

Intercepting the Failure



When Bird Strikes become Accidents

Richard A. Dolbeer, PhD • Phyllis R. Miller • Michael J. Begier

U.S. Aviation Wildlife Management Conference • Cleveland • 4–6 August 2026



Protecting People
Protecting Agriculture
Protecting Wildlife



United States Department of Agriculture
Animal and Plant Health Inspection Service

Acknowledgements

U.S. Department of Agriculture, Wildlife Services

U.S. Federal Aviation Administration



Findings and recommendations expressed in this presentation do not necessarily represent the position of the U.S. Federal Aviation Administration

HUDSON RIVER • APRIL 2025

SIX PEOPLE DIED.

The NTSB docket now validates bird impacts.

MUAN AIRPORT • KOREA • DECEMBER 2024

179 PEOPLE DIED.

Initiated by bird strikes.

Today's Discussion

Two Linked Safety Issues related to Bird Strikes

- **Normalization of Deviance**
- **Swiss Cheese Accident Model**

Radar-based Airspace Deconfliction (T. Nohara)

Normalization of Deviance

- When risk goes uncorrected, **deviance** becomes the **standard**
- The **absence** of a crisis or catastrophe is **not proof** of a **safe** system



Diane Vaughan

Triggering events for Part 139 Airports

CFR Part 139.337

The Wildlife Hazard Management Plan (WHMP) must be reviewed whenever triggering events occur to an air carrier aircraft “**on or near**” the airport

- 1) Multiple wildlife strikes
- 2) Substantial damage from striking wildlife
- 3) Engine ingestion of wildlife

January 15, 2009: Miracle on the Hudson

A watershed event



THE CLOSE CALLS ARE NOT ISOLATED*

- Large-bird strikes (2009–2023)
- >500 ft AGL
- Part 139 airports

2,299
LARGE BIRD
STRIKES

45%
CAUSED
DAMAGE

132
MULTIPLE
LARGE BIRDS
+ ENGINE
DAMAGE

*Dolbeer, R. A., and M. J. Begier. 2026. Bird strikes during approach and climb: a need for innovative management strategies. Human Wildlife Interactions. Volume 19
<https://digitalcommons.usu.edu/hwi/vol19/iss1/13>

January 29, 2026 - CVG

Amazon Prime A-330

Climb (950 feet AGL)

>8 Canada geese

Damage: Both engines, landing gear, wing



• *Flight Result:* **Smoke in cockpit,**
emergency CVG return (1 engine)
Cost = \$50 million

