



**USAF
BASH**





*Bird/Wildlife
Aircraft
Strike
Hazard Team*

Overview

- Awareness
- Reporting
- Wildlife Biology 101
- BAM/AHAS
- Safety's Role



**Bird/Wildlife
Aircraft
Strike
Hazard Team**

FABIO HIT BY BIRD ON ROLLERCOASTER

**“Oh my god!
Think if his mouth
was open!”**

CNN picture of the day

 close window

Bird's eye view

The model and spokesman, Fabio, got a bird's eye view of a new roller coaster at Busch Gardens in Williamsburg, Virginia. But a bird apparently couldn't see him -- it collided with his face during the ride. Fabio was reportedly taken to a hospital for minor cuts and released. A spokesman for his publicist said, "Oh my god! Think if his mouth was open!"



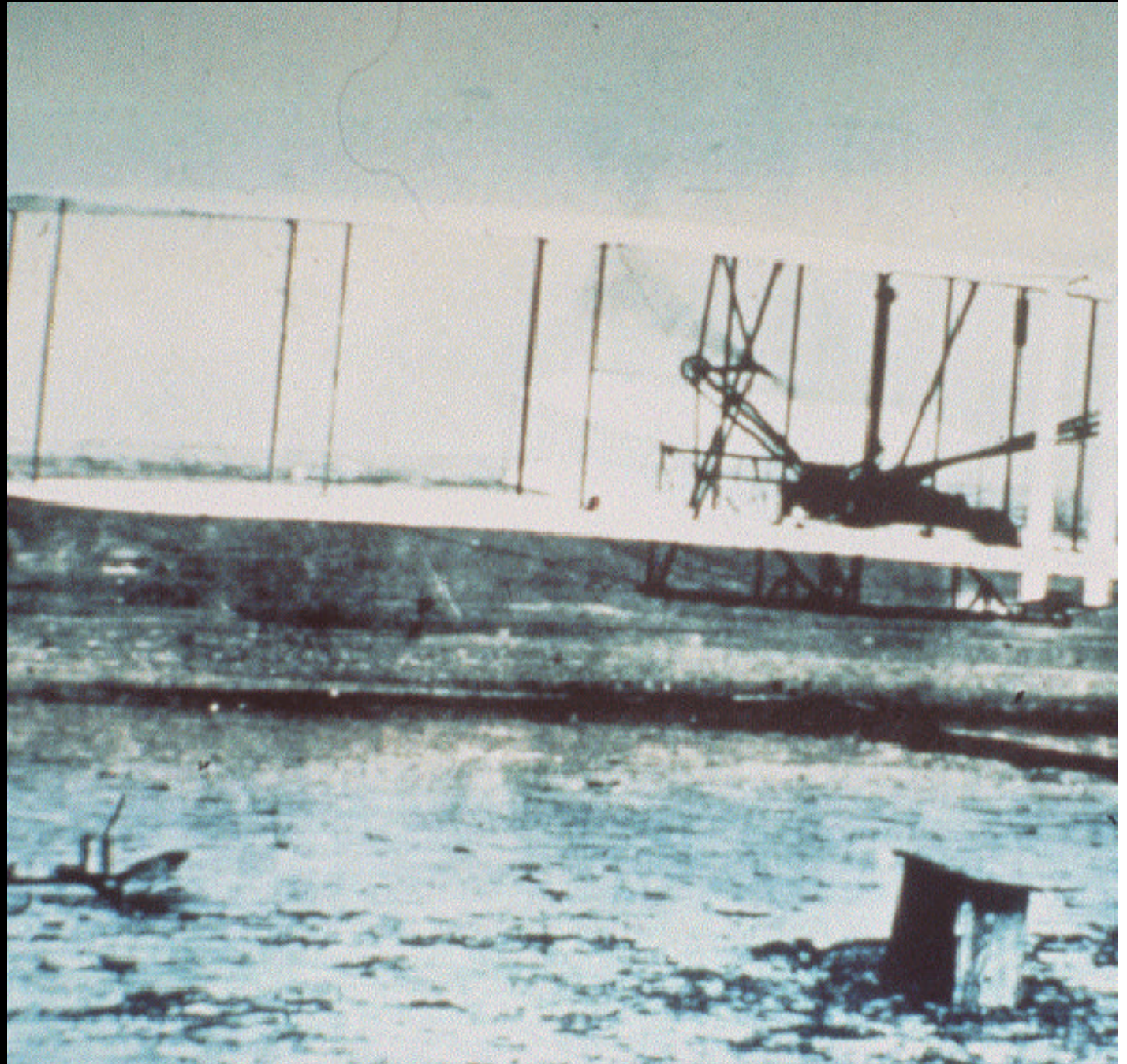
courtesy, welp



*Bird/Wildlife
