GETTING EVERYONE ON BOARD:

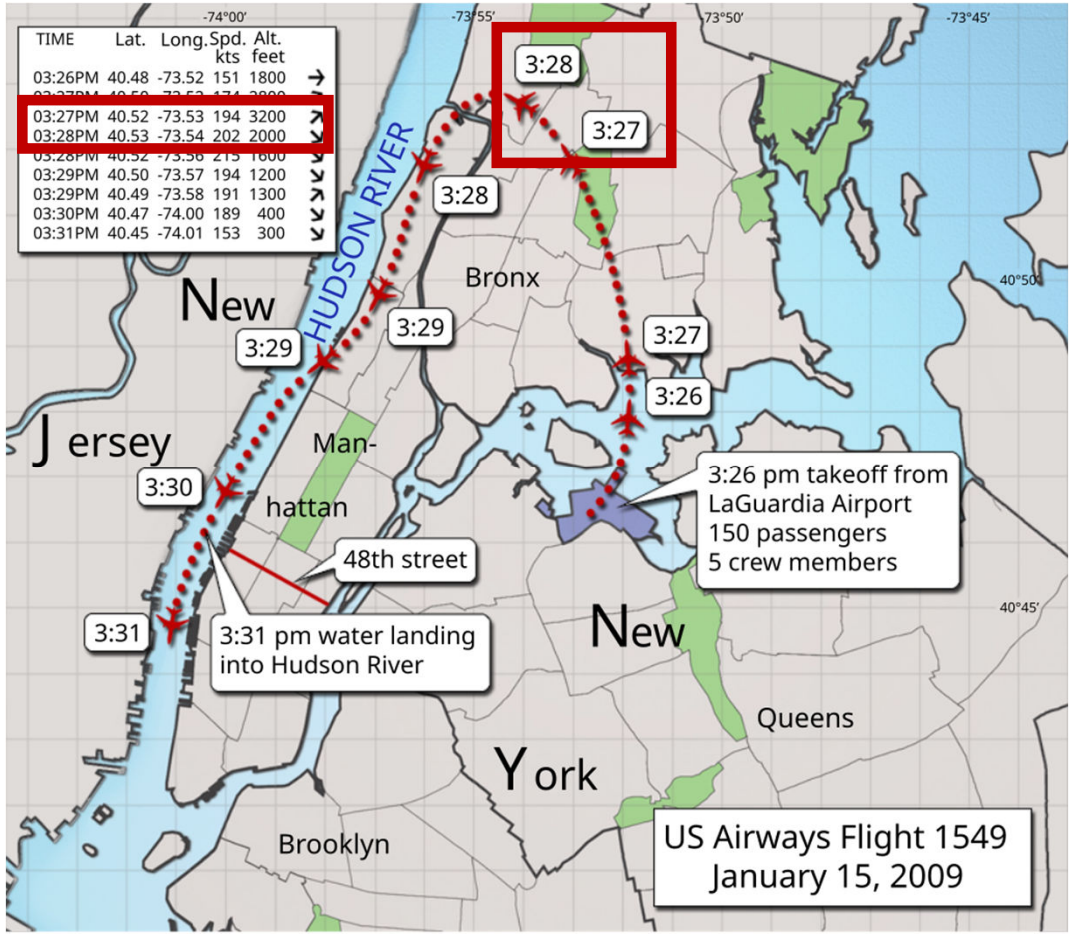
THE NEED FOR CROSS-DISCIPLINARY WILDLIFE HAZARD MANAGEMENT

Isabel C. Metz
German Aerospace Center DLR
Bird/Wildlife Prevention Workshop, 22 September 2026

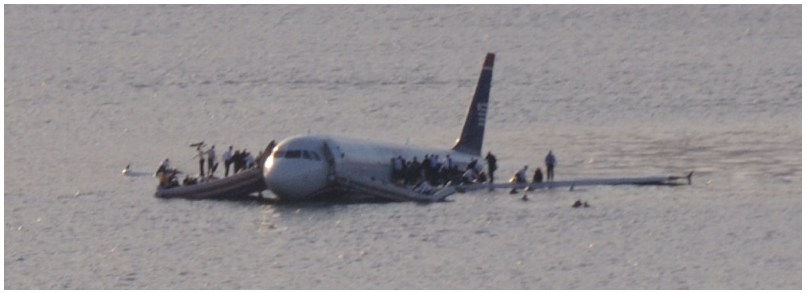
DLR

Motivation

Where critical encounters occur



[1]



