Exploration of Wildlife Management at Airports of the Pacific Northwest with Special Attention to Bird Strike Hazards.

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**A Paper for BIOL 453W Behavioral Ecology, Spring 2023**
**Willamette University 2023**

## Background

Bird strikes have become a growing concern for the aviation industry due to the potential risks and damages they can cause. Bird strikes occur when birds come into contact with the engine or fuselage of an aircraft. This can lead to significant damage and put the crew and passengers in danger (Juračkaa et al. 2022).

The most common time for bird strikes to occur is during the landing phase of a flight, which accounts for 61% of all bird strikes. During this phase, the plane is descending towards the runway and is more likely to encounter birds that are also in the same airspace. However, bird strikes can also occur during the takeoff phase (36%) and in-route phase (3%) (FAA, n.d.).

The damages caused by bird strikes can be quite costly as well. On average, commercial and military aircraft suffer about $400 million worth of damage per year due to bird strikes. This includes the cost of repairs, delays, and cancellations. (Juračkaa et al. 2022)

Airports and airlines have implemented various measures to mitigate the risks of bird strikes. One of the most common methods is bird control programs, which involve training dogs or birds of prey to scare off birds from the airport area. Another method is using radar technology to detect bird activity and alert pilots to avoid those areas (Juračkaa et al. 2022).

In addition, aircraft manufacturers have also taken measures to design aircraft that are more resistant to bird strikes. This includes reinforced windshields and engine covers, as well as improved engine designs that can withstand bird impacts (Juračkaa et al., 2022).

Despite these efforts, bird strikes continue to be a concern for the aviation industry. As air traffic continues to increase and bird populations continue to grow, it is essential for airports and airlines to remain vigilant in their efforts to prevent bird strikes and ensure the safety of their passengers and crew. (Juračkaa et al. 2022)

**Airport grounds management - how to change habitat to discourage species**
**Direct harassment of animals**

**At Portland (PDX)**

According to (Atwell 2019), just like any other airport in the USA, there are measures put in place to ensure the safety of airplanes from wildlife spots. For instance, in Portland, Oregon, the first wildlife management plan was made at PDX in response to the increasing wildlife hazards on and around the field at PDX (Atwell, 2019). One of the things they can do is the risk evaluation process (Atwell, 2019). This involves a systematic approach to assess wildlife strike hazards at the airport.

To ensure they are tracking and looking at the right type of wildlife risk, they make sure that, depending on the species, they know how to respond. By keeping up to date with the types of aircraft, they have created this model, making it easy for them to know what to do in certain

situations. This approach involves them being active and flexible in identifying the type of aircraft.

The different types of wildlife depend on the scale and the level of risk, and this is decided by what type of physical damage it can cause on an aircraft and the likelihood of a collision happening at PDX. Before they use these strategies, the port considers what actions to take. They need to make sure they are making the right decision when it comes to management actions. By using this type of approach, the port can ensure they are keeping people safe and negating the likelihood of negative impacts of wildlife strikes on the environment (Atwell, 2019).

**At Sea-Tac**

As someone who has spent much time around the SEATAC Seattle airport, I can attest to the importance of raptor management when it comes to bird strikes. Airport officials have taken this issue seriously for many years, with work starting as far back as 2001 (Alex Lauber, pers. comm.).

After talking to Alex (Alex Lauber, pers. comm.), who is a wildlife expert of birds in aerospace at Seattle Tacoma International Airport, and getting information about his work life and what he gets to see on a daily basis, the one bird family he says in the pacific northwest that seems to be a big issue and something I should look into for further research and endeavors and that was the raptor family (Alex Lauber, pers. comm.).

One of the Willamette University alums in this area of research is Hannah Traegesar (Hannah Traegesar, pers. comm.), whose work has been instrumental in advancing our understanding of how to manage raptor populations around airports. Traegesar's research has focused on identifying the factors that contribute to bird strikes and developing effective strategies for mitigating these risks (Traegesar, 2015).