Aircraft
Strike
Hazard Team*

First Bird Strike, First Fatality

- Lt Cal Rogers,
April 1912





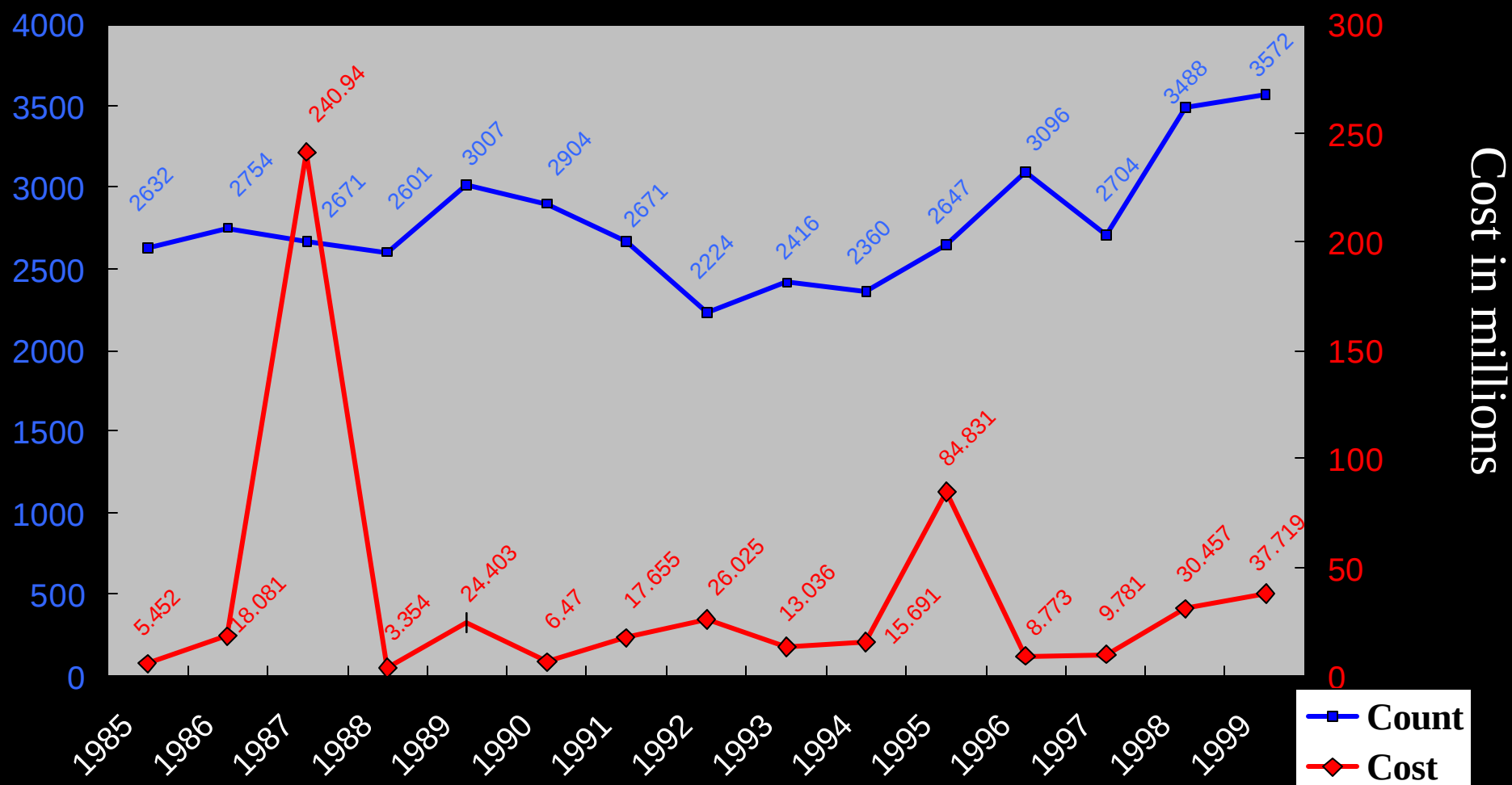
*Bird/Wildlife
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Hazard Team*

STATS (1985-1999)

41,747 Wildlife Strikes

\$542,668,023 Damage

15 YR AVG - \$36.1 M, 2783 Strikes

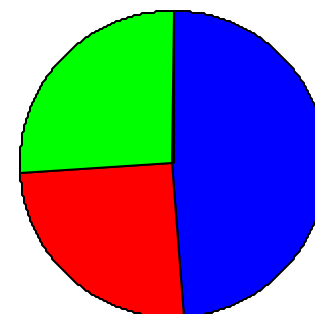




*Bird/Wildlife
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STATS 1985 -1999

Count



AIRFIELD

- 20,558 strikes (49%)
- \$157,705,504 (30%)

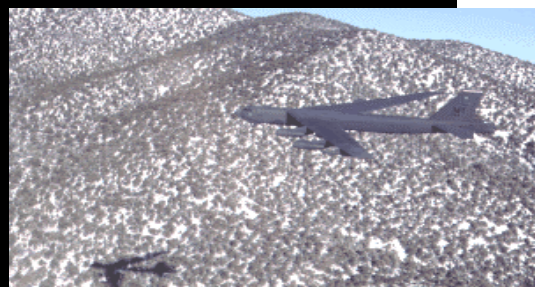


Cost



LOW-LEVEL / RANGE

- 10,206 strikes (25%)
- \$351,790,607 (68%)



UNKNOWN

- 10,771 strikes (26%)
- \$12,355,158 (2%)

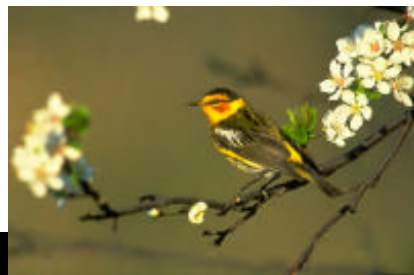
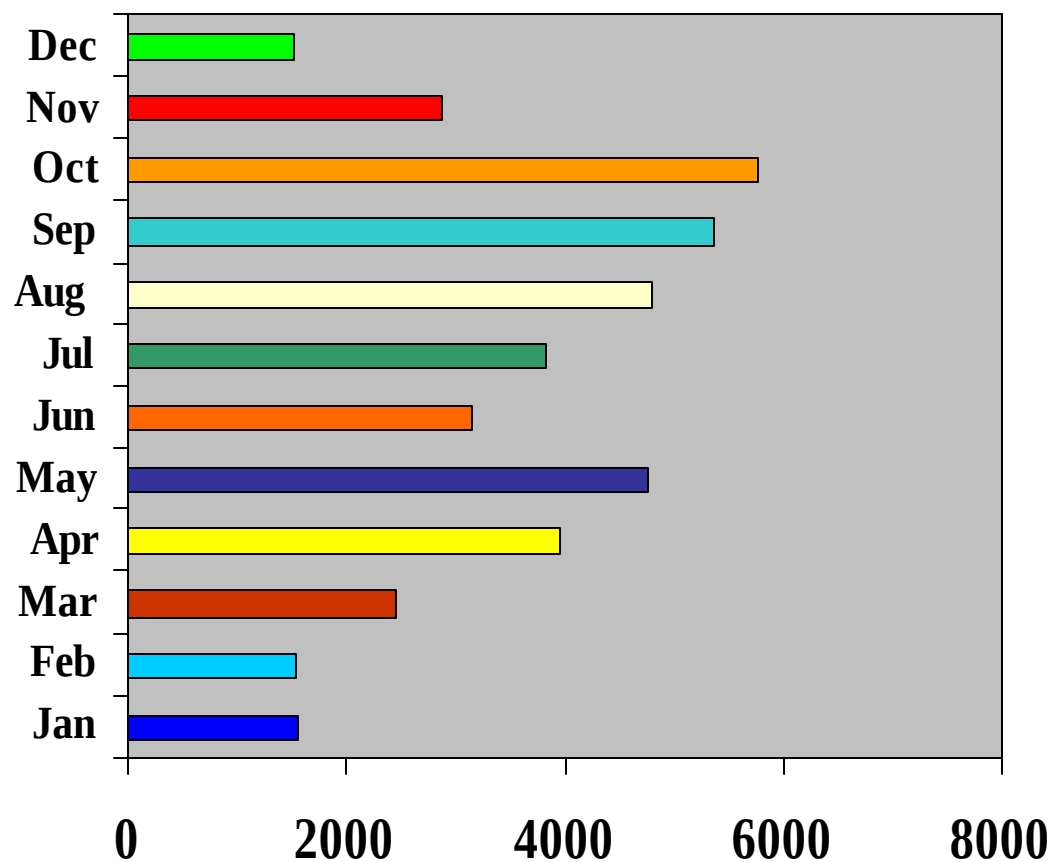


