

Lights Out Fort Worth

Fall 2023 Highlights and Observations

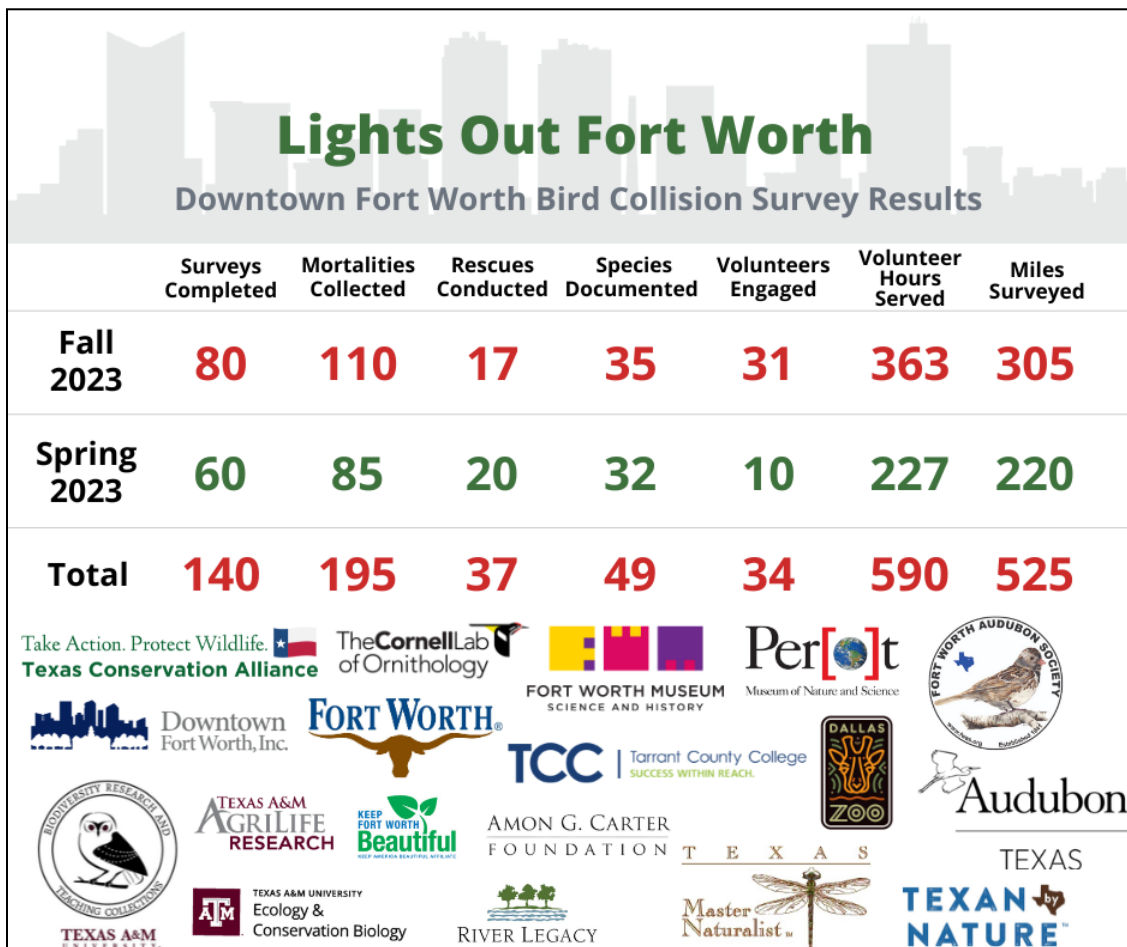


This fall, we concluded the second season of surveys in downtown Fort Worth, signifying the completion of a successful first year of Lights Out Fort Worth surveys. A very big THANK YOU to all of the dedicated individuals who made this year a success, many of whom are volunteers, partner organizations, and businesses alike.

With the contribution of many, anything is possible when we work together. The data we collect and the connections we make on the ground help us better understand how we can collectively mitigate the dangers that light pollution poses to migratory birds. As we welcome the holiday season, we would like to share some key highlights and observations from this fall.

Collision Survey Results

A total of **144** bird-building collisions were documented from September 11th to December 1st, which includes **110** mortalities, **17** rescued birds, and **17** stunned birds that hit windows and flew away.



Volunteer Appreciation

We greatly appreciate and sincerely thank our wonderful volunteer leaders who helped us start it all in the spring and returned as leaders again for the fall. From welcoming new volunteers and guiding them through downtown to delivering injured birds to rehabilitation, these volunteers are the backbone of the Lights Out Fort Worth team. Here's to both of our volunteer leaders, Joy Havner and April Pajoohi, for their tireless efforts and positive impact they've made on our program!



