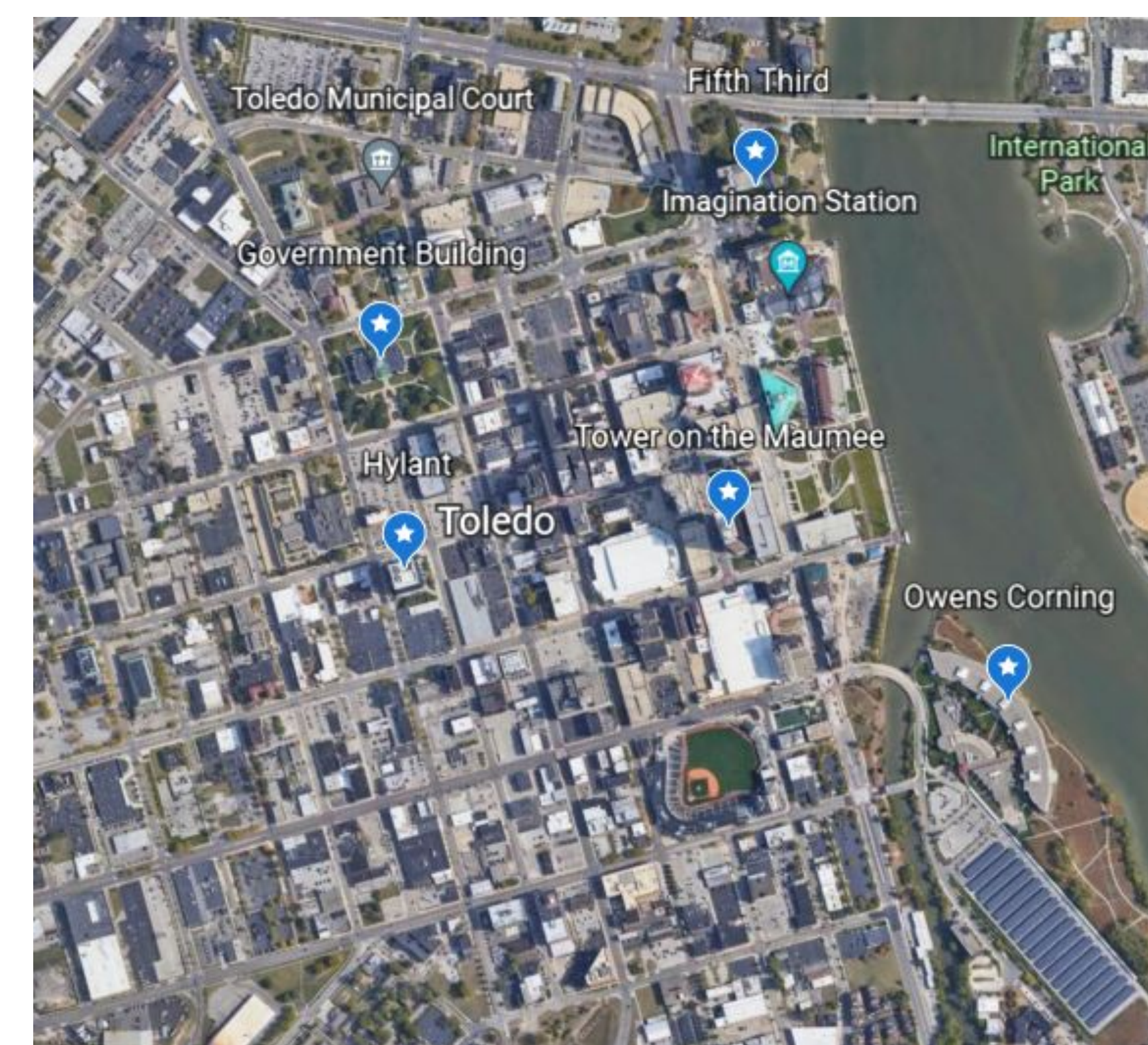
Wind speed is a big factor that contributes to how many birds collide with buildings in urban settings.



