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Wildlife Hazards at Airports: A Practical Review

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Wildlife Hazards at Airports: A Practical Review



Robert P. Sliwinski – Christopher B. Burke Engineering, Ltd.
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106th Purdue Road School
Transportation Conference & Expo





OVERVIEW

Introduction

Relevant Bird Strike Statistics

Wildlife Management Techniques

New Bird ID Guide Concept

INTRODUCTION

- ✈ Globally, aircraft accidents and incidents due to wildlife strikes are an increasingly serious safety concern;
- ✈ Airport operators have a professional and legal responsibility to provide an environment conducive to safe aircraft operations;
- ✈ Airport operators and managers have been sued for property damage and / or for human injuries and death in the aftermath of aircraft accidents due to wildlife strikes.



Sources: Dale (2009); Cleary and Dolbeer (2005).

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✈️ Some relevant statistics (US):

✈️ 209,950 wildlife strikes;

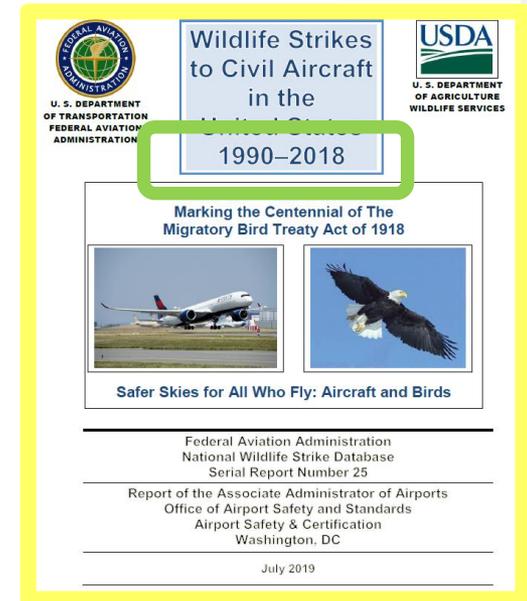
✈️ 97% - involved birds.

✈️ 63% - during the day;

✈️ 52% of strikes - between July and October;

✈️ 62% - during the arrival phases of flight;

✈️ 87% at the airport environment.



Identifier	Airport Name	City
KMIE	Delaware County Regional Airport	Muncie, IN
KEVV	Evansville Regional Airport	Evansville, IN
KFWA	Fort Wayne International Airport	Fort Wayne, IN
KGYG	Gary International Airport	Gary, IN
KIND	Indianapolis International Airport	Indianapolis, IN
KBMG	Monroe County Airport	Bloomington, IN
KLAF	Purdue University Airport	Lafayette, IN
KSBN	South Bend International Airport	South Bend, IN
KHUF	Terre Haute International Airport – <u>Hulman Field</u>	Terre Haute, IN

Table 1. Part 139 airports in the state of Indiana

Sources: FAA (2020a).

✈️ Some relevant statistics - Indiana (2009-2019):

✈️ 2,018 wildlife strikes (2.5% cause damage to aircraft);

✈️ 98% - involved birds.

✈️ 79.5% at the airport environment (below 1,500 feet AGL);

✈️ 78% of the damaging strikes at the airport environment.

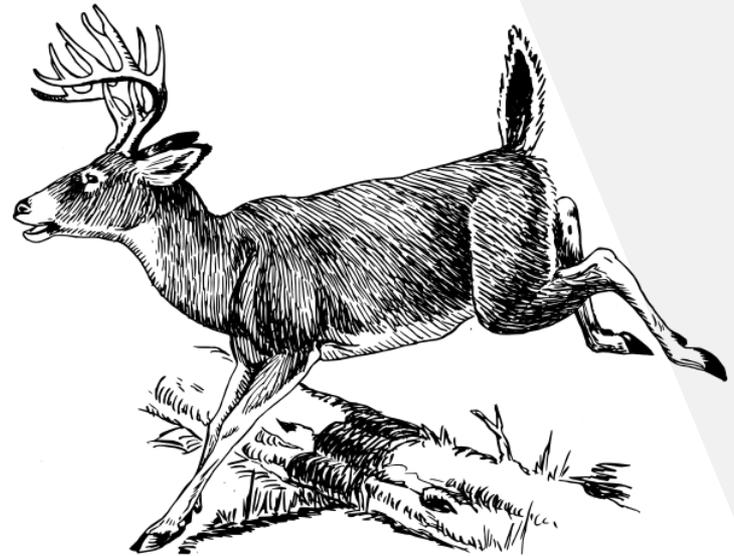
✈️ 49.6% during the day / 44.5% at night;

✈️ 66% - during the arrival phases of flight;

✈️ 33% - during the departure phases of flight.