Managing the Aircraft: Moving Beyond Airport Boundaries

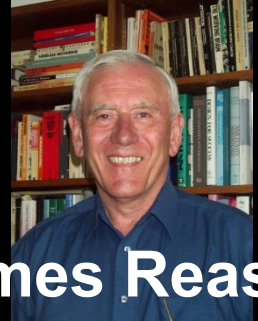
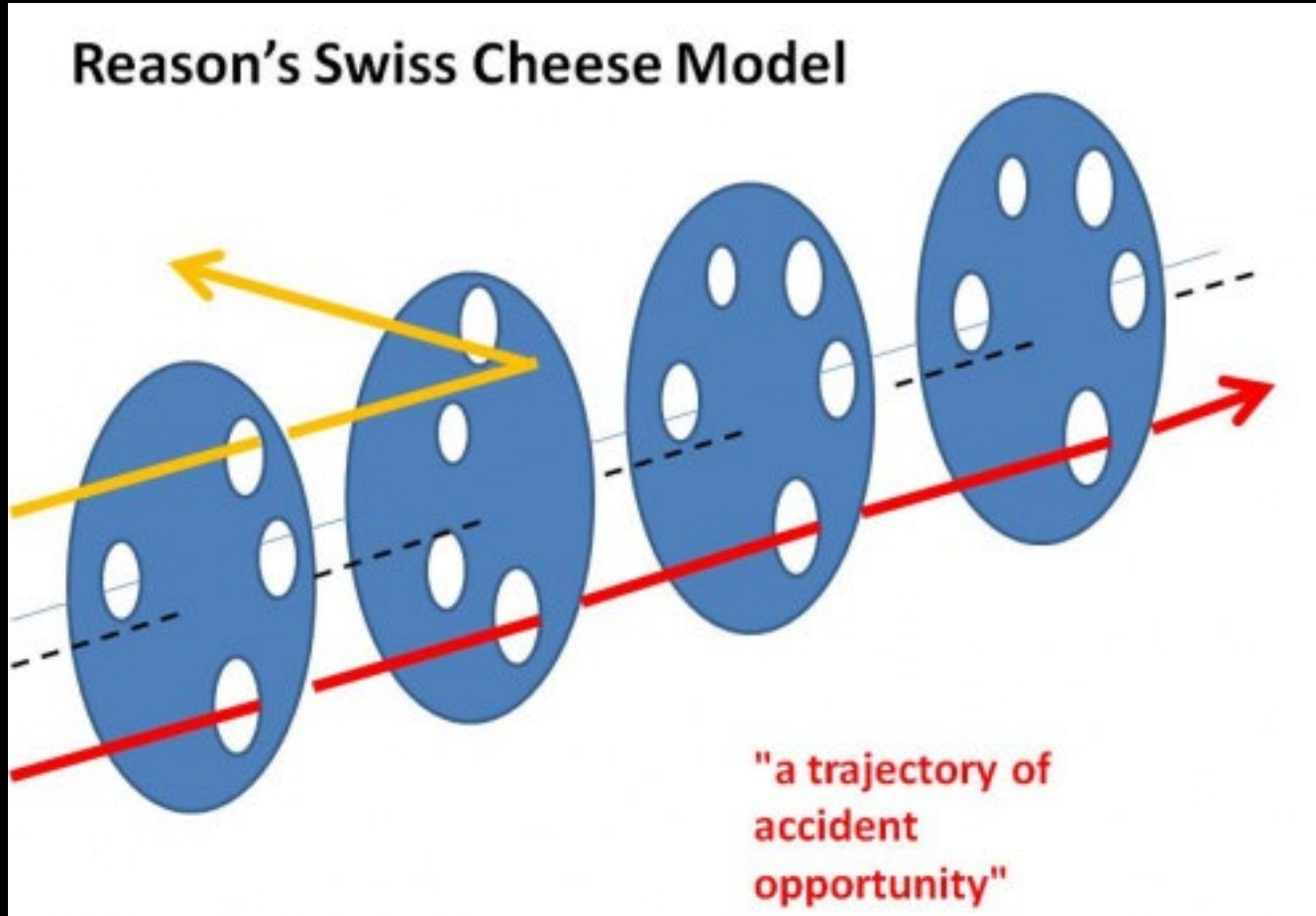
The Trap: When repeated warnings fail to end in catastrophe, we normalize the danger.

The Reality: Bird management on airports cannot protect flights above 500 feet AGL.

The Solution: To mitigate strikes during approach and climb, we must manage the aircraft—not just the wildlife at airport.

The Future: This paradigm shift requires automated bird detection and real-time data exchange between ATC and flight crews.

The Swiss Cheese Model of Accident Causation



James Reason

December 29, 2024 - Jeju Airlines, Muan Airport, ROK



08:58:26 B-737 ingests Baikal Teal in **both engines**.