This year we welcomed a total of 34 volunteers to the Lights Out Fort Worth surveys. As a gesture of appreciation, we award volunteers who have attended 5 or more surveys in a calendar year a commemorative pin. A total of 12 outstanding individuals earned their honorary Lights Out DFW volunteer pin this year, representing their commitment to taking action and protecting wildlife.

Volunteers strengthen our connection with the community, inspiring others to enact change for our feathered friends. Whether you are a nature enthusiast or someone who just wants to learn and take a morning walk with us, you are more than welcome to join the cause. Join us in celebrating the commitment of these individuals and everyone who took the time to come to the Lights Out Fort Worth surveys this year!

Fall 2023 Highlights

Increased Volunteer Engagement

Thanks to the increased community outreach and partnerships within Fort Worth, our volunteer engagement this fall has tripled in comparison to the spring season. Starting with 10 volunteers in the spring, we have quickly grown to 31 total volunteers this fall season. Special thanks to the Cross Timbers Master Naturalist and Fort Worth Audubon Society for being key partners in supporting and sharing opportunities for Lights Out Fort Worth. We are overjoyed to see many new faces join our team of volunteers this fall and hope to see many more in the spring!



Broadened Outreach

The campaign expanded significantly through community outreach events and presentations. Collaborating with partners in the DFW area, we engaged audiences previously unaware of light pollution and its impact on migratory birds. At these events, we utilized visual aids to illustrate the adverse effects of glass reflections and disruptive lights on birds. Furthermore, our participation at the Texas Master Naturalist Annual Meeting in October allowed us to connect with potential community educators across the state. This outreach effort empowered us to amplify our message, widely distribute resources, and contribute to fostering positive change on a larger scale.



Beyond the Birds

Besides birds, bats, the only mammals capable of sustained flight, also inhabit the night skies. Similar to birds, bats serve as pollinators, pest controllers, and some migrate! Light pollution doesn't just affect birds; it also disrupts bats by delaying the emergence from their roosts, consequently reducing their foraging time for insects. During our bird-window collision surveys, our team rescued several bats, including Mexican Free-tailed Bats (*Tadarina brasiliensis*). This year, we've documented 16 bats across three different species!



Fall 2023 Observations

Total Bird Casualty Species Found

The fall surveys were conducted over a 12-week period in addition to preseason surveys on August 30th and September 6th. Including the preseason surveys, a total of 151 bird-building collisions were documented this season, encompassing 37 individual species and 17 families. All birds were documented and uploaded into the statewide iNaturalist monitoring project. The following survey observations summarizes the collision monitoring results and diversity of birds recorded throughout the season.



Composition of Bird Families Throughout Fall 2023 Surveys

A total of 37 unique species encompassing 17 families were recorded throughout the fall season. This includes 2 species found during preseason surveys on August 30th and September 6th - the Least Flycatcher (Family *Tyrannidae*) and the Black-throated Green Warbler (Family *Parulidae*). The most abundant species observed overall were Lincoln's Sparrows, followed by White-throated Sparrows. These New World Sparrows (Family *Passerellidae*) made up 29% of documented birds ($n = 44$) with

observations beginning in Week 4 then increasing in Week 6 through 9 before gradually declining. New World Warblers (Family *Parulidae*) were the second most prevalent family observed ($n = 30$), with Nashville Warblers being the most common New World Warbler mortality. Together, New World Sparrows and Warblers made up 49% of documented birds, with species from one or both families being continuously observed every week. A Prothonotary Warbler, an uncommon migrant to North Texas⁴, was documented during Week 1. The Prothonotary Warbler has a conservation status rank of Vulnerable (S3B) in Texas due to habitat loss and alteration⁶, particularly in their breeding grounds east of the 96th Meridian¹. Only 22 observations of Prothonotary Warblers have been documented on iNaturalist in Tarrant County², all of which were located around the Fort Worth Nature Center and Refuge. Additionally, only 1 observation of a Prothonotary Warbler has been documented on the Lights Out Texas Monitoring Project as of March last year in downtown Houston⁷.

