

Birds and plane safety at Juneau Airport



*Richard Carstensen and Bob Armstrong
for Juneau Audubon Society • Sept 2004*

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Between December 3, 2001 and November 22, 2002, we conducted monthly point counts for SWCA at three locations on Juneau International Airport (JNU) property. Our report to SWCA on this work is titled *Bird use of Juneau Airport Property* (Carstensen and Armstrong, 2002) and can be downloaded at www.jnu-eis.org/documents/bird%20report.pdf.

The goal of our study for SWCA was to document bird use of airport property, to better understand prospective losses to birds, should their habitats be developed or rendered intentionally less attractive to large birds that could damage airplanes in a collision. Our field methods were not designed to evaluate safety issues. Previous work (Wilmoth *et al.* 2001, FAA, 2002) had addressed birds and airplane safety.

During the course of our airport-property point counts, and a concurrent study of bird concentrations throughout the greater Mendenhall Wetlands (the “Hotspots” study, Armstrong *et al.* 2004, for Juneau Audubon Society, JAS), we became concerned that existing studies, policies and recommendations did not adequately resolve the many challenging issues of bird/airplane interactions. Some of our concerns are outlined in the *Synthesis and recommendations* section of the Hotspots report.

The following report to JAS contains additional observations and recommendations that may be of use to managers, agencies and the public, as we collectively seek to improve airport safety, and to maintain or enhance bird habitat on the surrounding wetlands. As we stated in our Hotspots report, and further develop here, these are not necessarily conflicting mandates.

Three study areas on airport property

Carstensen and Armstrong (2002) describes 3 areas within JNU property where monthly point counts were

conducted. Seven point-count circles were visited at Floatplane Pond Woodland, three in Duck Creek Triangle, and one in the Jordan Creek Triangle. Regular comparisons of bird activity in these areas—in some cases quantifiable but for the most part stemming from incidental observations—raised questions about the efficacy of past and proposed habitat alterations to reduce the risk of bird strikes.

Birds of concern

We use the term “birds of concern” to encompass five groups of large birds deemed threatening to planes: heron, waterfowl, gulls, eagle and corvids. These bird species range in weight from a few ounces to 23 pounds. Two of these “groups”—heron and eagle—are represented locally by only a single species. The other three groups contain multiple species:

Waterfowl: The *Birds of Mendenhall Wetlands Checklist* (Armstrong, *et al.*, 2002, for JAS) lists 32 species as at least “rare” in one season on the wetlands.

Gulls and terns: Nine species are listed as at least “rare.”

Corvids: Four species are listed.

All of these birds are heavy enough to damage planes in a strike, and—with the exception of some of the less common or marine-oriented waterfowl species—their habitat preferences and behavior bring them into airplane flight space on a seasonal or year-round basis.

Although our comments below focus on these groups of large birds, it should not be assumed that smaller species pose no risk to planes. Small birds such as starlings that form large flocks have caused strikes and human fatalities at airports in the lower 48 states. At Juneau airport such large flocks of small birds are relatively uncommon. (Shorebirds may be an exception.) Risk assessment is an inexact science, especially in regard to the flight behavior of seasonally changing bird populations. We have focused on these larger birds because in our estimation, and that of others (Wilmoth *et al.* 2001, FAA, 2002) these are the groups most likely to cause strikes at JNU.

In a summarization of world research on bird strikes, Sodhi (2002) also concluded that weight is very significant. The weights in parentheses below are from *The Sibley Guide to*

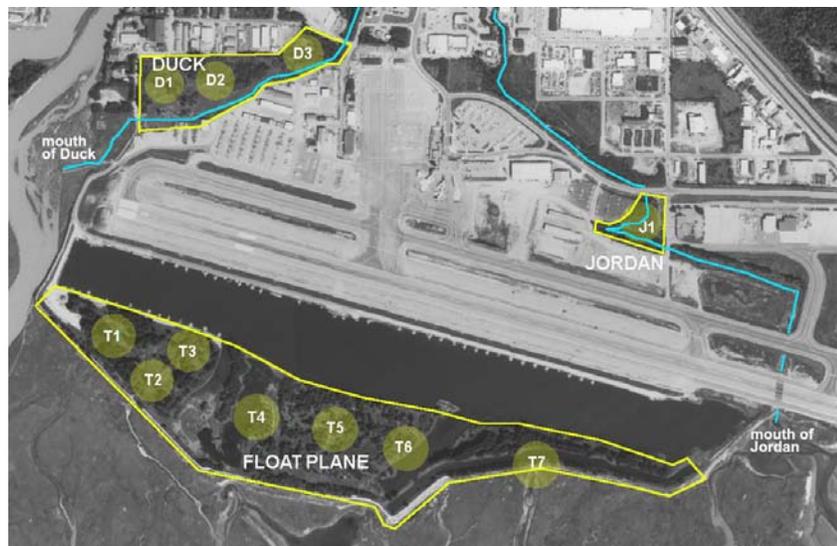


Fig 1 Three areas where monthly point counts were taken. Yellow circles show approximate 50 m radius for the 11 count locations.



