



How does Project Safe Flight contribute to education and research?

Since 2015, volunteers with Birds Georgia's Project Safe Flight have been patrolling the streets during spring and fall migration looking for birds that have been killed or injured after colliding with buildings. To date, 4,200 individuals, representing 135 different species, have been collected. These specimens are used for a variety of different purposes, adding to ornithological research, providing teaching opportunities, and educating the public in various ways. Here we outline how these birds serve a vital purpose after their untimely death.

Salvaged bird preservation, education, and infectious disease research at the University of North Georgia (UNG)

The final federal repository for birds collected during Project Safe Flight is the Biology Department at the University of North Georgia, where professor Dawn Drumtra uses the birds for both research and educational purposes. Deceased birds found by volunteers during Project Safe Flight patrols are transported to a storage location where they are kept frozen until they can then be transferred to the University of North Georgia

Avian Infectious Diseases

A percentage of the birds collected for Project Safe Flight are tested for the presence of an infectious disease called *Mycoplasma gallisepticum* in Dr. Drumtra's research lab. This is a bacterial disease that has been economically problematic for the poultry industry and which has been detected in both domestic and wild birds. The last major outbreak of this disease was in the early 1990s, predominantly in House Finches. UNG's research indicates that this disease is currently at its non-outbreak level of 4% in our wild birds which means that, for now, it is not a significant concern in the Eastern US. Over the past eight years this research has been supported by grants from the Georgia Ornithological Society and UNG Center for Undergraduate Research and Creative Activities. Research on this infectious disease has been presented by students at numerous conferences including: UNG's Annual Research Conference,

Wilson Ornithological Society, North American Ornithological Conference, and has recently been accepted for three presentations at The Wildlife Society in November 2023.

Education UNG-Gainesville Natural History Museum

Salvaged birds that are well- preserved are added to the UNG-Gainesville Natural History Museum avian teaching collection. There are currently over 500 birds in the museum's collection, all of which have been preserved by undergraduate students in the biology department. During some semesters, as many as 150 birds will be preserved by students for research and for use in the museum.

Students also have the opportunity to use birds for individual research projects. Madison Miller (B.S. Pre-Veterinary Medicine; December 2023) is currently researching the effectiveness of alternative preservation techniques, such as freeze drying. Due to the nature of decay, preserving dead specimens can be challenging if not done properly. Madi's research is looking into the success of freeze drying methods and has found that the condition that the bird is in when it arrives at the university largely determines the success of preservation techniques. Madi was even able to tag along with Project Safe Flight volunteers during the Fall 2022 migration season – giving her the opportunity to participate in this research from collection of the bird through the final deposit of the bird into the museum. This research has been presented at UNG's Annual Research Conference 2023 and has recently been accepted for presentation at The Wildlife Society in November 2023.

Graduate Research on Human Centered Computing at Georgia Tech

Project Safe Flight volunteers use a number of different technologies to track bird deaths caused by building collisions, including online calendars, spreadsheets, phone apps, and shared training materials. Ashley Boone, a PhD student at Georgia Tech researching human-centered computing, is looking at how certain technologies can contribute to the collection of data that helps tell a story about the threats to birds in our community. Project Safe Flight is one of several projects Ashley is examining, all of which could generate data to help advocate for legal and social change. It could also lead to better and more efficient technology for citizen scientists. About her research, Ashley says the following: *"I hope to use these insights to design technology that supports local efforts to create social and political change through data. In*

addition to supporting conservation efforts. I hope to understand how the design and use of technology in this context unveils deep entanglements between humans, birds, and the built environment."

In spring 2023, Ashley joined Project Safe Flight volunteers in Atlanta as they searched for deceased birds or evidence of window-collisions. *"The process of searching for deceased birds can be deeply personal and integrated with how you experience the city,"* Ashley says. She adds that she gained valuable insight from volunteer surveys about their experience looking for birds, *"it forces people to pay attention and take notice of the human impact. It is disturbing, but powerful."*

Photo Exhibits at the Hudgens Center for Art and Learning

From February to April of 2023, Project Safe Flight birds were presented by an artist as part of the "Three Billion" group art show curated by Brickworks Gallery owner and artist, Laura W. Adams at the Hudgens Center for the Arts in Gwinnett County. Adams curated a group of ten artists from the Atlanta region and beyond whose work focuses on environmental themes and wildlife declines. The name "Three Billion" referred to the report published in the journal *Science* about the loss of some three billion of our North American birds in the last 50 years. The artists in this show came together to display art that speaks to this horrifying loss, its causes and its solutions, as well as to the beauty and awesomeness of birds and their environments. The artists hope to bring more awareness of this unfolding tragedy and its potential solutions, through the medium of art.