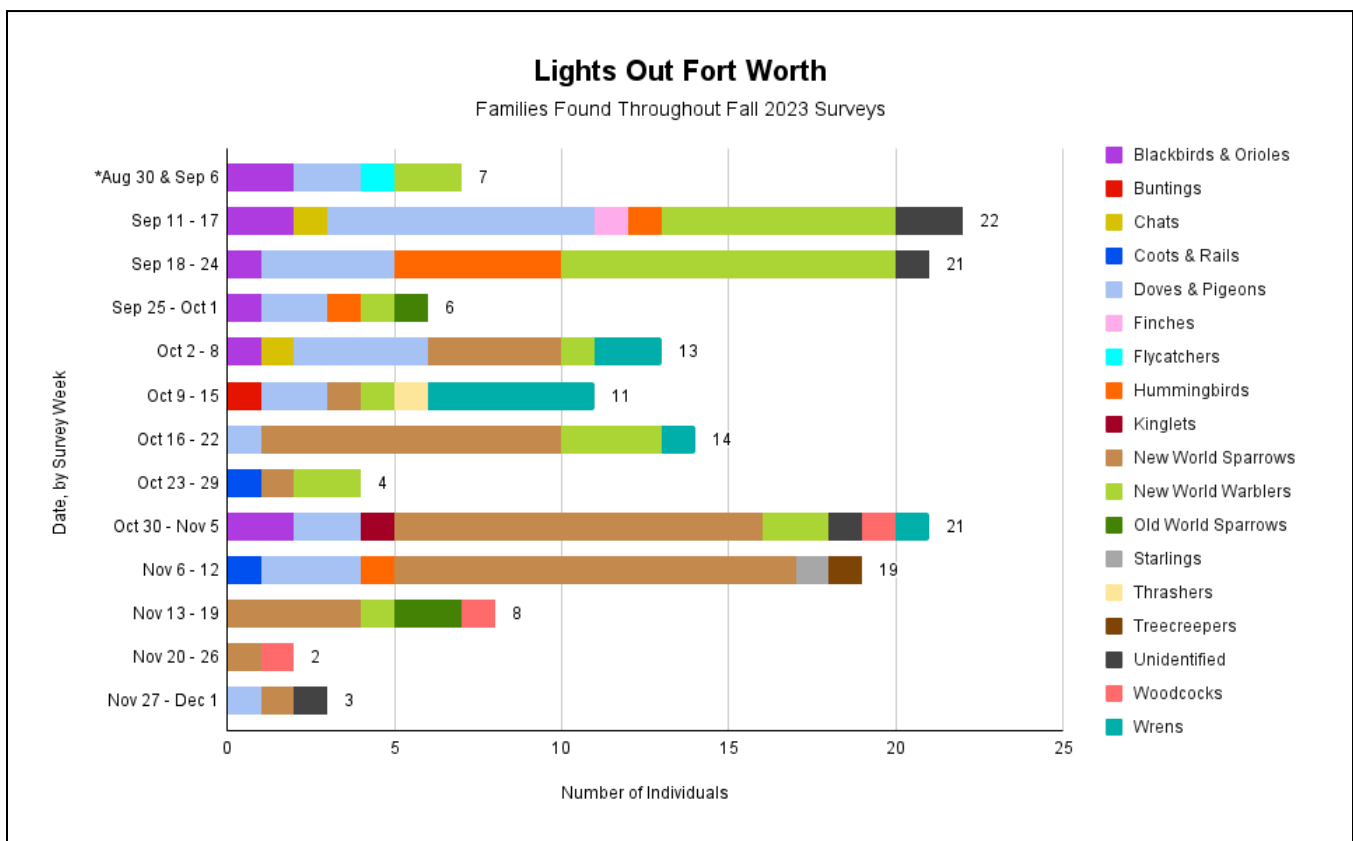


Figure 1.0: Bird Families Found Throughout Lights Out Fort Worth Fall 2023 Surveys by Number of Individuals Found per Week.

Heatmap of Observations Throughout Fall 2023 Surveys

The same predefined route established from the spring was followed this fall to identify problematic areas and factors affecting bird-building collisions. The 10-building survey route includes a group of small to large buildings (50 to 567 feet in height) of different constructive materials (glass, concrete, brick) and varying amounts of surrounding vegetation. Buildings 1 and 2 had the highest number of

collisions for spring and fall this year. These are taller glass buildings with sky bridges connecting across busy streets. The buildings' ground level is a carved out area of exposed columns and corridors illuminated by street and interior lighting, surrounded by trees and bushes lining the pedestrian walkways. We also observed an increase in collisions at building 7 this fall ($n = 20$) in comparison to the spring ($n = 4$). Building 7 is similar with glass windows and a skybridge, but much smaller in size at 56 feet in height, as well as being surrounded by a much higher density of vegetation. 84% of total observations found at building 7 were along a side that faces a 3-acre public park and a large open space, a parking lot, that expanded 100 meters directly west of the building. Additionally, 46% of total observations found at building 2 were along a side that faces another large open space, a row of parking lots, that expanded over 300 meters northeast of the building. The spatial variation and proximity of buildings to other urban structures influence collision mortality just as much as building size alone³. So although migratory birds are certainly susceptible to colliding with large buildings, surveying all building types and landscapes yields less-biased results, allowing us to provide a better understanding for researchers to analyze collision mortality rates with existing datasets⁵.

