**Designing a Bird Friendly Campus**

[*birdfriendlycampus.com*](http://birdfriendlycampus.com/)

**Background**

Bird-building collisions kill up to one billion birds annually in the United States (Loss et al., 2014). Collisions with reflective and transparent glass surfaces are the second leading anthropogenic threat to birds, resulting in a 30% loss of net bird populations in North America since 1970 (Rosenburg et al., 2019). With most North American bird species declining due to architectural design choices, Phase 1 of our project collected data to identify which design features have the highest loss rate (design "hot spots") and which species are most vulnerable to collisions on our campus. From this data, the project aims to prevent most collisions on campus by treating "hot spots" in Phase 2 based on the gathered data rather than treating all glass surface areas.

Twenty-two case study sites and campus buildings were chosen on the University of Washington, Seattle Campus (UW) based on their design features, proximity to habitat spaces, and previously reported collisions. For eight weeks over seven seasons (Autumn 22 - Spring 24), the buildings were monitored daily for collisions. The data collected in the study include species, age, location of the collision victims, scavenger details, weather, and behavior observations.

**Phase 1 Findings**

The study's findings as of March 2023 are that the UW campus kills at least 10,000 birds per year, with an estimated up to 15,000 for the years there is an influx of vulnerable species. Winter was the study's deadliest season, with the total number of collisions found to be twice that of autumn or spring. This study is the first collision study to indicate Winter as the deadliest season. The high number of winter collisions could be due to the influx of varied thrush (*Ixoreus naevius*) in the Winter due to their winter migration route. The species is 76% more vulnerable to collisions than other Pacific Northwest species (DeGroot et al., 2021), representing 21% of UW's total collision victims and 50% of UW's Winter 23 victims. The study found that 16 additional species hit campus buildings regularly. While all the found species are currently of low conservation concern, nine of the 18 are in decline due to anthropogenic threats such as bird building collisions. And the varied thrush and dark-eyed junco lose 0.7% of their net population yearly (The Cornell Lab, 2023; Rosenberg et al., 2019). Five species were steeply declining, and two were slightly declining (The Cornell Lab, 2023; Rosenberg et al., 2019).

The location of the finds indicates the UW campus has four primary design "hot spots," and when paired with nearby habitat space or tree canopies, the collisions increase. These hot spots are transparent glass railing (PACCAR Hall), transparent and reflective glass walkways (PACCAR Hall, Dempsey Hall, and Foege Building), reflective and transparent glass corners (Winkenwerder Forest Lab, Bloedel Hall and The Hans Rosling Center for Population Health), and glass curtain walls reflecting habitat space (Life Sciences Building and Dempsey Hall). Transparent and reflective windows across the 22 campus sites also contributed to the findings; however, these four design features have the most collision events.

**Phase 2 – Designing A Bird Friendly Campus**

In December 2023, the project’s data was used to draft bird friendly design standards for UW’s Green Building Standards which plans to require all new UW buildings to be bird friendly according to these guidelines. While protecting new buildings is critical to prevent future collisions, dozens of preventable collisions occur daily across campus, contributing to the 40,000 birds lost during the average undergrad’s four years on campus. Retrofitting current campus buildings to protect birds from collisions is not only our responsibility to meet campus sustainability goals, such as protecting biodiversity, but it’s also our ethical responsibility to protect local wildlife when we have straightforward solutions available. Phase 2 proposes four retrofit sites, continued monitoring to ensure the retrofits are effective, and continued app development.

*Retrofitting Collision Hot Spots*

Based on the data collected, treating campus hot spots can reduce building collisions by up to 90%. Treating hot spots is less expensive as it takes fewer resources (materials and time) to install. Treating hot spots, not the entire glass surface area, minimally alters the original building design and desired aesthetic. Using vinyl designs allows Phase 2 of the project to protect birds and for the designs to reflect unrepresented communities on campus while highlighting the departments that live in the buildings. All products are guaranteed for 25 years and have been tested to withstand extreme weather for 50 years.

*Continued Monitoring*

Considering our independent study course, *Designing for Conservation – Preventing Bird Building Collisions*, is popular among students, the project would continue monitoring buildings for collisions, including where the hot spots are treated, to ensure the products are as effective in reducing collisions as advertised. While these products have been tested for efficacy in controlled settings, there have been very few case studies of how effectively they reduce collisions in occupied buildings.

*Using Our App, Avian Impact, as a Design Tool*

The app will continue to be used to detect campus collisions. Planned screens include identifying living birds while recording metrics that inform how birds interact with campus buildings and their location. Additionally, screens will be added to provide designers with examples of available bird friendly products and patterns including filters allowing visualizations of bird friendly patterns helping campus designers and building managers to treat for collisions after the project has ended. Through our app, anyone can see where collisions are happening on campus, calculate which species are most vulnerable, and choose the most effective bird-friendly patterns in one location. (The project lead intends to maintain the app indefinitely, as students are so eager to join the app team that there is a waitlist.)

**Timeline**

We plan to use Seattle Birds Connect’s $5000 donation to treat our first hot spot (PACCAR’s Transparent Railing) as our first example to showcase to building managers and designers. Please see the uploaded timeline and budget for our 24/25 goals.