

Federal Aviation Administration Office of Airports Safety and Standards



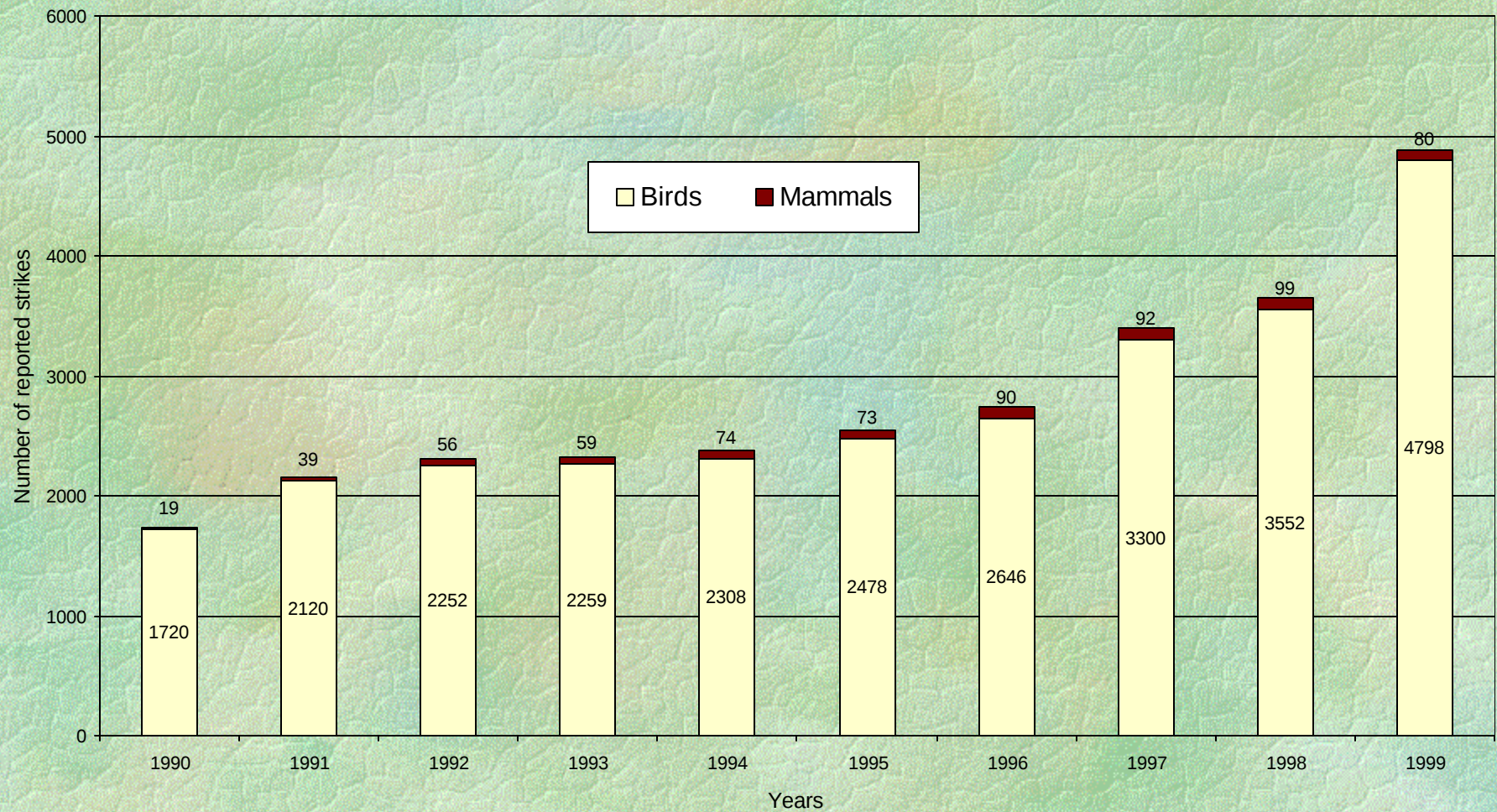
Ed Cleary

FAA Staff Wildlife Biologist

A photograph of a large jet engine mounted on an aircraft wing. Below the engine, four men in uniform (three in white shirts and ties, one in a dark uniform with a cap) are standing on the tarmac. The background shows a clear blue sky and a flat landscape.

Wildlife Strikes To Civil Aircraft In The United States 1990 -1999

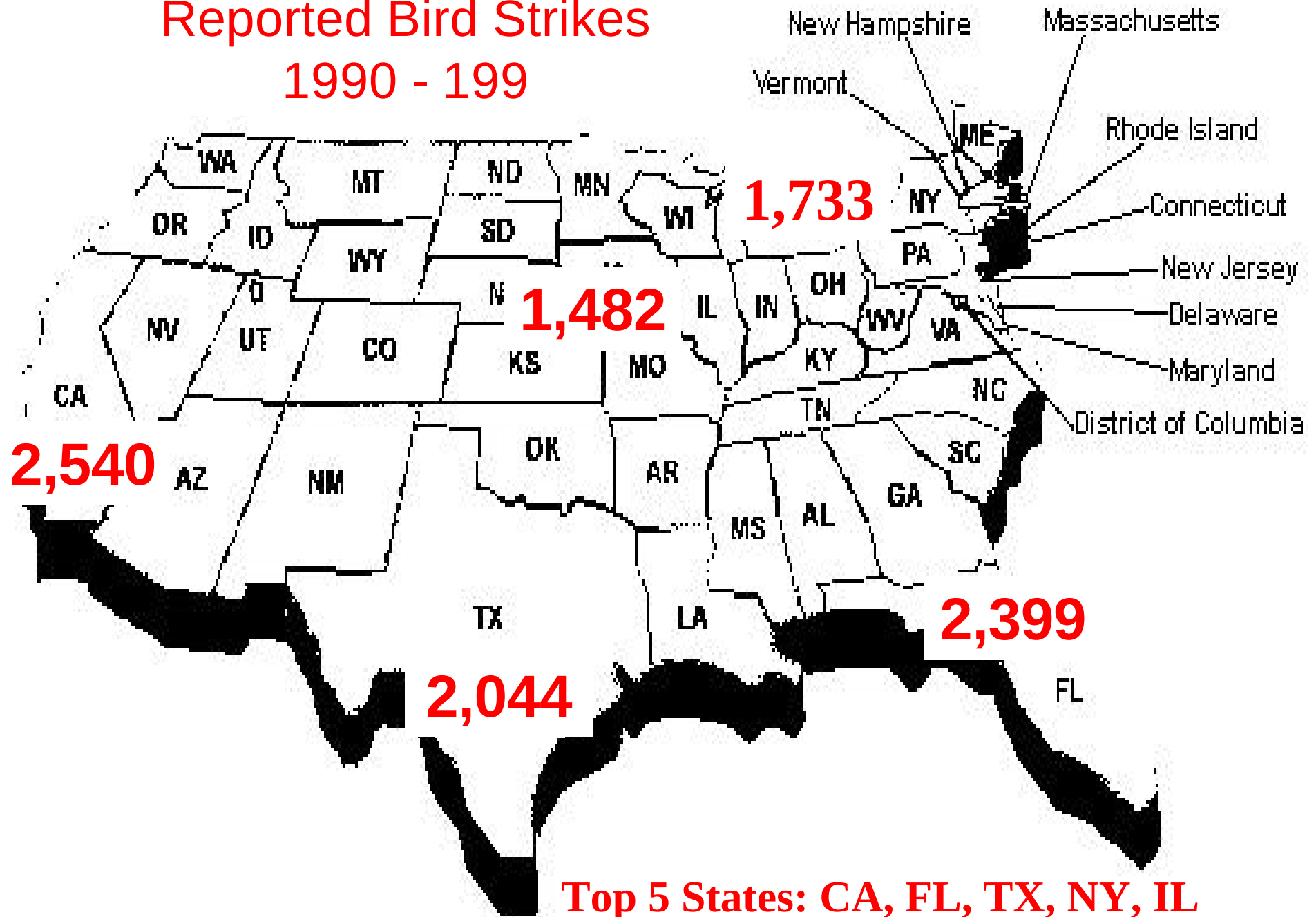
Reported wildlife strikes to civil aircraft, USA, 1990-1999