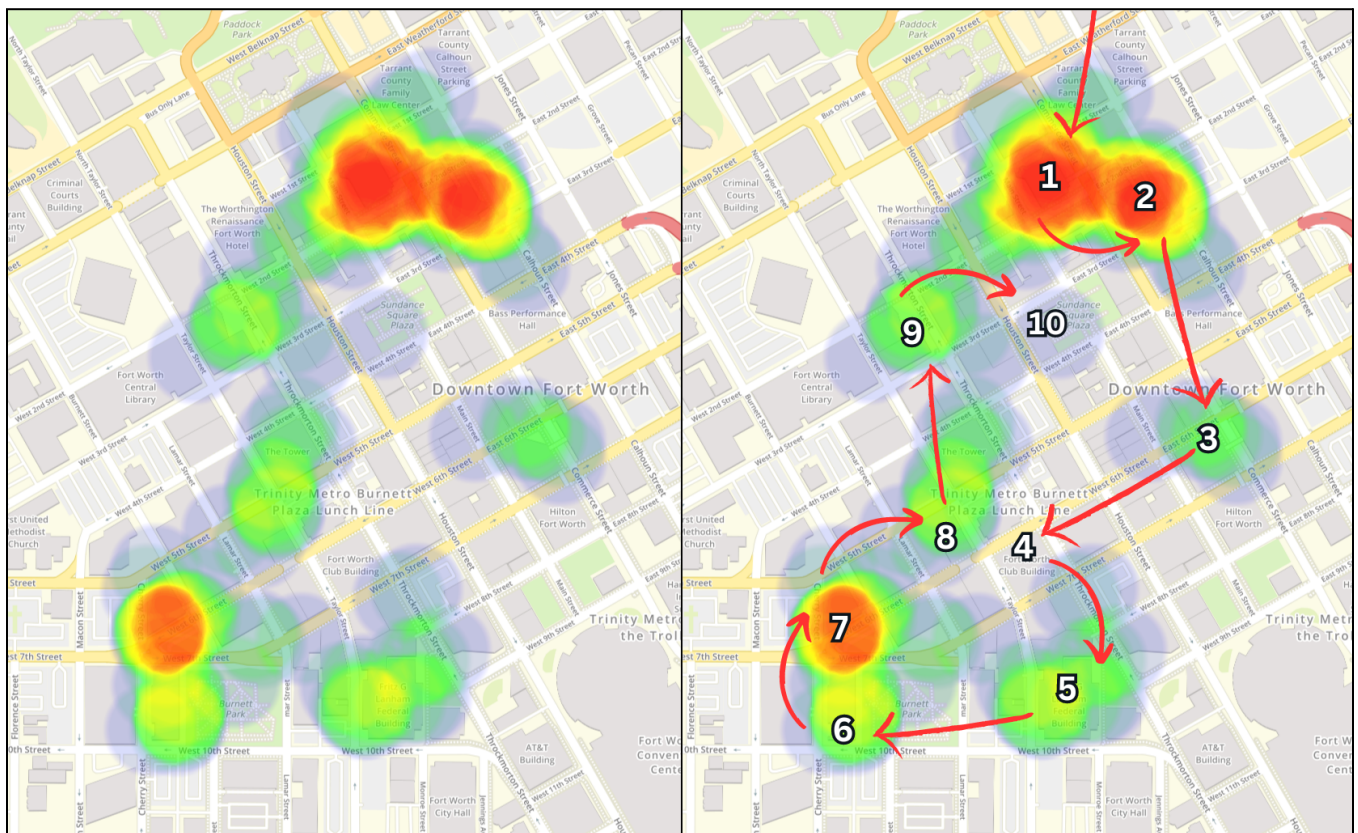


Figure 2.0: Heatmap of Observations Throughout Lights Out Fort Worth Fall 2023 Surveys (left) with the 10-Building Survey Route (right). Red areas signify greater density of recorded birds.