*Bird/Wildlife
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Jan	1560	4%
Feb	1551	4%
Mar	2450	6%
Apr	3945	10%
May	4752	11%
Jun	3147	8%
Jul	3825	9%
Aug	4789	12%
Sep	5356	13%
Oct	5768	14%
Nov	2867	7%
Dec	1517	4%

STATS 1985 – 1999

Strikes By Month





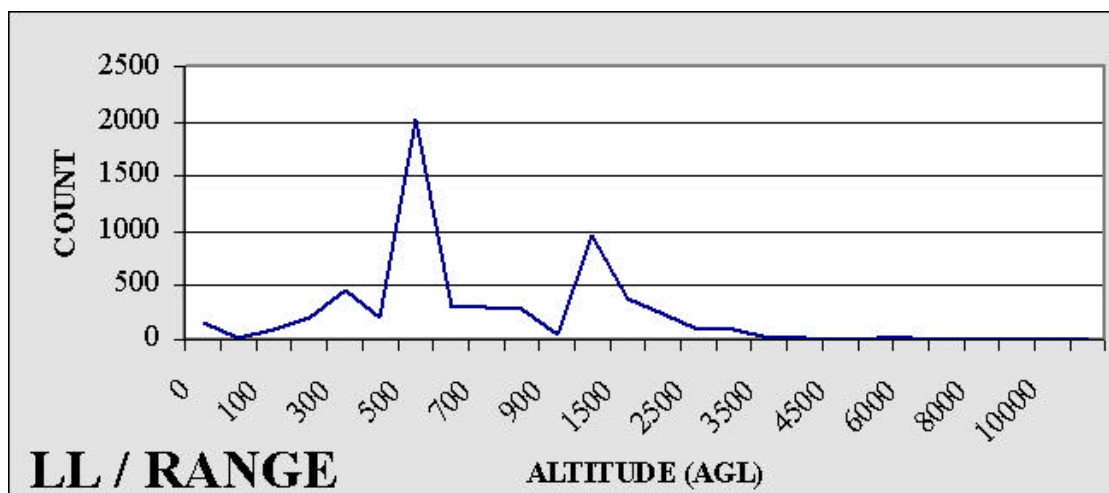
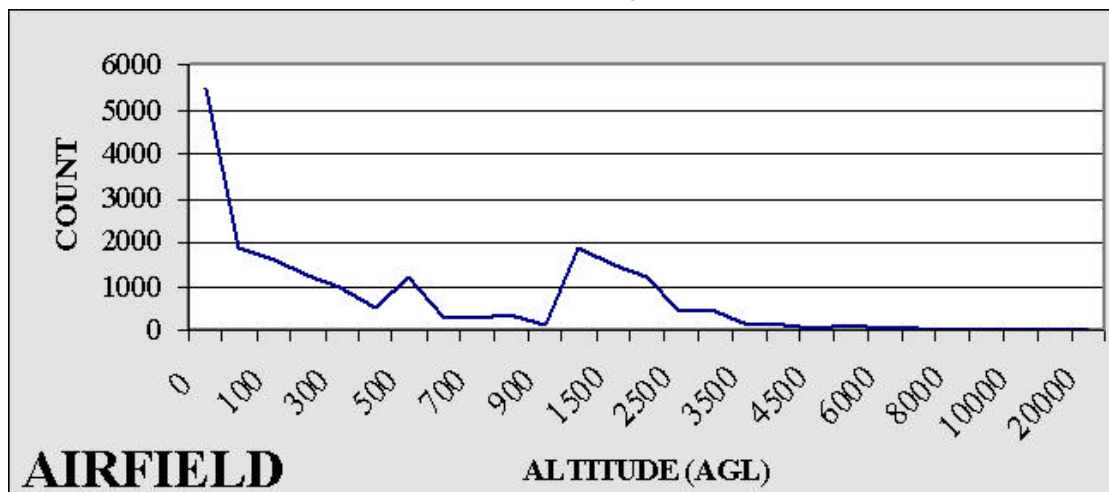
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AIRFIELD

<= 500 ' AGL, 67 %

<= 1000' AGL, 79 %

<= 2000' AGL, 93 %





**Bird/Wildlife
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Hazard Team**

Strikes By Species (Cost)



Common Name	Cost	Count
American White Pelican	\$256,917,876.00	6
Canada Goose	\$82,075,968.36	64
Turkey Vulture	\$35,925,449.52	417
Griffon Vulture/Eurasian Griffon	\$26,833,390.00	6
Red-tailed Hawk	\$12,708,987.70	339
Common Starling	\$12,670,797.55	237
Black Vulture	\$8,885,921.23	135
Snow Goose	\$6,651,710.00	30
Herring Gull	\$4,717,464.94	86
Horned Lark	\$2,799,973.40	1016
Mallard	\$2,797,325.18	147
American Cliff Swallow	\$2,270,065.14	132
Sharp-shinned Hawk	\$2,151,815.00	31
American Robin	\$1,623,922.95	282
Rock Dove/Pigeon	\$1,480,977.97	232



*Bird/Wildlife
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Strikes By Species (Count)



Common Name	Count	Cost
Horned Lark	1016	\$2,799,973.40
American Mourning Dove	594	\$1,354,422.72
Barn Swallow/Swallow	460	\$990,313.60
Turkey Vulture	417	\$35,925,449.52
Eastern Meadowlark	361	\$419,187.74
Red-tailed Hawk	339	\$12,708,987.70
Killdeer	287	\$167,242.00
American Robin	282	\$1,623,922.95
Sparrows, Buntings, Finches	246	\$69,930.00
Common Starling	237	\$12,670,797.55
Rock Dove/Pigeon	232	\$1,480,977.97
Chimney Swift	226	\$135,171.00
American Kestrel	210	\$150,144.31
Common Nighthawk	184	\$68,624.00
Western Meadowlark	181	\$210,625.00