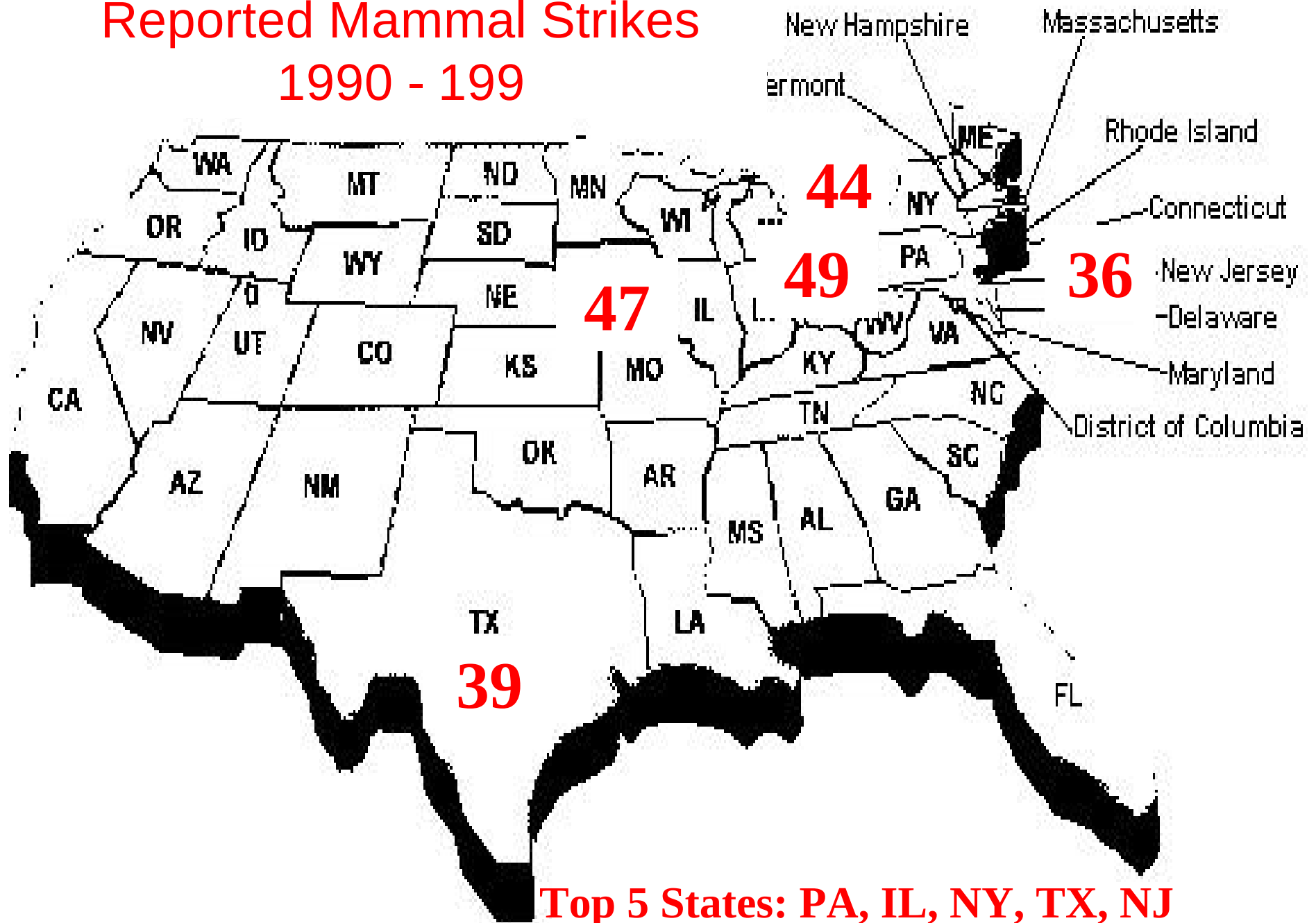
Sources of Information

- ✈ 71% reported using FAA Form 5200-7
- ✈ Pilots reported 36%;
- ✈ Tower personnel reported 22%
- ✈ 82% involved commercial aircraft