Bat Observations Throughout Spring and Fall 2023 Surveys

Birds aren't the only migratory animals that fly through the night sky. Bats are the only mammal capable of true flight. Our team encountered 2 bat species this season, the Mexican free-tailed bat (*Tadarida brasiliensis*) and the evening bat (*Nycticeius humeralis*). These bats have adapted to city life by utilizing structures like parking garages. However, light pollution can cause bats to leave their roosts later in the night. This gives them less time to forage for insects. In the spring, we found a deceased eastern red bat (*Lasiurus borealis*). Although we cannot infer what killed this fiery ball of fur, we do know that they enjoy eating insects such as moths. The eastern red bat's fur color helps them to blend in amongst leaves in the fall. This species of bat is arboreal, and can be found roosting in and around trees. Out of the 15 bats encountered this fall, 7 were caught and released once warm, 4 were deceased, 2 were spotted and assumed to have found higher ground and flew off, and 2 were rescued and sent to the local bat rehabilitation facility, Bat World Midcities. Collisions and confusion can cause bats to end up grounded. The mornings that we encountered bats were usually very cold. When a bat has become grounded, it is dangerous for two reasons. The first is that most bat species cannot take off the ground, and the second is that bats go into torpor when their body temperature drops to a certain degree. Torpor is similar to hibernation and can render a bat defenseless. These bats need help either to find higher ground, or a rehabber if injured. Bats are rabies vector species and should be handled with an abundance of caution.



Figure 3.0: Bat Observations Throughout Lights Out Fort Worth Spring and Fall 2023 Surveys. Numbered observations are as followed: 1. Eastern red bat. 2. Mexican free-tailed bat. 3. Evening bat. 4. Mexican free-tailed bat. 5. Mexican free-tailed bat, photo credit: Bat World MidCities. 6., 7., 8. Evening bat(s).

Together, We Achieve More

A very special THANK YOU to all of the partners who supported Lights Out Fort Worth this year! These partners are the foundation of our collaborative organization, where connections between like-minded individuals help advocate and enact change in our communities. At the end of the spring season, the Lights Out Fort Worth team had a hopeful glimpse into how the fall season would be. We are happy to say that the results exceeded our expectations, and that is a result of the commitment and dedication of our partners who helped ensure our success. Thank you for taking the time to read our final report to conclude the second season of surveys in Fort Worth. We look forward to seeing you again in the spring and wish everyone a wonderful holiday season and Happy New Year!



"For most of history, man has had to fight nature to survive; in this century he is beginning to realize that, in order to survive, he must protect it."

- Jacques-Yves Cousteau

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- ¹ Arnold, K. A. (n.d.) *Prothonotary Warbler*. The Texas Breeding Bird Atlas, Texas A&M University. Retrieved from <https://txtbba.tamu.edu/species-accounts/prothonotary-warbler/>
- ² iNaturalist community. Observations of Prothonotary Warbler (*Protonotaria citrea*) from Tarrant County, TX, USA observed between 2017-2023. Exported from <https://www.inaturalist.org> on 10 December 2023.
- ³ Hager, S. B., Cosentino, B. J., Aguilar-Gómez, M. A., Anderson, M. L., Bakermans, M., Boves, T. J., Brandes, D., Butler, M. W., Butler, E. M., Cagle, N. L., Calderón-Parra, R., Capparella, A. P., Chen, A., Cipollini, K., Conkey, A. A. T., Contreras, T. A., Cooper, R. I., Corbin, C. E., Curry, R. L., ... Zuria, I. (2017). Continent-wide analysis of how urbanization affects bird-window collision mortality in North America. *Biological Conservation*, 212:209–215. <https://doi.org/10.1016/j.biocon.2017.06.014>
- ⁴ Kaufman, K. (2023). *Prothonotary Warbler*. Audubon, National Audubon Society. Retrieved from <https://www.audubon.org/field-guide/bird/prothonotary-warbler>
- ⁵ Loss, S. R., Will, T., Loss, S. S., & Marra, P. P. (2014). Bird–building collisions in the United States: Estimates of annual mortality and species vulnerability. *The Condor*, 116:8–23. <https://doi.org/10.1650/condor-13-090.1>
- ⁶ NatureServe (2023). NatureServe Explorer [web application]. NatureServe, Arlington, Virginia. Available https://explorer.natureserve.org/Taxon/ELEMENT_GLOBAL.2.100372/Protonotaria_citrea
- ⁷ Tony Dang. 2022. iNaturalist observation: <https://www.inaturalist.org/observations/108796241>. Accessed on 10 December 2023.