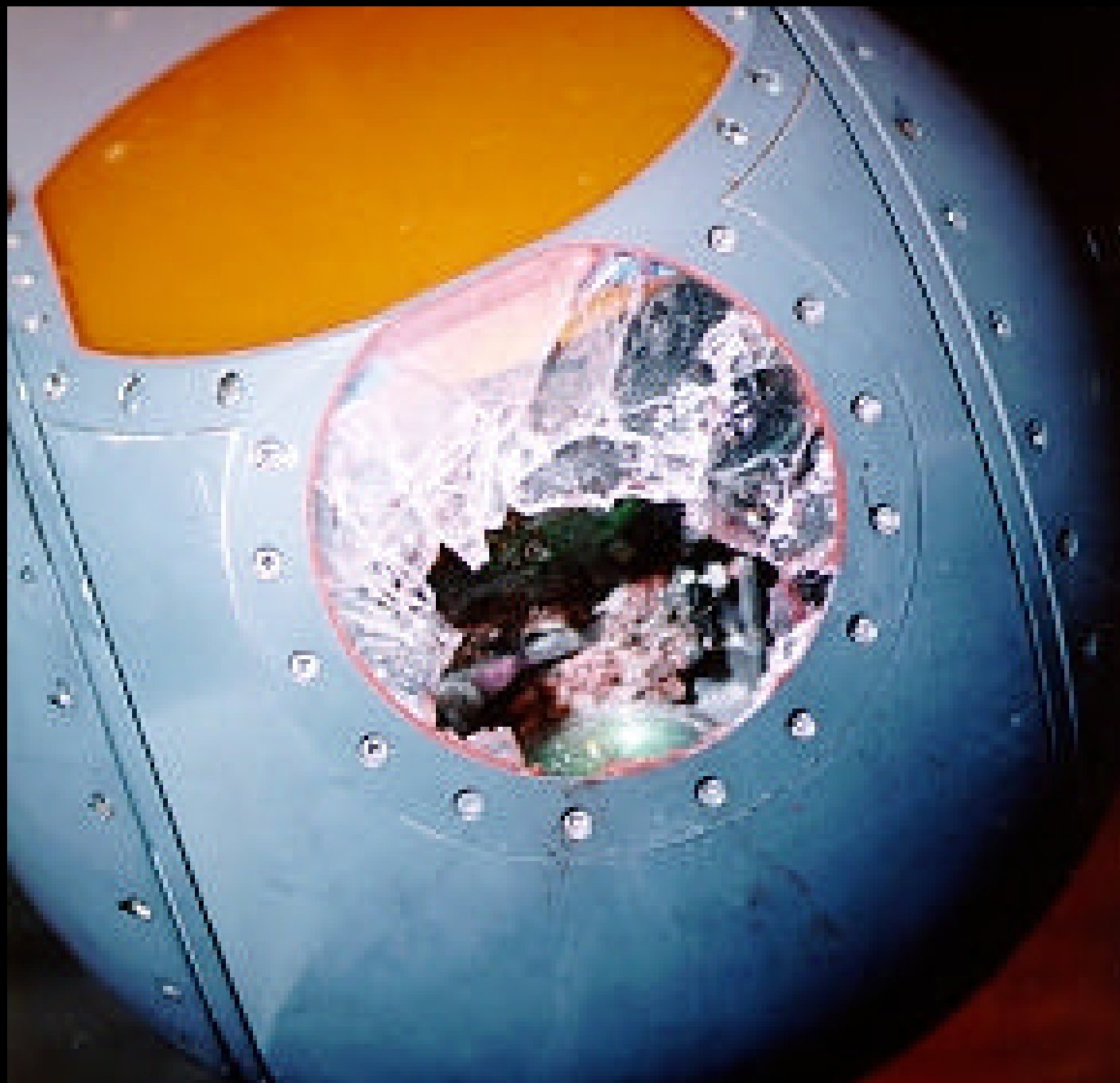


*Bird/Wildlife
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**Size Doesn't
Always Matter**

F-16 Target Pod

**White-Throated
Swift**





*Bird/Wildlife
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**Props Don't
Necessarily Stop
Engine
Ingestions**

C-130

American Robin

\$495K Damage





*Bird/Wildlife
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Rotary Winged Aircraft Aren't Immune

- USMC Cobra
- Feb 2000,
Lebanon
- Golden Eagle





*Bird/Wildlife
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Hazard Team*

BASH Isn't Just For The Birds

- Vance AFB –
Aux Field
- Feb 2000
- White-tailed
Deer (2)





***Bird/Wildlife
Aircraft
Strike
Hazard Team***

Identifying the Problem

- Strike Reporting
- Wildlife Identifications
- Observations / Surveys

Identifying the Problem

(1) Strike Reporting

(2) Wildlife Identifications

(3) Observations / Surveys



**Bird/Wildlife
Aircraft
Strike
Hazard Team**

BASH SAS

•Reporting
Format, 1 Jul 00

•Msg DTG
271810Z JUN 00

Identifying the Problem

- (1) **Strike Reporting**
- (2) *Wildlife Identifications*
- (3) *Observations / Surveys*

Identifying the Problem

SAS - Microsoft Internet Explorer

File Edit View Favorites Tools Help

Back Forward Stop Refresh Home Search Favorites History Mail Print Edit Discuss

Address https://saspc01.saia.af.mil/sas01/sas05.FRM_BASH_01.HTML_MAIN?nBSM_Strike_Id=75 Go Links >>



Strike Report
75

Reports Menu

- Data
 - Main Data
 - Impact Points
 - Wildlife IDs
- Functions



BIRD/WILDLIFE AIRCRAFT STRIKE HAZARD

[Feedback](#) | [Main Menu](#) | [Open List](#) | [Help](#)

STRIKE ID	75
STRIKE TYPE	United States Air Force
MAJCOM	Air Force Materiel Command
ORG 1 (Wing Level)	9 AW
ORG 2 (Group Level)	
ORG 3 (Squadron Level)	10 TS
AWARENESS	NO, NOT AWARE OF STRIKE INFLIGHT
LOCATION 1	ASIA (MIDDLE EAST/JAPAN incl)
COUNTRY	Japan
STATE	UNKNOWN
AIRPORT	103268 - NIIGATA - RJSN - N
LATITUDE (N-S)	
LATITUDE (Deg)	
LATITUDE (Min)	
LATITUDE (Sec)	