Reported Bird Strikes 1990 - 1999

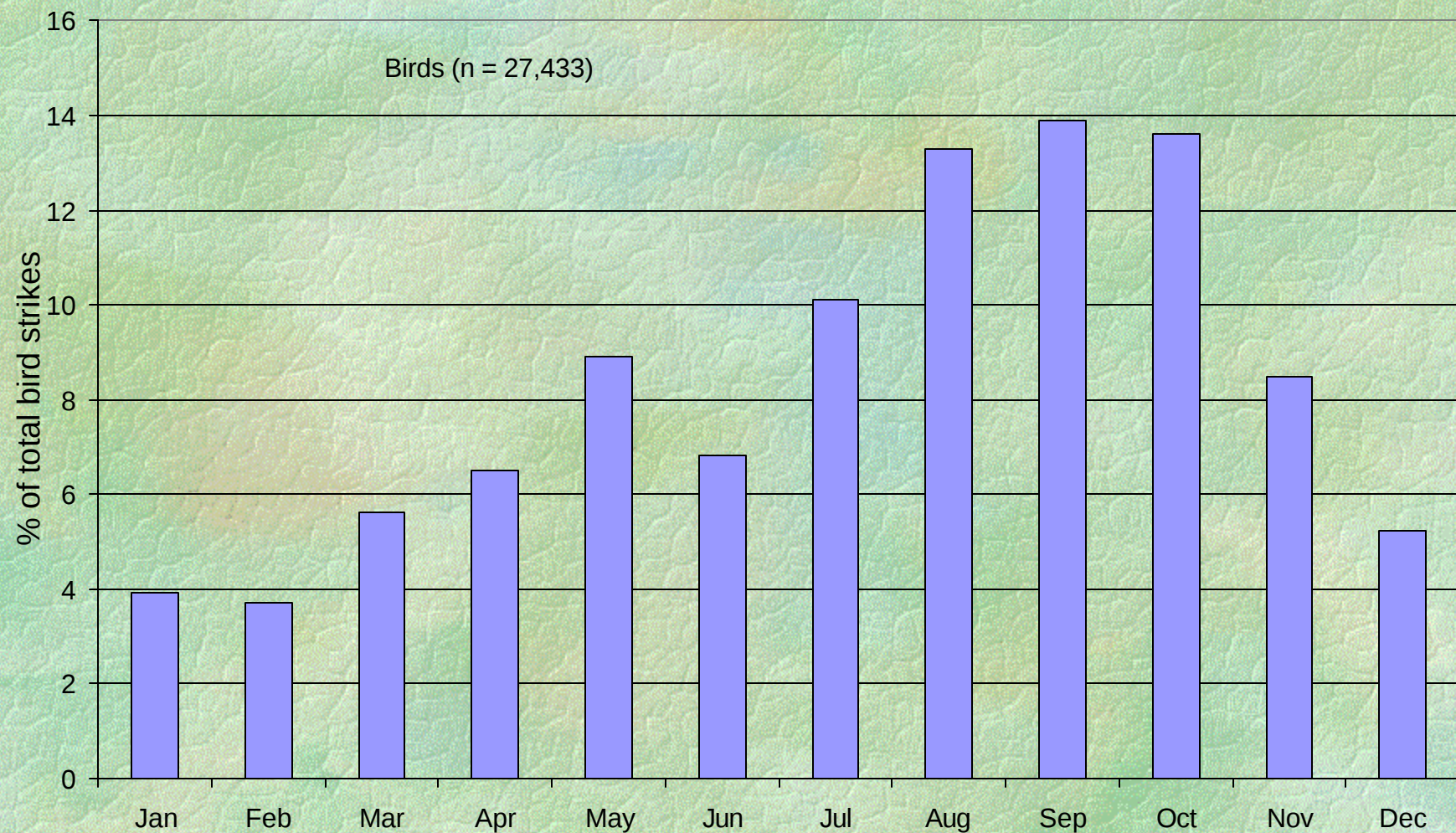


Reported Mammal Strikes 1990 - 1999

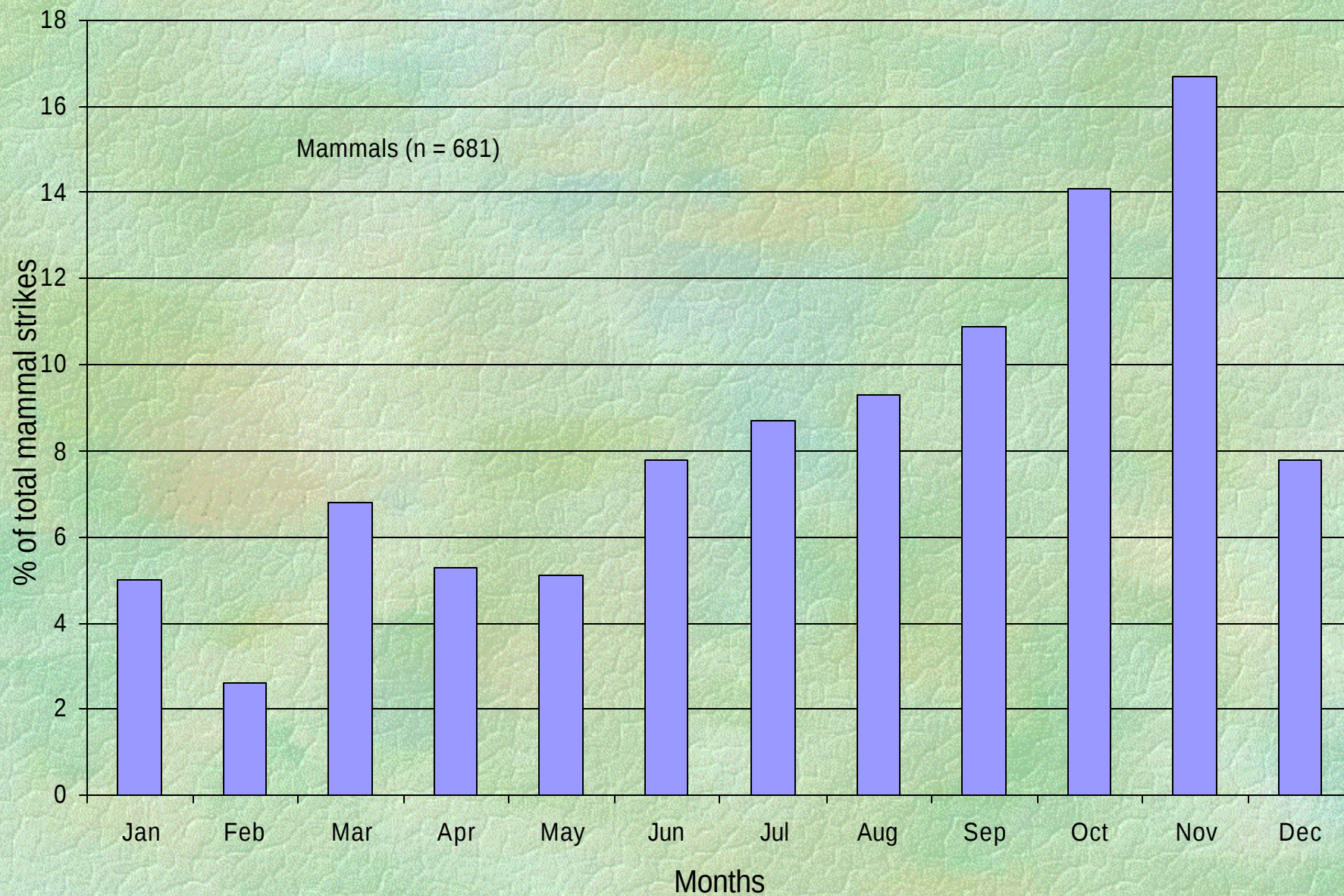


Top 5 States: PA, IL, NY, TX, NJ