Laura W. Adams is a paper collage artist whose work depicts the forests, wildlife and wildflowers of the world. She concentrates her subject matter on the flora and fauna and birds that live in areas around her. An avid birder and hiker, Adams' work brings the viewer into the emotional and spiritual connection she feels in the presence of nature. She has been a working artist for over 25 years, and has also worked as a gallerist, an art reporter, and a guest museum curator. The source material Adams uses for her collages include found items from nature, textured papers, painted papers and exotic patterned papers that have been cut up, layered, and adhered with acrylic medium. Often, ten or more layers of material are used to create a single work. The result is a "painting", without using paint, with a distinct, three-dimensional effect. Adams has shown her work in galleries and juried exhibitions throughout the United States. Her pieces are owned in a number of corporate collections as well as private collections around the world. She currently shows her work in galleries in New York, NY, Lenox, MA, Richmond VA, Nashville, TN, Charleston, SC and Beaver Creek, CO. Adams ventured into the business side of

the art world when in 2016 she opened Brickworks Gallery in an historic, industrial era building on the Atlanta Beltline's Eastside Trail. The gallery is now open by appointment only, as it is also the working artist studio of Adams.

To see more of Laura's artwork go to: brickworksgallery.com or visit Laura's Instagram feed: [@brickworksgallery](https://www.instagram.com/brickworksgallery)

"Flock" by Kate Breakey

Kate Breakey photographed and hand colored images of Project Safe Flight birds.

Artist's statement: *"These images were made using the earliest form of photography, a process invented by Henry Fox Talbott (1800-1877) who is regarded as the father of photography. They are called 'photogenic drawings' or 'photograms'- images made without a camera. The subject is simply laid on light sensitive paper and exposed to light. The result is a negative shadow image that shows variations in tone that depends upon the transparency of the objects used. The birds on this wall are part of a larger series of photograms of plants and animals made over a ten year period. They ranged from the tiniest of creatures – scorpions and beetles, bats and mice, to larger mammals, coyote and deer and everything in between, snakes and birds, possum and rabbits, -several hundred individual creatures in all. In the darkroom they became the ghostly shadows of the remains of these living creatures, burned into photographic paper with light and with love, to make a lasting impression, the only document of their brief existence here on this earth."* A selection of this work was published by University of Texas press in 2012 as a book titled 'Las Sombras/The Shadows'. This collection has since been installed at the Birds Georgia office at the Trees Atlanta Kendeda Treehouse at 825 Warner Street, SW, Ste. B, Atlanta, GA 30310.



The Bird Genoscape Project

Birds collected during Project Safe Flight will also contribute to exciting research that will help inform conservation decisions. Feathers taken from salvaged birds will be sent to The Bird Genoscape Project. ***What is a genoscape?*** A genoscape is a map of genetic variation across the breeding range of a specific animal species. This genetic data allows researchers to track individuals of a species across the full annual cycle, from breeding to wintering grounds, and everywhere in between.

The Bird Genoscape project maps migrant flyways of North America by collecting genetic data from bird feathers. This project increases our understanding of bird population trends, including threats and causes of declines such as the negative impacts from climate change. Researchers with the Genoscape Project receive bird feathers from project partners all over the continent, including Birds Georgia. To demonstrate the application of this work, the Bird Genoscape Project has identified six genetically distinct breeding populations of Willow Flycatcher across North America. The identification of one of those populations, the 'Southwest' population, has helped this population obtain special protections through designation as an endangered species. This type level of focus allows conservationists apply limited energy and funds where they are most critically needed.. Learn more about this project, [here](#).

University of Tennessee Research

In collaboration with researchers from the University of North Georgia and the University of Tennessee, specimens from select species collected during monitoring routes will be used to study long-distance seed dispersal. Stomach contents from birds, presumably victims of nocturnal building collisions, will be collected to investigate what seed and plant material may be contained inside. This data may shed some light on how seeds are dispersed over great distances, specifics on foraging by nocturnal migrant species, species-specific natural history investigation, and many more topics. Research like this will supplement data collected at various bird banding sites in the Appalachians.

Student Research and Outreach

Project Safe Flight Georgia has spread to multiple universities across the state. Students, faculty, and staff at these institutions have used this data for undergraduate and graduate research, advocacy work on campus in efforts to make the space more bird-safe, and general education.

Students have presented their findings during on-site symposiums, class presentations, and other regional or national events. Georgia Tech, Georgia State, Kennesaw State, Oglethorpe, Emory, and the College of Coastal Georgia have all been involved in this program in various capacities. Also, Colorado State University Pueblo received specimens from Birds Georgia to add Eastern species to their museum collection and broader research.

****All birds are collected and temporarily stored by Birds Georgia under both state and federal permits. Any specimens donated are given to institutions who also have the necessary approvals.**

Oglethorpe University

Professor Roarke Donnelly uses birds gathered from PSFG in Conservation Biology and Ecology classes at Oglethorpe University. The birds are used as study specimens to teach students skin preservation methods and identification skills. Eventually, Professor Donnelly plans to use the collection to discuss phenotype variation in a level one Biological Inquiry course. In regards to the donations, Professor Donnelly says, "I'm grateful for the donation of collected birds because it helps me to teach some specific biological concepts and skills, but also because they help me to maintain some contact between my urban students and biodiversity...this can ultimately help to foster conservation ethics."