Technology, Documentation and Management

- ✈ Birdcast
- ✈ Vigilance
- ✈ Wildlife Log
- ✈ Active Wildlife Management
- ✈ Reporting Wildlife Strikes
- ✈ Wildlife Management Techniques



https://birdcast.info/

The Cornell Lab of Ornithology

News & Announcements

BirdCast

Research

People

Scientific Discussions

Live Migration Maps

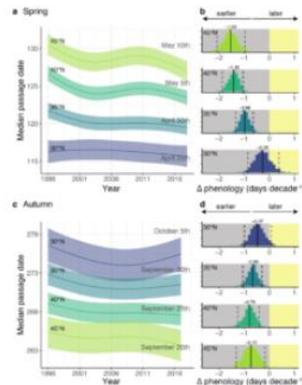
Search for...



Bird Migration Forecasts in Real-Time

When, where, and how far will birds migrate? Our migration forecasts will answer these questions for the first time.

Scientific Discussion



Migration Science: Phenology of nocturnal avian migration has shifted at the continental scale

Team BirdCast has been analyzing radar data with our group of talented collaborators, and today we published a new study on shifting patterns of nocturnal bird migration and how dynamic these patterns can be spatially.

Tweets by @DrBirdCast

BirdCast—Cornell Lab Retweeted

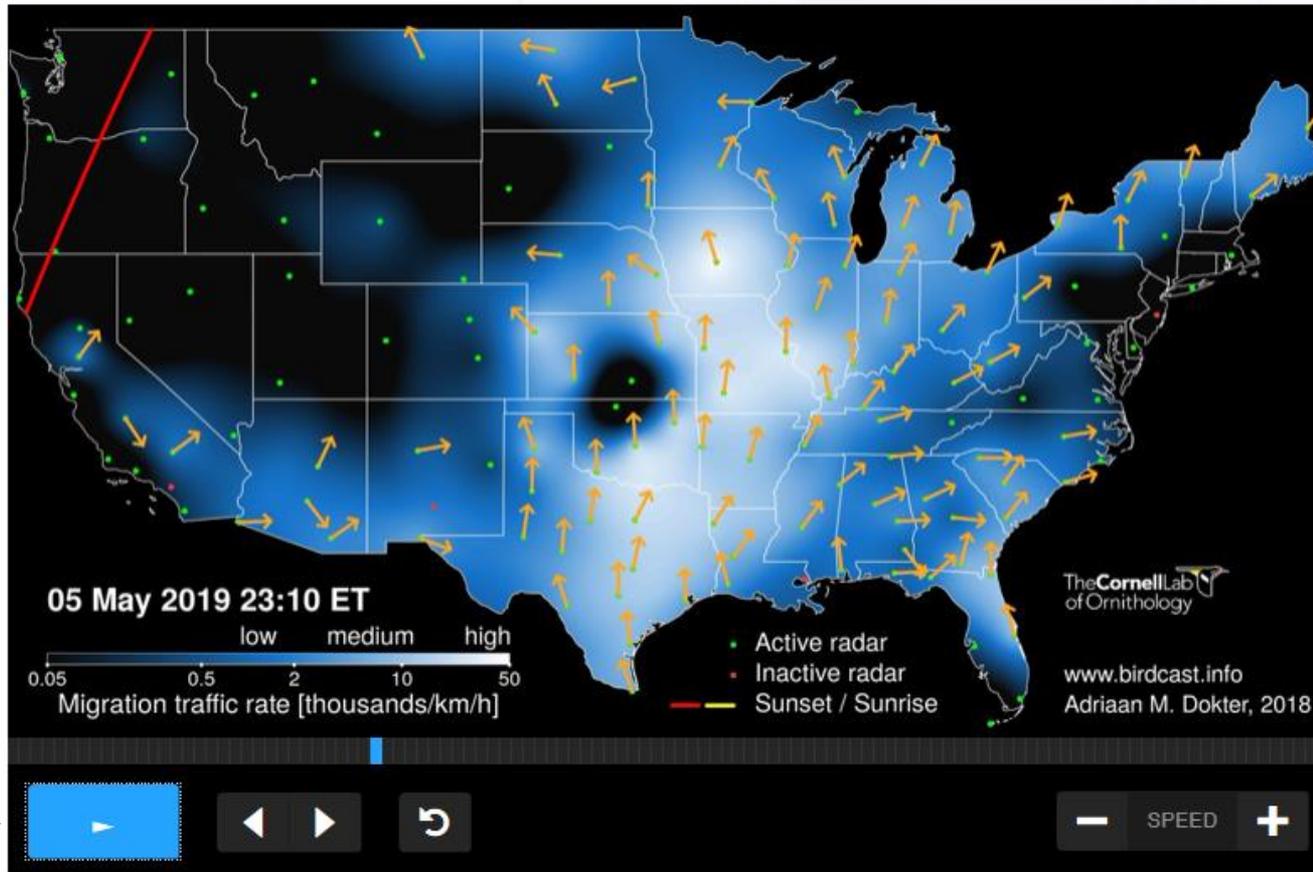
Kyle Horton
@Kyle_Horton

How has bird migration timing shifted in the last 20+ years? Slightly earlier, particularly in the spring, and in areas showing greater warming. Just out in @NatureClimate, read here: go.nature.com/36EOcdm #ornithology



Live Migration Maps

2019/05/06



WILDLIFE MANAGEMENT TECHNIQUES

Vigilance

-  Keeping an eye out for wildlife/bird activity
-  Highest activity for birds is Spring and Fall

Wildlife Log

-  Log provides data on wildlife/bird activity on the airport
-  Log wildlife harassment events and techniques used.