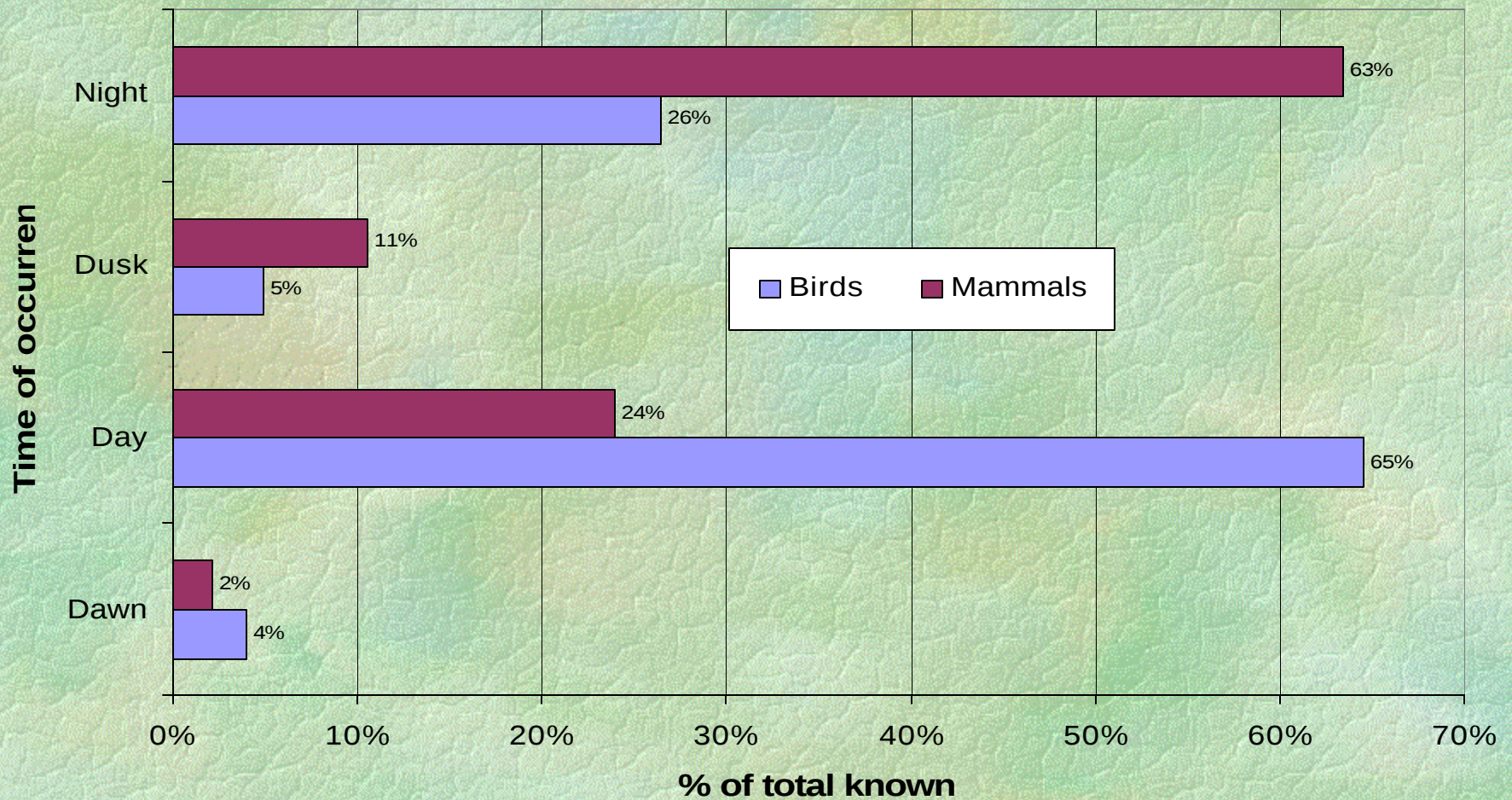
Bird strikes to civil aircraft, USA, 1990-1999



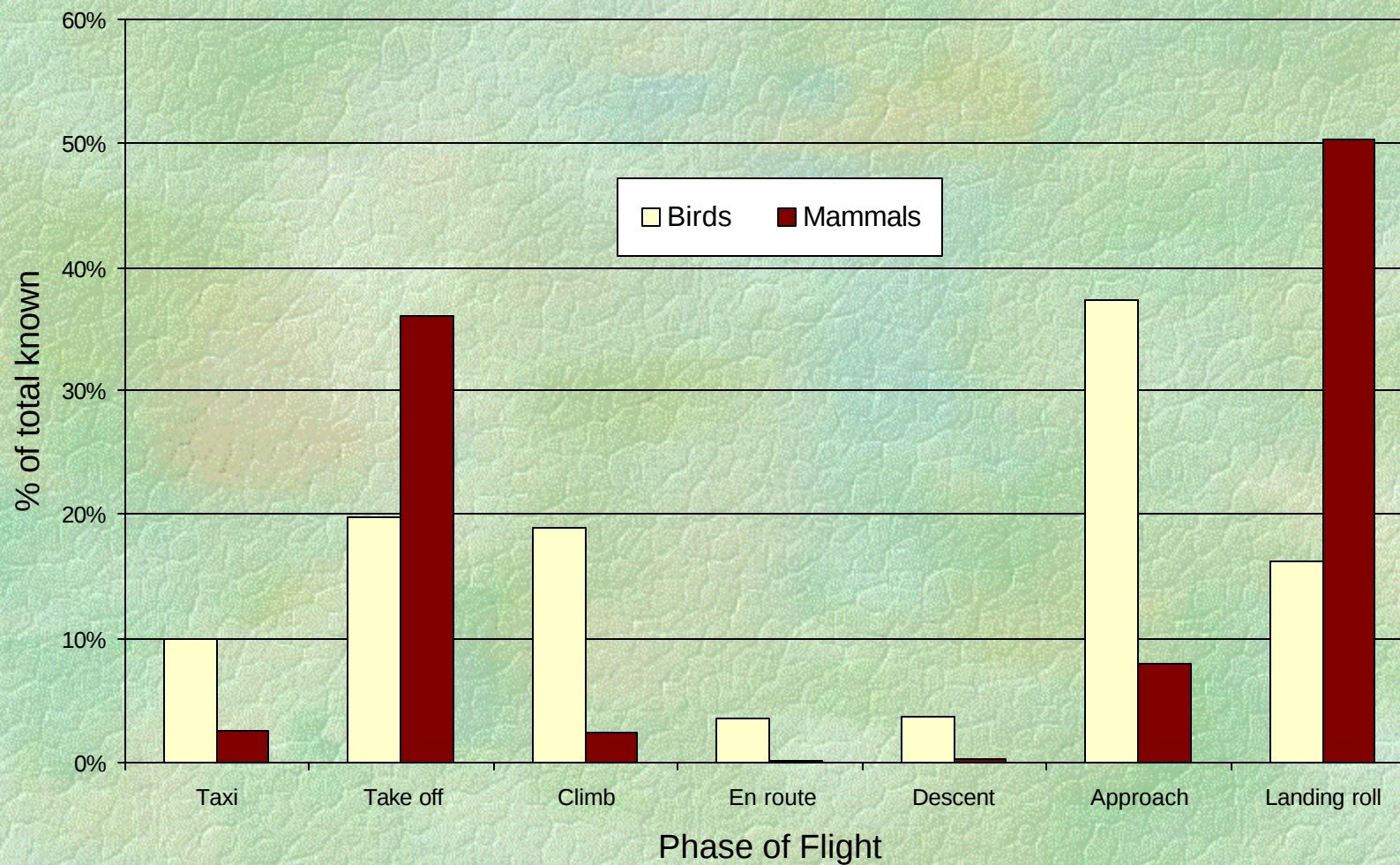
Mammal strikes to civil aircraft, USA, 1990-1999