**Bird/Wildlife
Aircraft
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Feather Identification

Identifying the Problem

(1) Strike Reporting

(2) Wildlife Identifications

(3) Observations / Surveys

Identifying the Problem

- **AFI 91-204, para. 7.4.7.1.5. “Send feathers or feather fragments of **ALL** bird strikes for identification...”**
- **Enter into SAS and send a copy along with feathers to Smithsonian Institute**
- **Address on the new bird strike report form**



**Bird/Wildlife
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Feather Identification

Identifying the Problem
(1) *Strike Reporting*
(2) **Wildlife Identifications**
(3) *Observations / Surveys*

Identifying the Problem



Red-tailed Hawks



SMITHSONIAN INSTITUTION
National Museum of Natural History

**1/3 OF ALL BIRD STRIKES
ARE IDENTIFIED**

**EXPERTS ARE AT THE
SMITHSONIAN**

**ACCESS TO OVER 650,000
SPECIMENS**



*Bird/Wildlife
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FEATHER ID

1.



Identifying the Problem

(1) Strike Reporting

(2) Wildlife

Identifications

***(3) Observations /
Surveys***



**Bird/Wildlife
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FEATHER ID

2.



Identifying the Problem

(1) Strike Reporting

(2) Wildlife

Identifications

**(3) Observations /
Surveys**



***Bird/Wildlife
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Hazard Team***

FEATHER ID



Identifying the Problem

(1) Strike Reporting

(2) Wildlife

Identifications

***(3) Observations /
Surveys***



***Bird/Wildlife
Aircraft
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FEATHER ID



Identifying the Problem

(1) Strike Reporting

(2) Wildlife

Identifications

***(3) Observations /
Surveys***



***Bird/Wildlife
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Hazard Team***

FEATHER ID

5.



Identifying the Problem

(1) Strike Reporting

(2) Wildlife

Identifications

***(3) Observations /
Surveys***



***Bird/Wildlife
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Strike
Hazard Team***

FEATHER ID

6.



Identifying the Problem

(1) Strike Reporting

(2) Wildlife

Identifications

***(3) Observations /
Surveys***



**Bird/Wildlife
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Local Survey Forms

Identifying the Problem
(1) Strike Reporting
(2) Wildlife Identifications
(3) Observations /
Surveys

Identifying the Problem

Langley AFB Wildlife Observation Form
Return to: Steve Kendrot, USDA Wildlife Services, 1FW/SEF, 65 Sweeney Blvd, LAFB, VA 23665

Date: _____ Time: _____

Name of Observer: _____

Weather (Circle one):
Clear - Overcast - Partly - Cloudy - Rain - Snow

Location: (Mark Location on map)

Species: _____

Size of Group: _____

of males: _____

of females: _____

of unknown sex: _____

of adults: _____

of fawns/pups: _____

Notes (Behavior, etc...):

NOTE:
* STREET ADDRESSES ARE APPROXIMATE &
* FACING THE STREET THAT THEY BELONG TO
* AND SHOULD BE USED AS A GUIDE ONLY
* FOR LOCATING SPECIES REPORTS ON THIS MAP
* THE SCALE OF THE MAP IS 1:10,000



*Bird/Wildlife
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Dealing with the Problem

- Exclude / Mitigate
- Harass
- Avoid



Dealing with the Problem

(1) Exclude / Mitigate

(2) Harass

(3) Avoid



**Bird/Wildlife
Aircraft
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Dealing with the Problem



Dealing with the Problem
(1) Exclude / Mitigate
(2) Harass
(3) Avoid

1. GRASS HEIGHT (7-14 inches)
2. COMPLETE CANOPY
3. MINIMIZE TRANSITION ZONES
4. BROAD-LEAF PLANTS



**Bird/Wildlife
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**Cattle Egret
(*Bubulcus ibis*)**



Dealing with the Problem
(1) Exclude / Mitigate
(2) Harass
(3) Avoid

Dealing with the Problem



1. MOW DURING LOW FLYING
2. TRY NOT TO MOW DAILY



*Bird/Wildlife
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Maintain Good Airfield Drainage

Dealing with the Problem
(1) Exclude / Mitigate
(2) Harass
(3) Avoid

Dealing with the Problem



STANDING WATER



*Bird/Wildlife
Aircraft
Strike
Hazard Team*

Keep Ditches Flowing

Dealing with the Problem
(1) Exclude / Mitigate
(2) Harass
(3) Avoid

Dealing with the Problem



1. REDUCE VEGETATION
2. STEEPER BANKS
3. DEEPER CHANNELS



*Bird/Wildlife
Aircraft
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Dealing with the Problem