WILDLIFE MANAGEMENT TECHNIQUES (CONTINUED)

- ✈ Techniques to harass wildlife include: Sirens, vehicle presence, human presence, bird alarm calls, pyrotechnics, propane cannons, laser, lethal reinforcement.
- ✈ Reporting Wildlife Strikes
 - ✈ Keep record of wildlife/bird strikes in wildlife log and use FAA website for reporting wildlife strikes

IDENTIFICATION OF HAZARDOUS BIRDS FOR BETTER BIRDSTRIKE REPORTING

- Current bird field guides provide limited potential for identification of bird strikes
- Do not show various features, behaviors or flight of birds
- Best identification made by an ornithologist or Smithsonian Institution
- Most Pilots and Airport Management are not experienced birders
- Propose a multivariate system of bird identification designed for non-birders
- Easy to use and provides multiple features including:
 - Image of bird, silhouette of bird, bird in flight, flock in flight, large flock, video of flight, dead bird on ground.
 - Will include notes on behavior, preferred habitat and level of hazard

BIRD ID GUIDE COLLABORATORS

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LIST OF HAZARDOUS BIRD SPECIES TO AIRCRAFT IN THE U.S.

- Vultures
- Geese
- Cormorants/Pelicans
- Cranes
- Eagles
- Ducks
- Osprey
- Turkey/Pheasants
- Herons
- Hawks
- Gulls
- Rock pigeon
- Owls
- Horned Lark Snow Bunting
- Crows/Ravens
- Mourning dove
- Shorebirds
- Blackbirds/Starlings
- American kestrel
- Meadowlarks
- Swallows
- Sparrows
- Nighthawks

Table 8-1. Ranking of 25 species groups as to relative hazard to aircraft (1=most hazardous) based on three criteria (damage, major damage, and effect-on-flight), a composite ranking based on all three rankings, and a relative hazard score. Data were derived from the FAA National Wildlife Strike Database, January 1990–April 2003¹.

Species group	Ranking by criteria			Composite ranking ⁵	Relative hazard score ⁶
	Damage ²	Major damage ³	Effect on flight ⁴		
Deer	1	1	1	1	100
Vultures	2	2	2	2	64
Geese	3	3	6	3	55
Cormorants/pelicans	4	5	3	4	54
Cranes	7	6	4	5	47
Eagles	6	9	8	6	41
Ducks	5	8	10	7	39
Osprey	8	4	8	8	39
Turkey/pheasants	9	7	11	9	33
Hérons	11	14	9	10	27
Hawks (buteos)	10	12	12	11	25
Gulls	12	11	13	12	24
Rock pigeon	13	10	14	13	23
Owls	14	13	20	14	23
Horned lark/snow bunting	18	15	15	15	17
Crows/ravens	15	16	16	16	16
Coyote	16	19	5	17	14
Mourning dove	17	17	17	18	14
Shorebirds	19	21	18	19	10
Blackbirds/starling	20	22	19	20	10
American kestrel	21	18	21	21	9
Meadowlarks	22	20	22	22	7
Swallows	24	23	24	23	4
Sparrows	25	24	23	24	4
Nighthawks	23	25	25	25	1

BIRD ID GUIDE

- Start by determining size (comparison to common species)

- Small (The size of a House Sparrow)



- Medium (The size of an American Robin)



- Large (The size of an American Crow)



MULTI-VARIATE APPROACH TO THIS BIRD GUIDE

Multiple photos/videos of a bird species to provide a broader view of a bird when one painting or photo will not provide sufficient information to correctly identify a bird species. These parameters include:

- Image of bird (including male and female – if different, and juveniles)
- Silhouette of bird
- Individual bird in flight
- Small flock in flight
- Large flock in flight
- video of flight
- dead bird on ground



EUROPEAN STARLING



Summer Plumage



Winter Plumage



Juvenile Plumage



Silhouette



Dead Starling



Single in Flight



Small Flock in Flight



Large Flock in Flight "Murmuration"

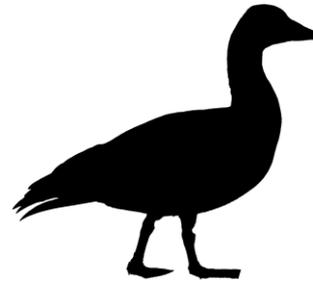
SNOW GOOSE



White Plumage



Blue Plumage



Silhouette



Dead Snow Geese



Single in Flight



Small Flock in Flight
“V”



Large Flock in Flight



Thank you!



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