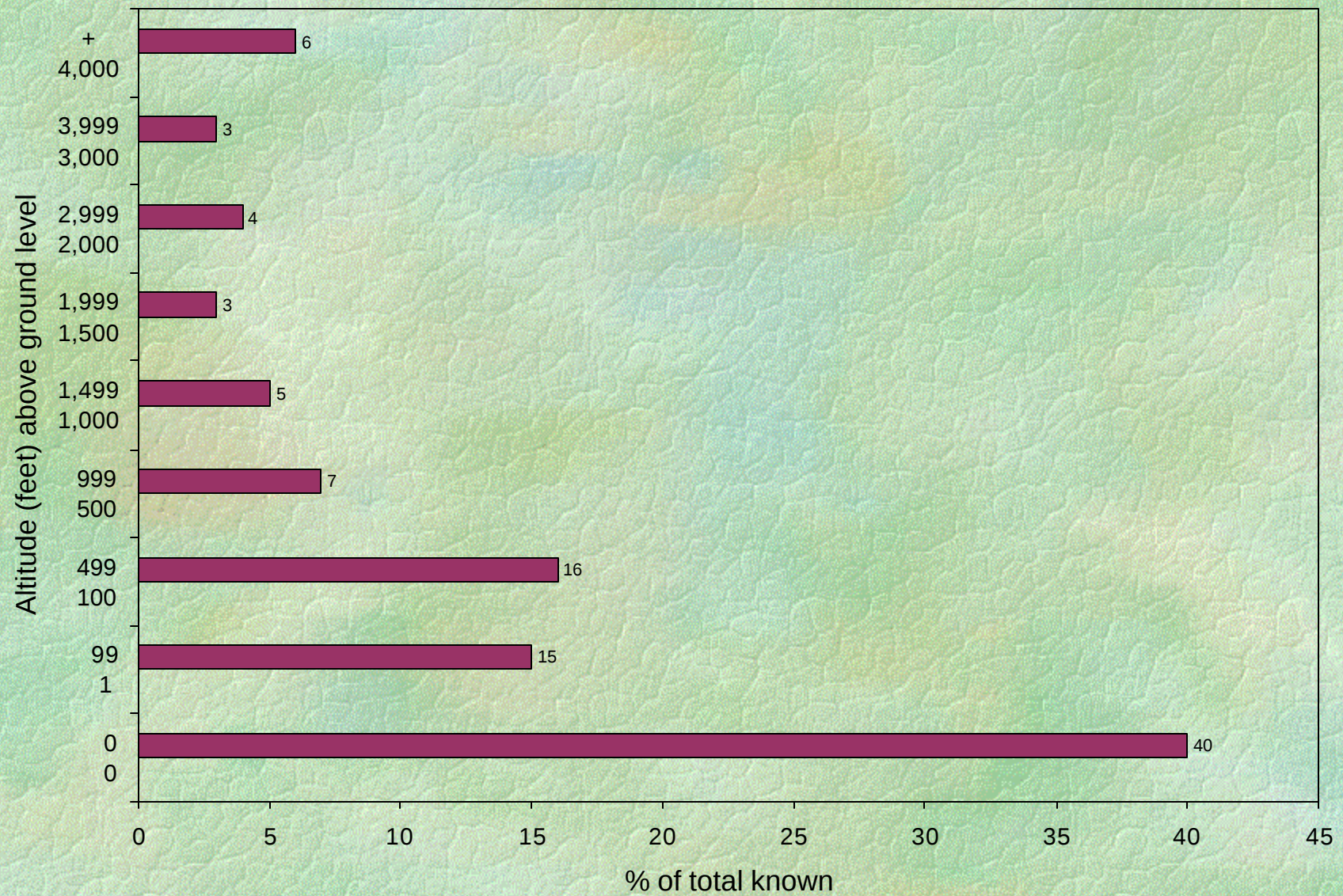
Reported time of occurrence of bird and mammal strikes to civil aircraft, USA, 1990-1999



Percentage of Reported Wildlife to US Civil Aircraft by Phase of Flight, 1990-1999



Altitude of Occurrence of Bird Strikes



Damaged aircraft component(s)

<u>Aircraft type</u>	<u>% of total known</u>
B-737	20.6
MD-80	4.6
B-757	4.5
B-727	4.4
BA-31	3.2
DC-9	3.2
B-747	2.9
Total top 25	68.8
Other aircraft	31.2
Total known	100.0

Negative effect on flight

Aircraft type	% of total known
B-737	19.1
MD-80	4.4
BA-31	4.1
Saab-340	3.8
C-172	3.5
B-757	3.2
MD DC-9	3.1
Total top 25	67.8
Other aircraft	32.2
Total known	100.0

Aircraft Components Struck and/or Damaged

✈ Birds:

- ✈ Aircraft component most commonly struck:

 - ✈ Radome/nose, windshield, engines

- ✈ Aircraft component most commonly damaged:

 - ✈ Engines, Wing/rotor, Radome/nose

✈ Mammals:

- ✈ Aircraft component most commonly struck:

 - ✈ Landing gear, Propellers, Wing/rotor

- ✈ Aircraft component most commonly damaged:

 - ✈ Landing gear, Propellers, Wing/rotor

Effect of Engine Placement

- ✈ Reported engine strikes for aircraft with:
 - ✈ Underwing-mounted engines
 - ✈ 35.97 strikes/1 million operations
 - ✈ Fuselage-mounted engines
 - ✈ 7.11 strikes/ 1 million operations

Most Commonly Struck Birds

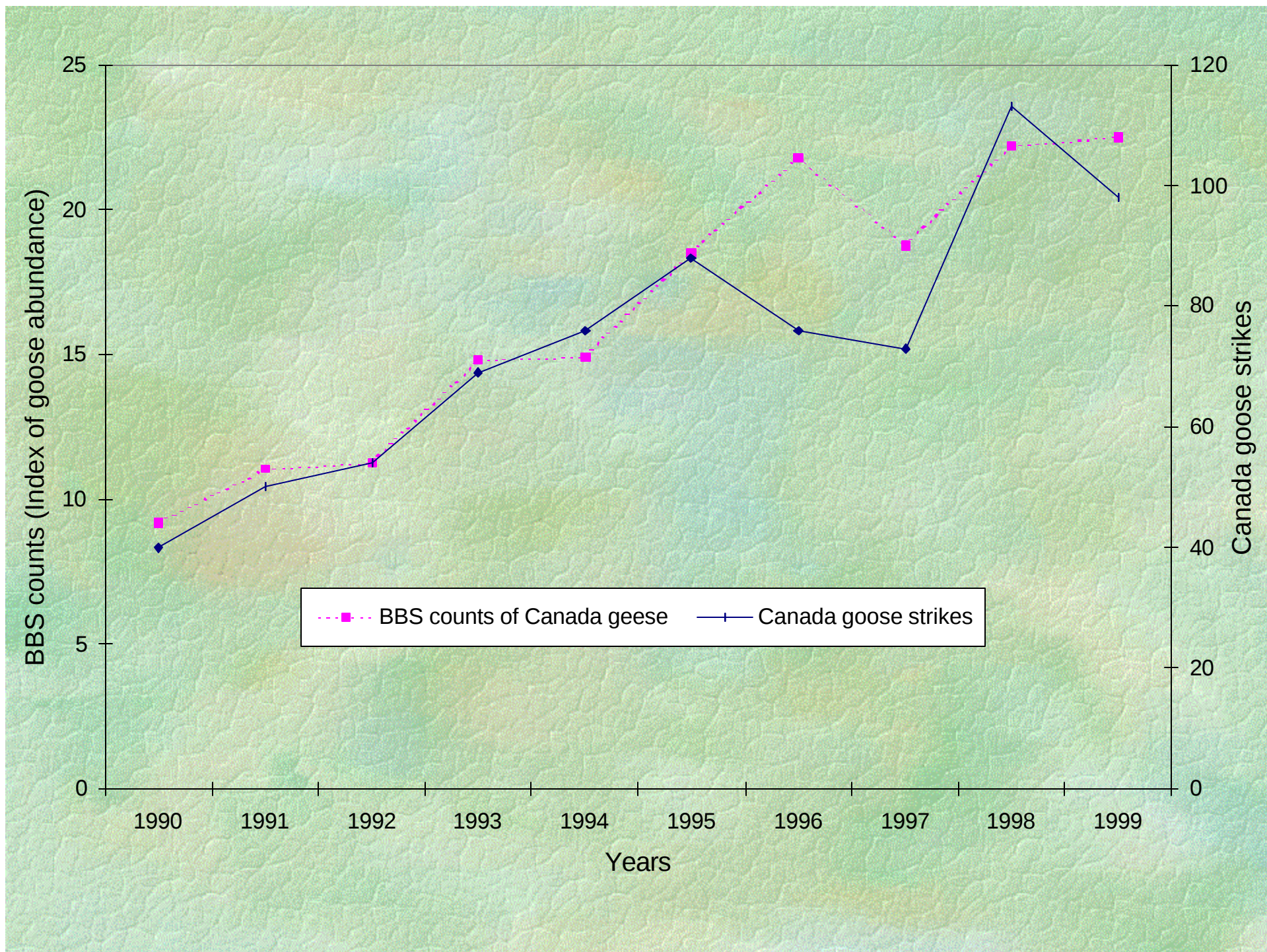
<u>Species</u>	<u>Struck</u>	<u>Damage</u>	<u>Neg. EOF</u>
Gulls	3,570	643	493
Doves	1,473	154	151
Waterfowl	1,447	679	317
Raptors	1,379	320	199

Most Commonly Struck Mammals

Species	Struck	Damage	Neg. EOF
Ungulates	442	355	231
Carnivores	135	12	25
Chiropteras	33	3	1
Rodents	23		1

Canada geese, a special problem

- ✈ Population increase 13%/ year 1966-1999.
- ✈ Involved in 6% of strikes
- ✈ Caused
 - ✈ 27% of reported down time
 - ✈ 24% of cost of direct damage
 - ✈ 42% of cost of associative losses



Losses Due to Wildlife Strikes to Civil Aircraft, USA (10-year totals,)

- ✈ 4,524 aircraft damaged (1,489 substantial)
- ✈ 19 aircraft destroyed
- ✈ 91 human injuries
- ✈ 6 deaths
- ✈ \$4,000 million lost (aircraft damage and associated cost) (calculated)
- ✈ 4,700,000 hours air craft down time (calculated)



Remember

It's great to soar with the eagles, but
weasels never get sucked into jet engines

A photograph of the front of a Delta airplane, showing the cockpit windows and the fuselage. The fuselage is painted with Delta's signature blue, white, and red stripes. There is significant damage to the white section of the fuselage, including a large, jagged hole and a smaller, circular hole. The cockpit windows are visible above the fuselage. In the background, another Delta airplane is partially visible.

The End

Thoughts?

Questions?

Comments?