[2]

Motivation

where critical encounters occur

Jeju Air Flight 2216, 29 December 2024

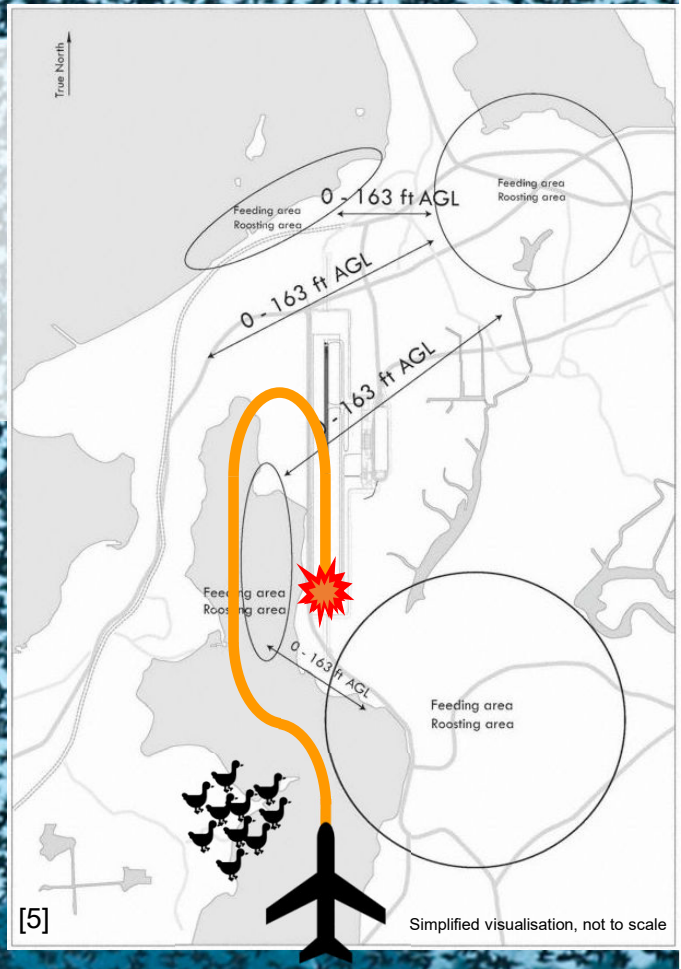
- Collision of a Boeing 737-800 with a large (!) flock of Baikal Teal on final approach to Muan International Airport
- Crew performed a go-around and belly-landing on runway 19
- Collision with a concrete embankment
- 179 of 181 people on board perished



[3]



[4]



[5]

Simplified visualisation, not to scale

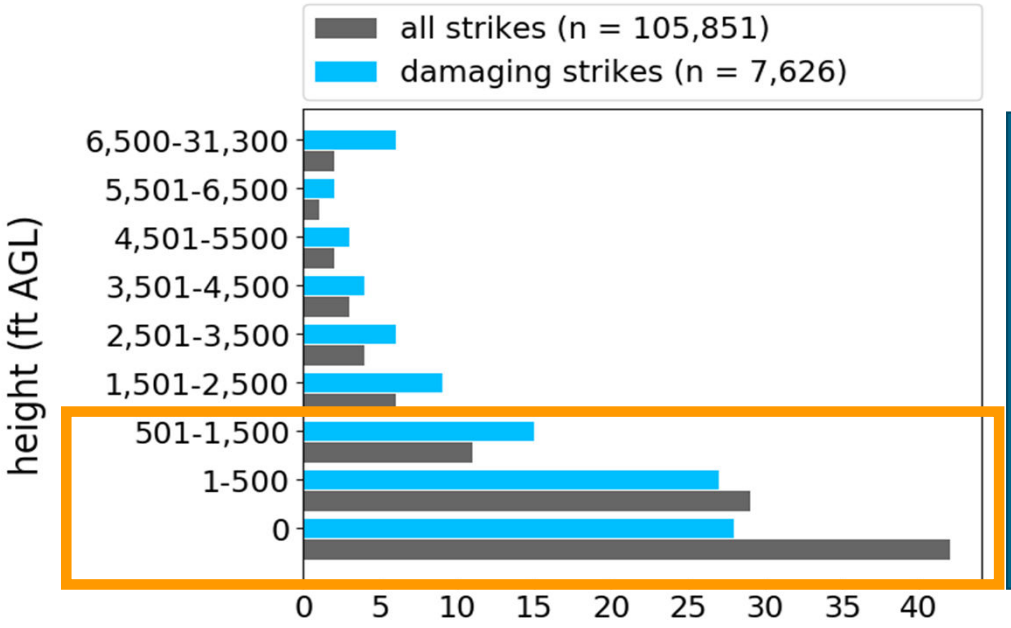
[6]