Sparrow

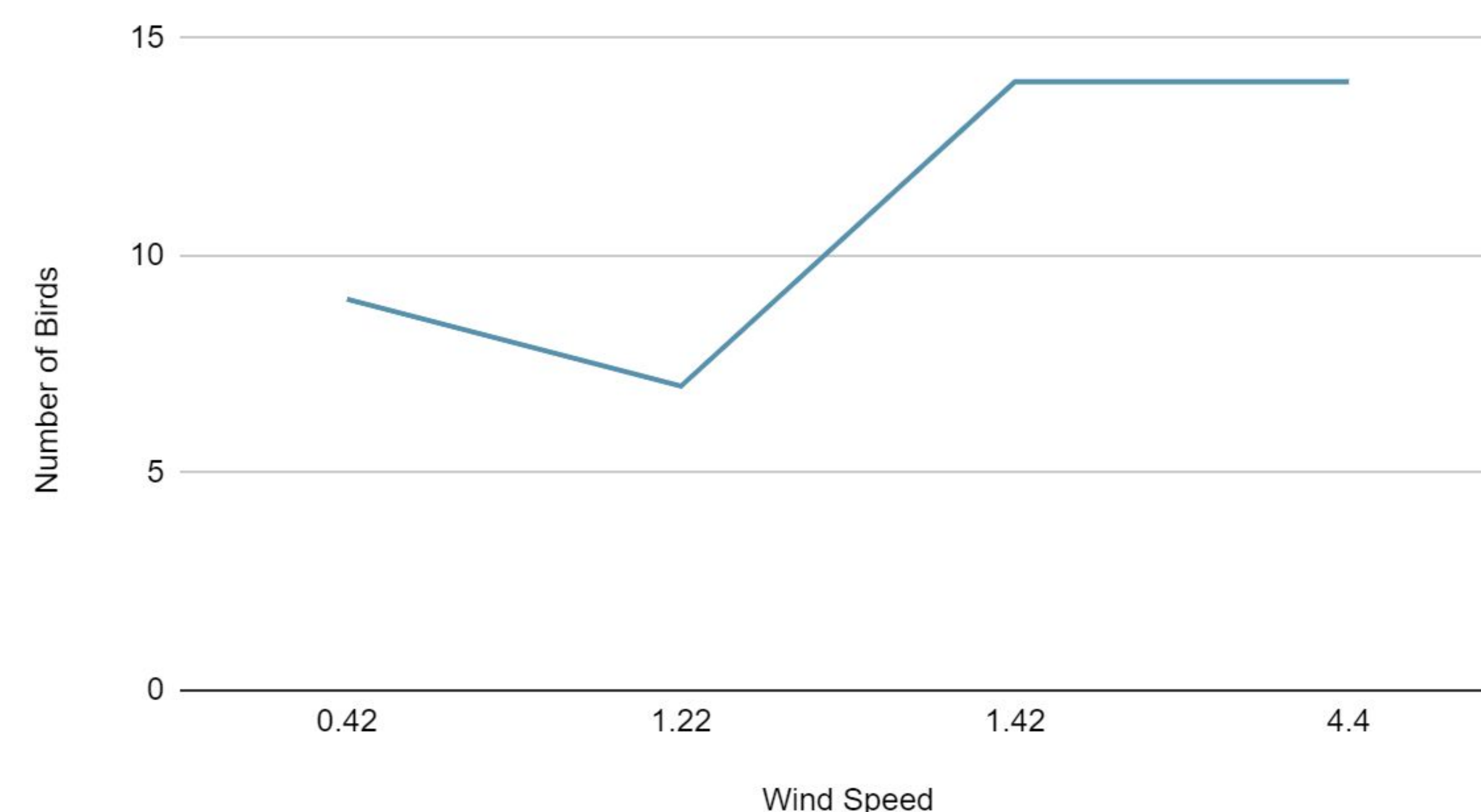


Mourning Dove



Map of Downtown Toledo and some of the sites and locations that we searched for birds

Number of Birds vs. Wind Speed



Abstract

During our time spent downtown, we not only measured bird deaths to collisions but also measured wind speed as well. When measuring wind speed we realized how strong wind speed truly affects birds and their flight. When Comparing wind speed to bird deaths, we measured on the days where the wind was stronger there were more bird to building deaths/collisions. These injured birds were then taken to a local rescue for wildlife, to give them a possible second chance at life.

Results

Average Wind Speed Per Day

- Day 1 - 0.42
- Day 2 - 1.22
- Day 3 - 1.42
- Day 4 - 4.4

Average Number of Birds Per Day

- Day 1 - 9
- Day 2 - 7
- Day 3 - 14
- Day 4 - 14

The wind speed is the average of all wind speed collected. The wind speeds listed correlate with the amount of bird deaths per day and as the wind speed increased the amount of bird deaths also increased.

Conclusion

We found that on days where the wind speed exceeded 3 to 4 mk/h, there were more birds that collided with buildings. As for days that the wind speed was lower, there weren't as many birds to find. Not only did we find dead and injured birds, but we also found parts of birds such as piles of feathers and bones. We assumed that the bird was once there, but an animal had eaten it, leaving the feathers and bones behind. Although we only went downtown for four of the 7 days, we collected enough data to conclude our hypothesis was correct.

Acknowledgments

We would like to thank Jessica Duez, Jeremy Dominguez, and Laura Kubiak for giving us the opportunity to use their tools and volunteer opportunities to an advantage that allowed us to collect data within a physical setting.

References

- Loss, S. R. (2019, November 6). Factors influencing bird-building collisions in the downtown area of a major North American city. <https://journals.phos.org/plosone/article?id=10.1371/journal.pone.0221164>
- Nilsson, (November 17, 2022). How Will the Winds of Climate Change Affect Migratory Birds? (n.d.). BirdCast. from <https://birdcast.info/news/research-how-will-the-winds-of-climate-change-affect-migratory-birds/>
- Maldonado, (January 7, 2022). Bird Law Spells Lights Out for City-Owned Buildings in Bid to Save Feathered Friends. (n.d.). The City. <https://www.thecity.nyc/environment/2022/1/6/22870960/bird-law-spells-lights-out-for-city-owned-buildings-in-bid-to-save-feathered-friends#:~:text=Legislation%20recently%20passed%20by%20the,birds%20navigating%20the%20big%20city.>