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<http://www.faa.gov/arp/hazard.htm>





**Federal Aviation Administration
Office of Airport Safety and Standards
Airport Safety and Compliance Branch**

**U. S. Department of Agriculture
Animal and Plant Health Inspection Service
Wildlife Services
National Wildlife Research Center**

Wildlife Hazard Management At Airports

**A manual for airport personnel
prepared by**

Edward C. Cleary

**U. S. Department of Transportation
Federal Aviation Administration**

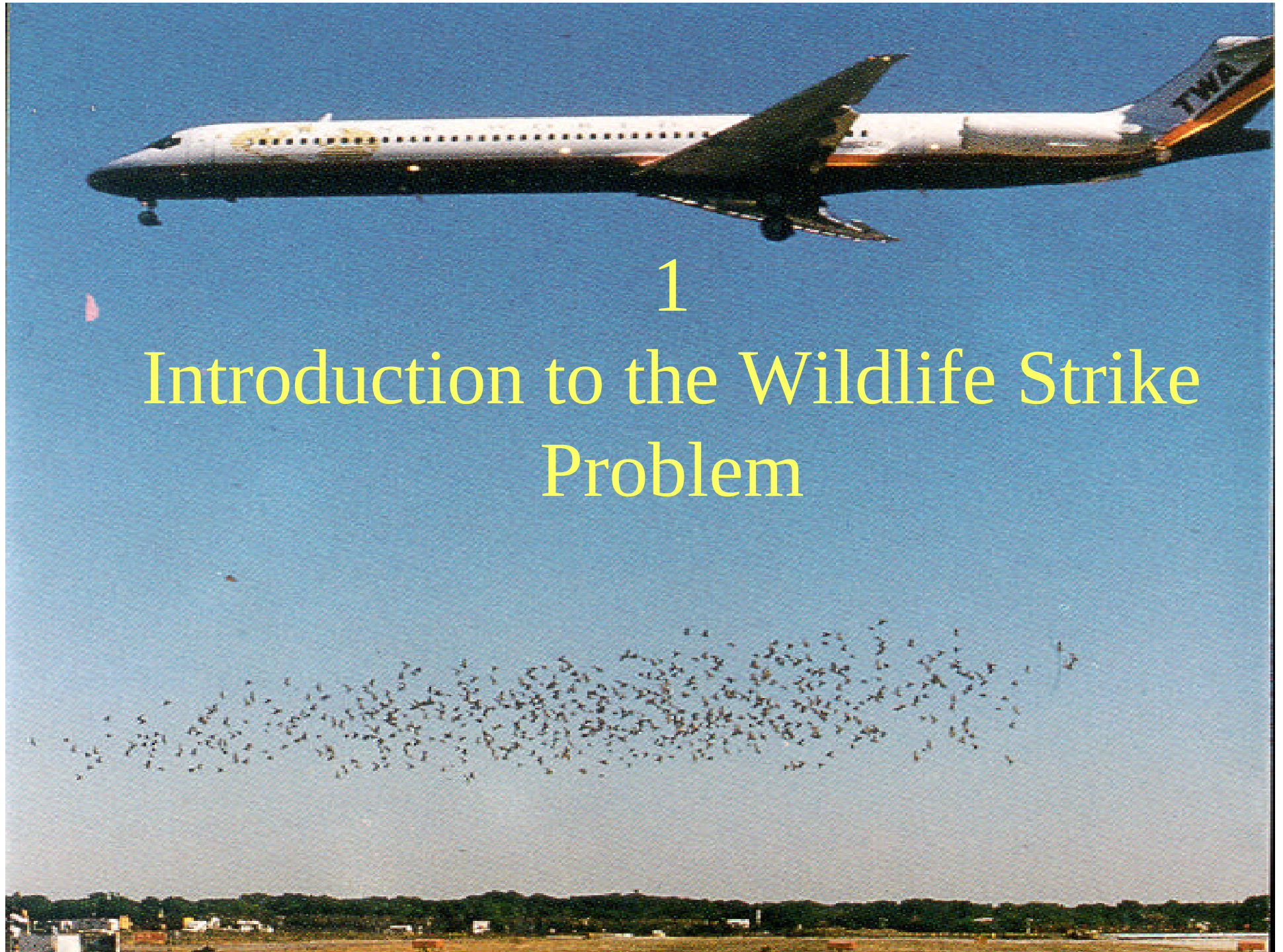
Richard A. Dolbeer

**U. S. Department of Agriculture
Wildlife Services**

Contents

- 9 Chapters
- List of selected publications and web sites
- Glossary
- List of Acronyms
- 12 appendices
- 248 pages + xiv