Dealing with the Problem
(1) **Exclude / Mitigate**
(2) **Harass**
(3) **Avoid**

1. DO NOT FEED THE WATERFOWL
2. GRID SMALL PONDS AND HOLDING AREAS

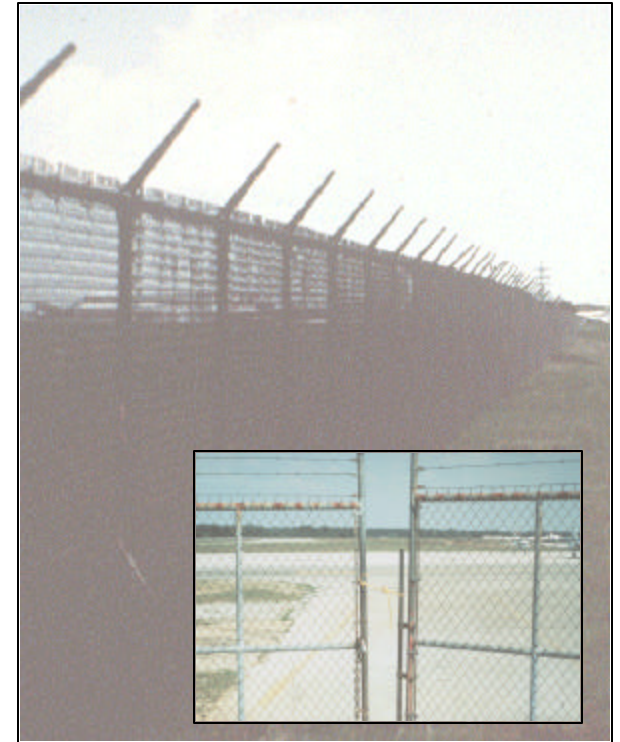


*Bird/Wildlife
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Hazard Team*

Fencing Best Deterrent to Deer

Dealing with the Problem
(1) *Exclude / Mitigate*
(2) *Harass*
(3) *Avoid*

Dealing with the Problem



1. LONG TERM
2. MAINTAIN

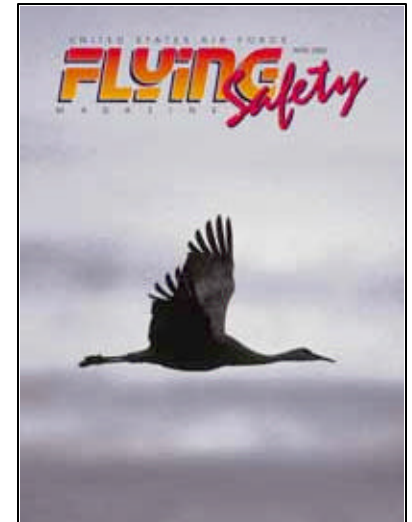


**Bird/Wildlife
Aircraft
Strike
Hazard Team**

Littlerock AFB

Dealing with the Problem
(1) Exclude / Mitigate
(2) Harass
(3) Avoid

Dealing with the Problem



Flying Safety
April 2000

**\$60,000 Electric
Fence
Or
\$284,000 8-Foot
Fence**



*Bird/Wildlife
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Hazard Team*

**Don't Give
Them a
Reason to be
There**

Dealing with the Problem
(1) Exclude / Mitigate
(2) Harass
(3) Avoid

Dealing with the Problem

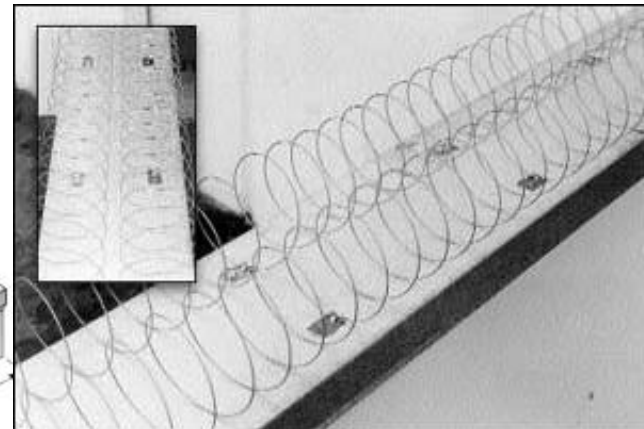
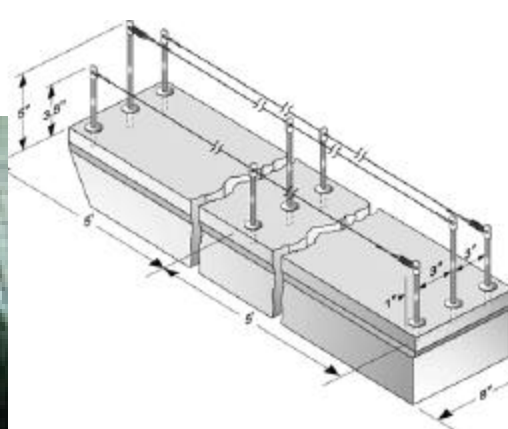


REMOVE PERCHES



**Bird/Wildlife
Aircraft
Strike
Hazard Team**

Dealing with the Problem



Dealing with the Problem
(1) Exclude / Mitigate
(2) Harass
(3) Avoid



*Bird/Wildlife
Aircraft
Strike
Hazard Team*

Crops Around Your Airfield

Dealing with the Problem
(1) Exclude / Mitigate
(2) Harass
(3) Avoid

Dealing with the Problem



MANAGE OUTLEASING WISELY
- Avoid Grain Crops



*Bird/Wildlife
Aircraft
Strike
Hazard Team*

Dealing with the Problem

Dealing with the Problem

(1) Exclude / Mitigate

*(2) **Harass***

(3) Avoid





*Bird/Wildlife
Aircraft
Strike
Hazard Team*

Harassment Tools

Dealing with the Problem

(1) Exclude / Mitigate

*(2) **Harass***

(3) Avoid

Dealing with the Problem





*Bird/Wildlife
Aircraft
Strike
Hazard Team*

Questionable Tools For Harassment

Dealing with the Problem

(1) Exclude / Mitigate

*(2) **Harass***

(3) Avoid

Dealing with the Problem





*Bird/Wildlife
Aircraft
Strike
Hazard Team*

Border Collies

- **Handler**

- **~\$90K/yr**

Dealing with the Problem

(1) *Exclude / Mitigate*

(2) **Harass**

(3) *Avoid*

Dealing with the Problem





*Bird/Wildlife
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Wildlife Hazards To Night Flying

Dealing with the Problem

*(1) **Exclude / Mitigate***

*(2) **Harass***

*(3) **Avoid***

Dealing With the Problem

- Non-migration
 - Insectivores - Goatsuckers
 - Owls
- Migration
 - Passerines (Songbirds)
 - Waterfowl
 - Can be flying at fairly high altitudes
- Mammals
 - Bats, deer, and coyote





*Bird/Wildlife
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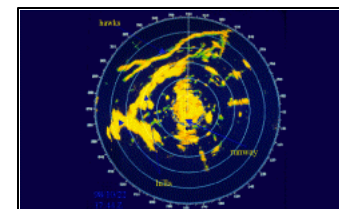
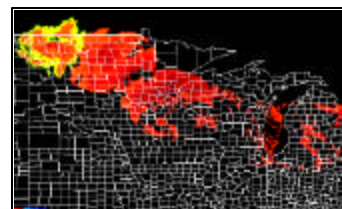
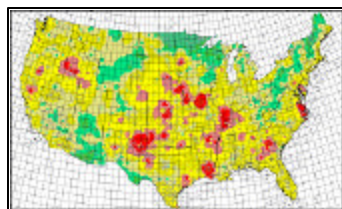
BAM
AHAS