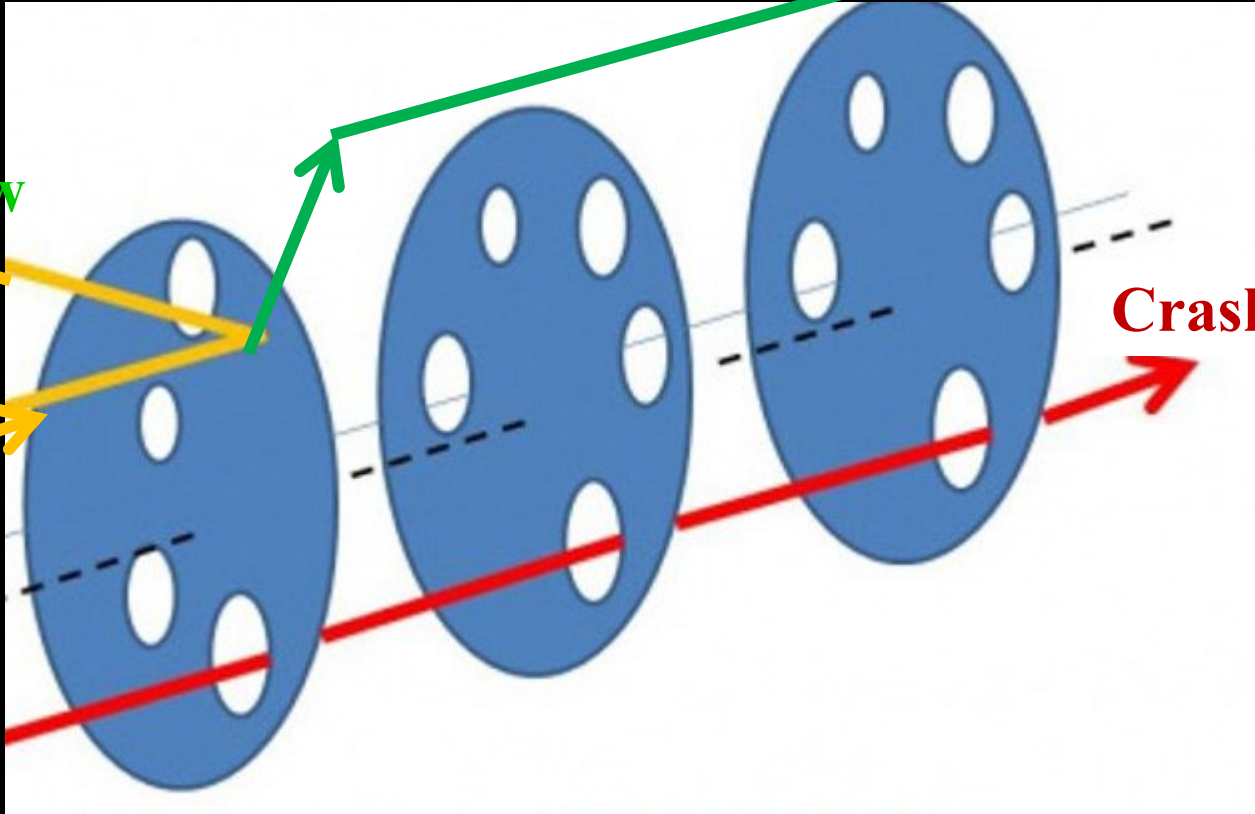
09:02:57 Aircraft hits concrete barrier at end of runway

179 of 181 people die

Jeju Air Flight 2216 Scenario*

Timely bird
warning
given to
flight crew

Go-around and
Normal landing



Baikal teal in
both engines

Power lost-
Flaps/LG
inoperable

Aircraft hits
concrete barrier

December 20, 2023 - *Smoke* in Cockpit (MSY)

- SWA B-737-800
- **Climb, 1000 feet AGL**
- Bald eagle
- **1 Engine destroyed**
- Acrid, heavy smoke in cockpit
- Emergency landing on 1 engine



This is 1 of 96 incidents of smoke in cockpit following bird ingestion.

The Mandate (May 13, 2026): NTSB urges airlines to upgrade simulator training for cockpit smoke scenarios.

Conclusions

The Limit of Conventional Mitigation - Off-Airport Strikes

- **The Blind Spot: Conventional Wildlife Hazard Management Plans fail to address "off-airport" strike events during approach and climb**
- **The Cultural Risk: Ignoring these off-airport events exemplifies the Normalization of Deviance**
- **These off-airport strikes often cause a cascade of problems that make the situation more dangerous (Swiss Cheese Effect)**
- **The Strategy Pivot: Closing this gap requires a paradigm shift - managing the aircraft to actively avoid the hazards**

Our Goal



**Safer Skies for
ALL who fly...**

Thank You!

?? Questions ??



Bird Strike Committee USA