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1

Introduction to the Wildlife Strike Problem



2

The FAA National Wildlife Strike Database For Civil Aircraft



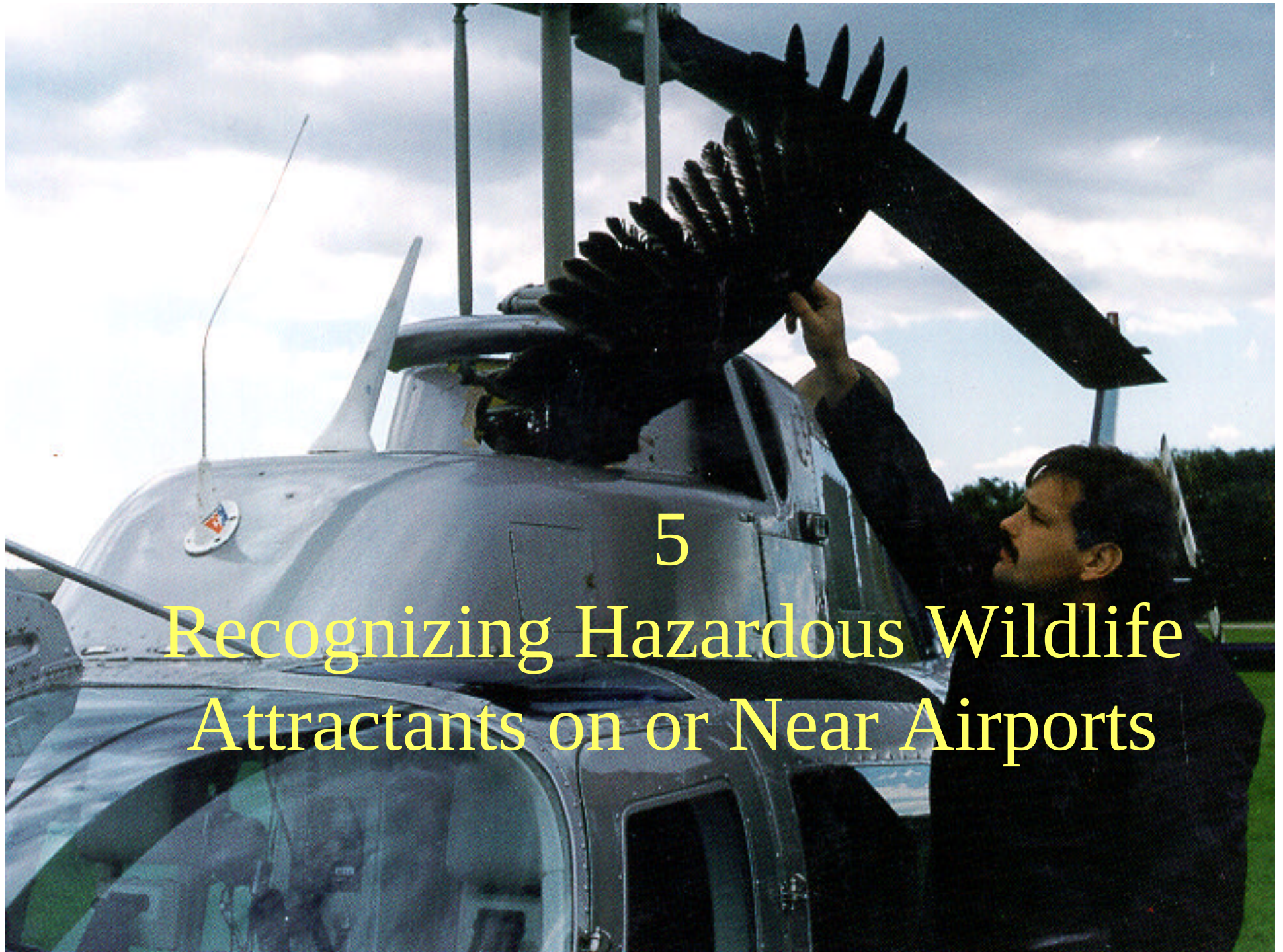
3

Agencies and Organizations Impacting Wildlife Hazard Management at Airports



4

Federal Regulations and Department Policies Impacting Airport Wildlife Management



5

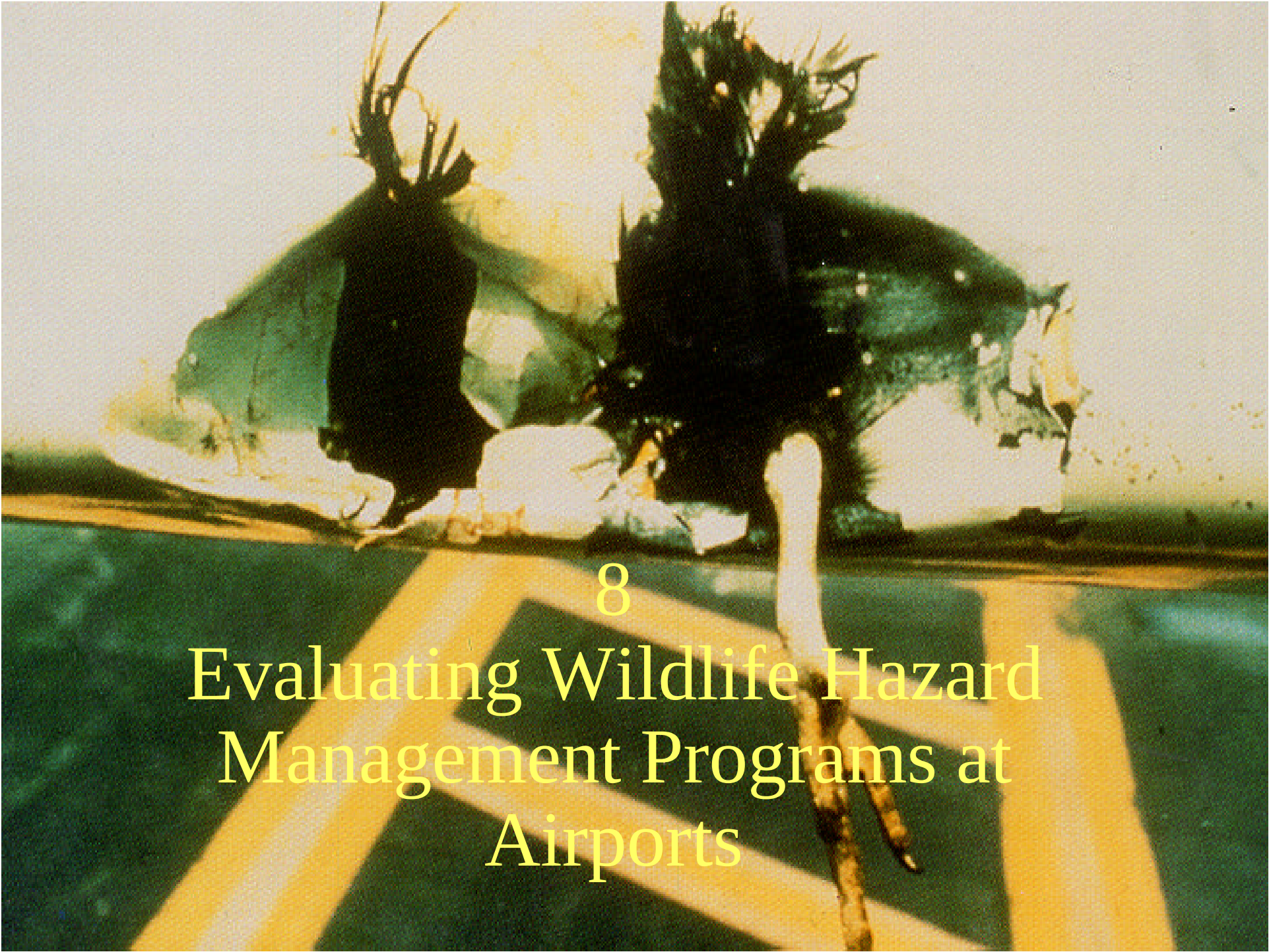
Recognizing Hazardous Wildlife Attractants on or Near Airports



6

Development of Airport Wildlife Control Programs

7
Wildlife Hazard Management
Training for Airport Personnel



8

Evaluating Wildlife Hazard Management Programs at Airports



9

Wildlife Control Strategies and Techniques at Airports



Appendices

- A. Names, addresses, phone numbers: USDA/WS, and FAA.
- B. Animal Damage Control Act, 2 March 1931.
- C. FAA Advisory Circular 150/5200-33: Hazardous Wildlife Attractants on or Near Airports.
- D. FAA, AAS, Program Policies and Guidance.
- F. FAA, AAS, Certalerts
- G. Memorandum of Understanding between USDA/ADC (WS) and FAA.



Appendices

H. FAA form 5200-7, Bird/Other Wildlife Strike Report

I. Gull Facts for Airport Wildlife Control Personnel.

J. Assessing Wildlife Hazard Management Plans at Civil Airports

K. Aviary and Field Evaluation of Various Wildlife Control Products and Strategies for Airports

L. A Wetland Banking Mitigation Strategy for the FAA.



Airport Certification Program 14 CFR 139

Program Policy and Guidance

Policy #64

→ Establishes procedures to be followed when a serious strike [139.337 (a)(1-3)] is reported.

→ Reminds ACSI to:

→ Review Airport WHMP prior to Inspections.

→ Check AFD, NOTAM, ATIS for warnings of wildlife hazards.

→ Airports with such warnings must conduct a wildlife hazard assessment.