Dealing with the Problem



Dealing with the Problem

- (1) *Exclude / Mitigate*
- (2) *Harass*
- (3) ***Avoid***





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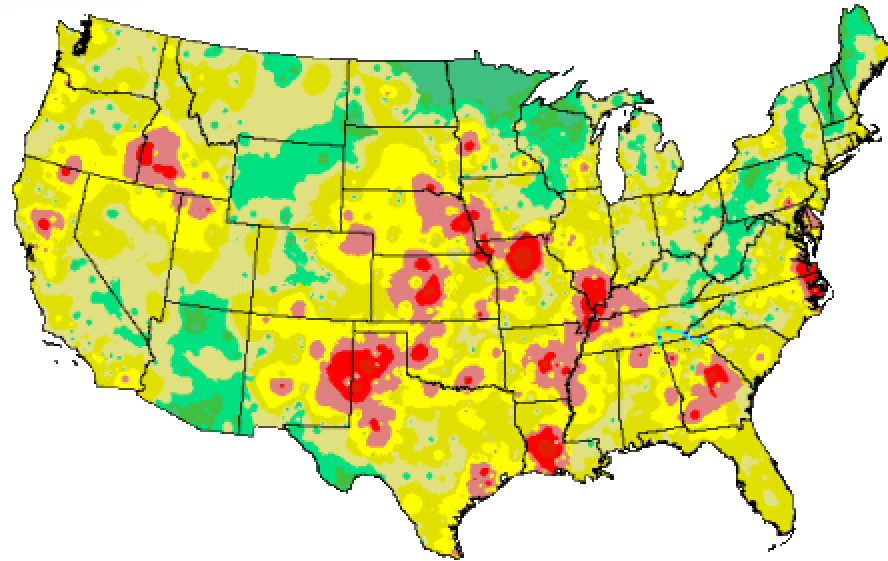
BAM

- Top 60 Species
- 30+ Years of Data
- GIS-based
- Web Based

Dealing with the Problem

- (1) *Exclude / Mitigate*
- (2) *Harass*
- (3) *Avoid*

Dealing with the Problem





BAM

• www.ahas.com

•Two Profiles

•Aircraft

•Planner/Sch

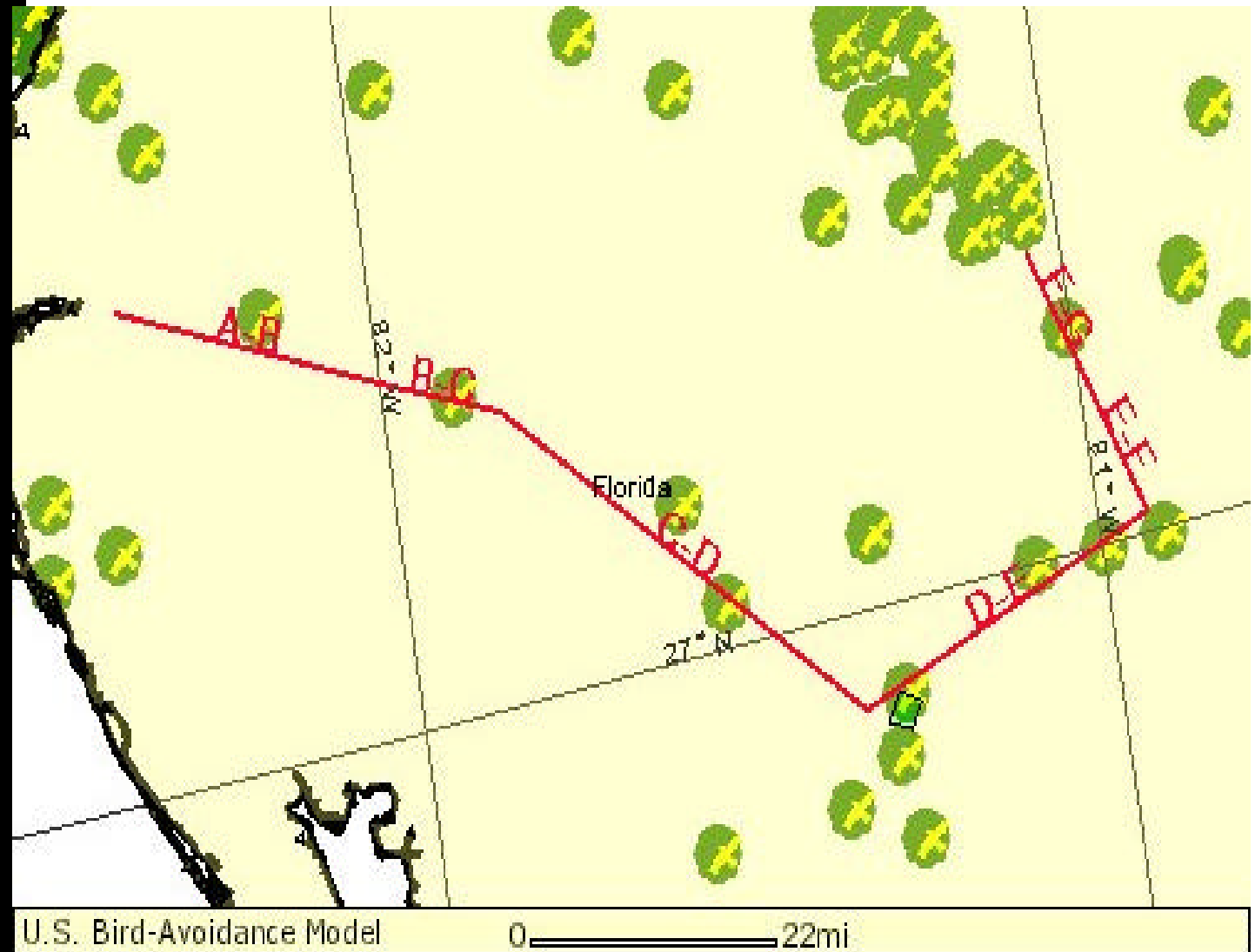
•Static - Historic

Dealing with the Problem

(1) Exclude / Mitigate

(2) Harass

(3) *Avoid*





**Bird/Wildlife
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Hazard Team**

AHAS

- **BAM + W_x + Radar + Thermal Activity**
- **>24 hours = BAM**
- **<24 hr but > 2 hr = Forecast Hazard**
- **< 2 hr = Near-real Time Hazard Data**