Fig 2 Immature heron resting on stump of spruce, cut to remove habitat for dangerous birds. Jordan Triangle, 01/02/03.

Birds, 2000. Aside from weight, other major factors in bird strikes pointed to by Sodhi are:

- 1) age (immatures are more likely to be struck)
- 2) migration (likelihood is 5 times higher during periods of passage, due to increased numbers)
- 3) bird fatigue
- 4) bird inexperience with local conditions.

Heron

Great Blue Herons (5.3 lb) caused the two most serious of 21 bird strikes recorded at JNU over the past

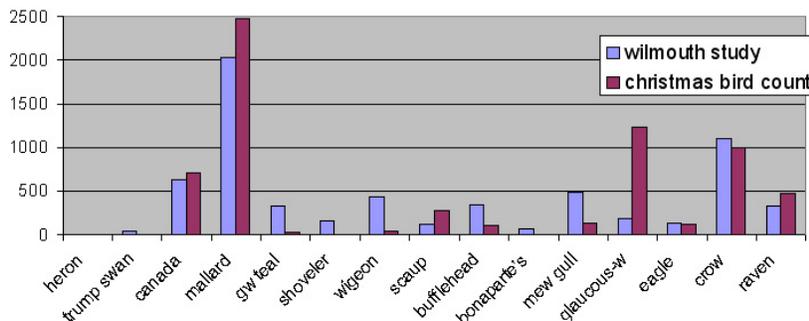


Fig 3 Two sources of data for populations of “birds of concern.” Wilmoth (2001) shows total birds counted on 12 sample areas of 11.5 acres each at JNU, from May 1999 to May 2000. These data include repeat counts of individuals seen on successive visits. Christmas Bird Count shows average number of individuals counted in one day within the 15-mile-diameter Juneau Count Circle for the years 1998-2002. Double counts are possible, but CBC compilers try to avoid this.

decade (FAA, 2002). Herons are big, relatively unmaneuverable in flight, and often fly to and from foraging locations in the dark.

Heron numbers seem to be increasing in Juneau since the 1970s, possibly because of reduced harassment by teenaged humans (Rich Gordon, pers. comm.). Their increased relaxation near human observers over the past quarter century has been dramatic. Unfortunately, this makes it harder to discourage herons from using habitats near the airport, particularly in prime fishing locations.

While numbers are increasing, herons are rare by comparison with all other birds of concern, making their involvement with 2 serious strikes all the more remarkable. On the December 15, 2001 Christmas Bird Count 37 observers reported only 7 herons in the entire Juneau count circle. Two weeks later we flushed 3 herons out of the Jordan triangle; a substantial portion of Juneau’s overwintering herons were using an area that was freshly cleared of trees specifically to discourage them.

In addition to our formal 10-minute point count visits, we have often seen and photographed heron in Jordan Creek Triangle when driving by in daytime. It’s likely that they make even more use of Jordan Creek by night.

Waterfowl

Many waterfowl species frequent the Mendenhall Refuge, but we can narrow down the list of primary birds of concern to those few that regularly use habitats on airport property, or cross the approach routes at high enough elevation to come into contact with airplanes*. In winter, the list includes Canada Goose (8 lb), Mallard (2.4 lb), Greater Scaup (2.3 lb), and Bufflehead (13 oz).

During migration, we could add Trumpeter Swan (23 lb), Tundra Swan (14.4 lb), Greater White-fronted Goose (4.8 lb), Snow Goose (5.3 lb), American Wigeon (1.6 lb), and American Green-winged Teal (12 oz). Several other dabbling duck species that frequent the arms of the Floatplane Pond in spring and fall might make the list, but behaviorally and ecologically they resemble the above ducks, and need not be discussed individually.

In our opinion, the two most potentially dangerous waterfowl species at JNU are Mallard and Canada Goose. Of these, we have recorded only Mallard on our point counts north of the runway at Duck and

* Examples of waterfowl that probably pose lesser risk at JNU are Surf Scoters (2.1 lb) and White-winged Scoters (3.7 lb). Although seasonally the most abundant water birds on the Refuge, they tend to congregate off the end of Mendenhall Peninsula or in the deeper parts of Gastineau Channel. In flight, they form long lines, staying low over the water. They would therefore more likely be struck by a floatplane rising or setting down in such locations (or by the proposed “flying boat”) than by planes in the airport vicinity. We have not observed them crossing JNU approach paths.