Traegesar and her colleagues have uncovered one of the critical findings that raptors are attracted to airports because of the abundance of prey in the area. This means that if we want to reduce the risk of bird strikes, we need to find ways to manage the raptor populations near the airport (Traegesar, 2016).

One strategy that has been successful in this regard is the use of non-lethal deterrents. For example, some airports have experimented with using trained falcons to scare off other birds, which can help to discourage raptors from setting up shop in the area(Hannah Traegesar, per. comm.).

Another form of raptor investigation research is raptor trapping and form of trapping. Managing raptors is really important to safety at SeaTac airport. After I looked at the (Hannah Traegesar, per. comm.) poster about raptors at Seatac airport, she got to look into the program and review some of the information that began to come out for research. Looking at this and other papers, including(Anderson and Osmek, 2005) work that she did with him, this started around 2001 when they were looking to do research from the biological side of things and negate the number of strikes that were hitting airplanes and getting close to SeaTac.

Their plan was to monitor and analyze the raptor behavior and look to understand more why the number of hawks kept increasing at this time and decrease the number of strikes. When doing their search, they looked and widdled it down to some specific ideas and planned raptor species identification ( Traegesar, 2016)

Another approach that has shown promise is the use of habitat management techniques. By creating a habitat that is less attractive to raptors, such as by planting certain types of vegetation or installing structures that discourage nesting, we can help to reduce the size of raptor populations in the area(Anderson and Osmek, 2005).

Of course, it is worth noting that raptor management is just one part of a larger effort to reduce bird strikes at airports. Other strategies include the use of radar and other monitoring technologies to detect bird activity in the area, as well as the use of noise and other deterrents to scare off birds that are already in the vicinity of the airport.

One of the challenges of managing raptor populations around airports is that these birds are protected under the Migratory Bird Treaty Act. This means that any efforts to control their populations must be done in a way that is humane and compliant with federal regulations.
To help navigate this complex regulatory landscape, many airports have turned to experts like Alex Lauber (Alex Lauber, pers. comm), who has extensive experience in avian management and ecological consulting. Lauber's work has focused on developing customized solutions that are tailored to the unique needs of each airport, taking into account factors like the local ecology, the

surrounding landscape, and the specific types of birds that are present in the area (Anderson and Osmek, 2005).

Overall, raptor management is an important area of research and practice for anyone concerned with bird strikes at airports. By developing effective strategies for managing these populations, we can help to reduce the risks posed by raptors and create safer skies for everyone.

### *Case study A: Story of Sully and Flight 1549 details of NY*

US Airways flight 1549 was a flight from LaGuardia airport in New York to Charlotte Douglas in North Carolina (Pariès, pers. comm.). A little into the climb after the flight took off, the Airbus hit a flock of Canadian geese hit the A320. The plane was forced to return to Laguida but was not able to make it due to the birds compromising both engines. This caused the pilot and his 100 passengers to ditch the flight in the Hudson River; now, with all of this being said, everyone survived. However, bird strikes can end up having tremendous effects on transportation. Although these things can happen, birds don't always hit planes in a way that could end up like this situation (Pariès, pers. comm.).

## Part Two: How to work with Wildlife Strike Management

To pursue a career in wildlife airport management focusing on bird air strikes, one must possess a combination of education and experience in relevant fields. A typical training program for this career path would involve coursework in aviation safety, wildlife management, and environmental science. Additionally, experience working with wildlife, particularly birds, is crucial.

One possible route to gaining the necessary education and experience is through a degree program in wildlife management or a related field. This could include courses in ornithology, ecology, and airport operations. Certificate programs and workshops that specifically focus on wildlife airport management are available.

For experience, individuals may seek internships or job opportunities at airports or wildlife management organizations. These could involve working with airport personnel to implement bird deterrence methods, performing wildlife surveys, or participating in bird relocation efforts.

It is important to note that a career in wildlife airport management focusing on bird air strikes requires a solid commitment to safety and attention to detail. Professionals in this field must be able to identify bird species, understand their behavior patterns, and implement effective mitigation measures to minimize the risk of bird strikes. With the right combination of education and experience, however, pursuing a fulfilling and rewarding career in this crucial field is possible.

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