Dealing with the Problem
 (1) *Exclude / Mitigate*
 (2) *Harass*
 (3) *Avoid*

Dealing with the Problem

Avian Hazard Advisory System

Evaluate the Current or Forecast Risk on

- ◆ [VR Routes](#)
- ◆ [IR Routes](#)
- ◆ [Ranges](#)
- ◆ [MOA's](#)
- ◆ [Military Airfields](#)

HOME PAGE

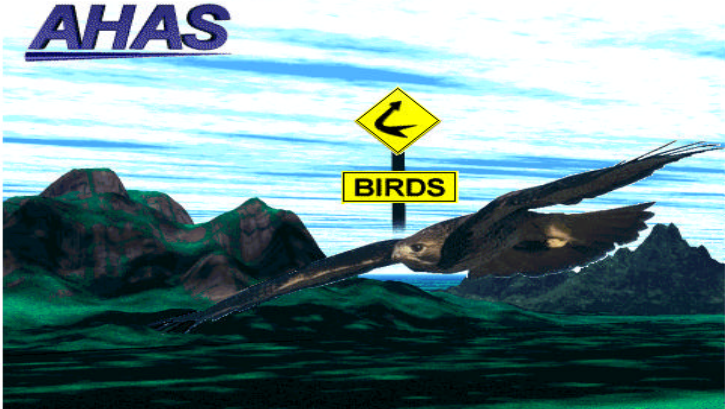
NEWS

How to use AHAS

- ◆ [Risk and BASH](#)
- ◆ [Current Conditions](#)
- ◆ [Forecast Conditions](#)
- ◆ [US BAM](#)

How AHAS Evaluates

- ◆ [Low Level Routes](#)
- ◆ [Ranges](#)
- ◆ [MOA's](#)

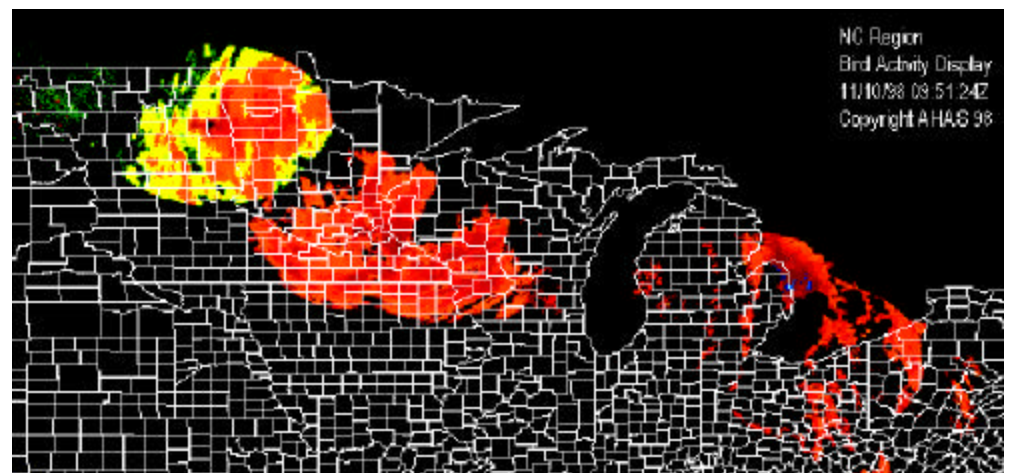


AHAS Returns

- **New Look Web Site is Now Operational**

The Avian Hazard Advisory System (AHAS) web page (AHAS.com) is now operational and available to access

Tundra
Swan
Migration





*Bird/Wildlife
Aircraft
Strike
Hazard Team*

Sources of Info

References

- **USAF BASH Web Site**
Safety.kirtland.af.mil/AFSC/Bash/home.html
- **USAF AHAS Web Site**
www.ahas.com
- **FAA BASH Web Site**
www.faa.gov/arp/arphome.htm



**Bird/Wildlife
Aircraft
Strike
Hazard Team**

BASH Guidance

-USAF Regs

-Safety

-CE

-Afld Mgmt

USAF Guidance

- **AFI 91-202, Chapter 7.11 (1 August 1998)**
 - **THE US AIR FORCE MISHAP PREVENTION PROGRAM**
- **AFI 91-204, Chapter 7.4.7 (29 November 1999)**
 - **SAFETY INVESTIGATIONS AND REPORTS**
- **AFPAM 91-212 (1 April 1997)**
 - **BIRD AIRCRAFT STRIKE HAZARD (BASH) MANAGEMENT TECHNIQUES**
- **AFI 32-7064 (1 August 1997)**
 - **INTEGRATED NATURAL RESOURCES MANAGEMENT**
- **AFI 13-213 (1 August 1997)**
 - **AIRFIELD MANAGEMENT**



**Bird/Wildlife
Aircraft
Strike
Hazard Team**

BASH Guidance

-Regulations

-FAA Regs

FAA Guidance

- **AC 150/5200-33**
 - *FAA ADVISORY CIRCULAR: HAZARDOUS WILDLIFE ATTRACTANTS ON OR NEAR AIRPORTS*
- **FAR Part 139, Sec. 139.337**
 - *CERTIFICATION AND OPERATIONS: LAND AIRPORTS SERVING CERTAIN AIR CARRIERS*
- **CertAlert 97-02**
 - *RELATIONSHIP BETWEEN FAA AND USDA/WILDLIFE SERVICES*
- **CertAlert 97-05**
 - *GRASS ATTRACTIVE TO HAZARDOUS WILDLIFE*
- **CertAlert 97-09**
 - *WILDLIFE HAZARD MANAGEMENT PLAN OUTLINE*



*Bird/Wildlife
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FSO Responsibilities

SAFETY'S ROLE

Wing, Base and Installation Safety Offices:

- **Establish a BASH Plan**
- **Establish BHWG**
- **Establish procedures for wildlife control**
- **Develop a Bird Hazard Warning System**
- **Designate Phase I / II periods of bird activity**



***Bird/Wildlife
Aircraft
Strike
Hazard Team***

BASH TEAM

- **MAJ PETE WINDLER, x5674,
windlerp@kafb.saia.af.mil**
- **MR. EUGENE LEBOEUF (GS-13), x5679,
leboeufe@ kafb.saia.af.mil**
- **2LT Donovan Swaby, x5673,
donnavan.swaby@kafb.saia.af.mil**

DSN 246-xxxx, Comm (505) 846-xxxx

FAX – X0684



QUESTIONS???