Final report expected by June 2026

Motivation

Where critical encounters occur





In reality, wildlife strike risk is not an aerodrome problem.
Wildlife strike is a below 3000' AGL
airspace problem
and thus the primary responsibility for managing the problem should reside with those managing and using the airspace.

Jeff McKee, Phillip Shaw, Arie Dekker, and Kylie Patrick (2016)

How to broaden the horizon?

Safeguarding Aviation against Wildlife Hazards

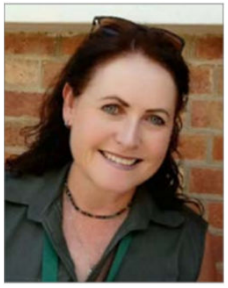
How it all started



Cerian Henshaw
WHM SME
United Kingdom



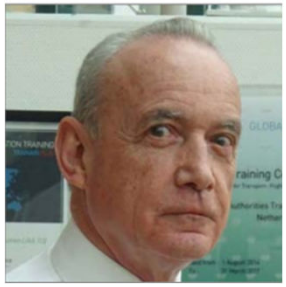
Alex Moffat
WHM SME
United Kingdom



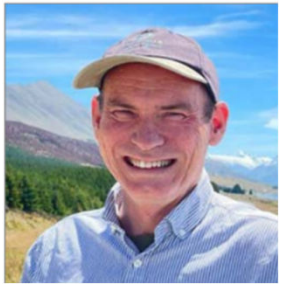
Beryl Wilson
WHM SME
South Africa



Sameera Arshad
WHM SME
Pakistan



Brian Greeves
Pilot
Australia



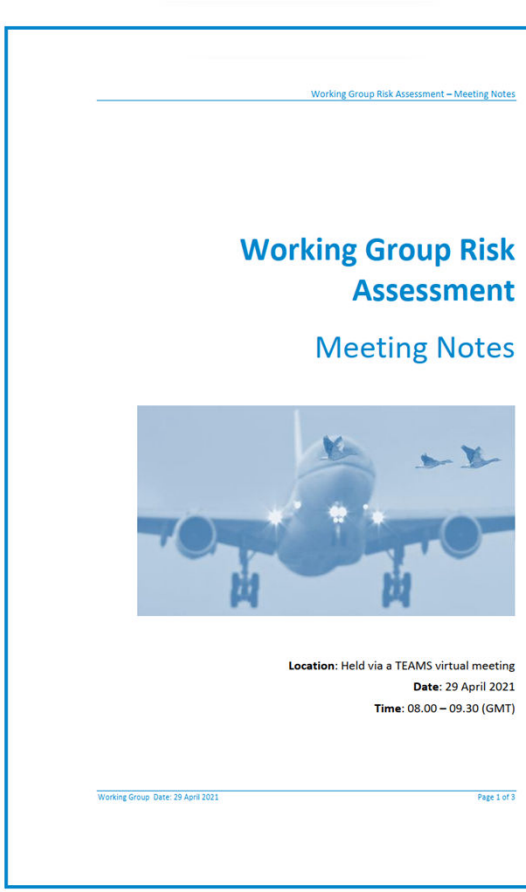
David Wiman
ANSP
New Zealand



Isabel Metz
ATM Research
Germany



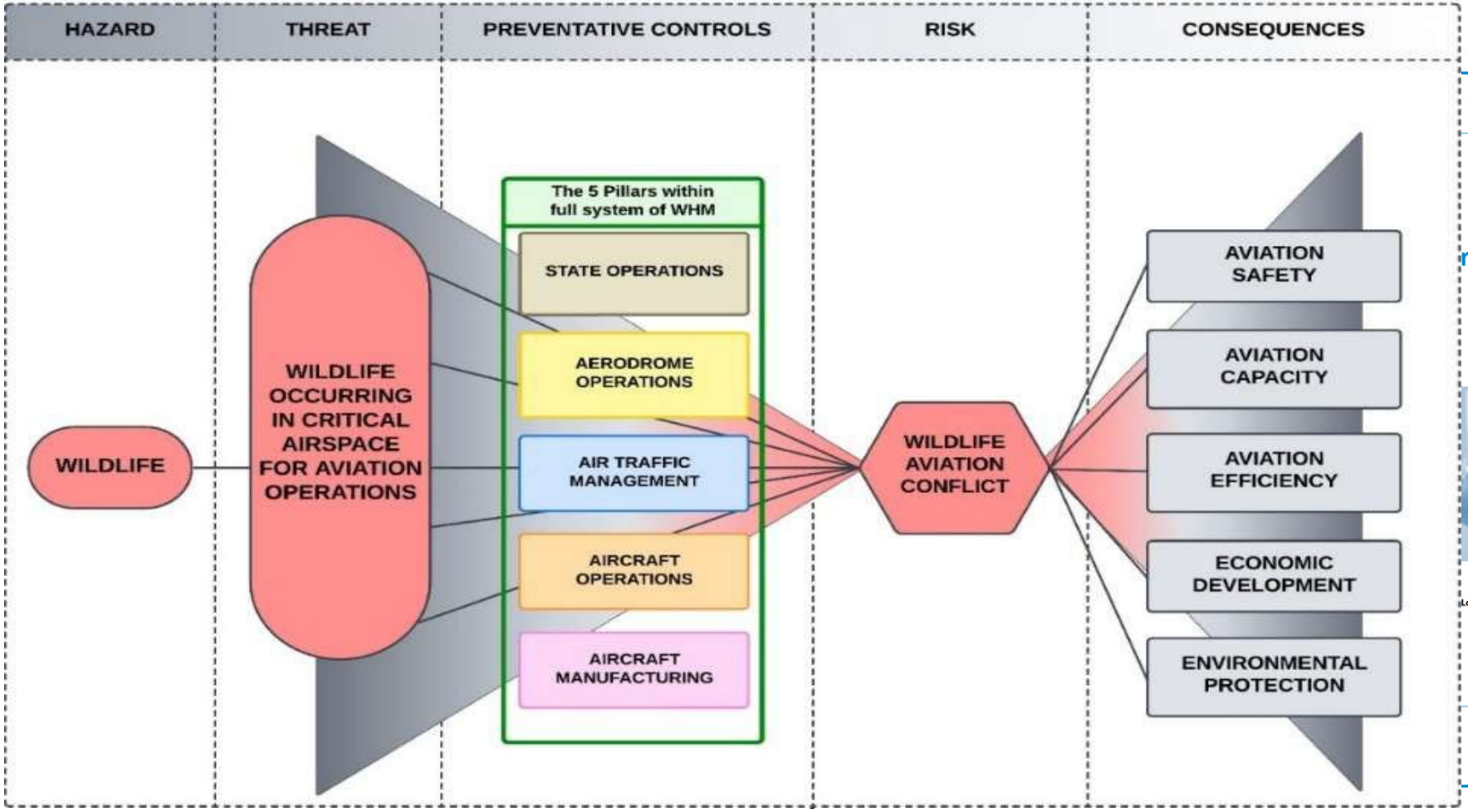
Ash McAlpine
Regulator
Australia

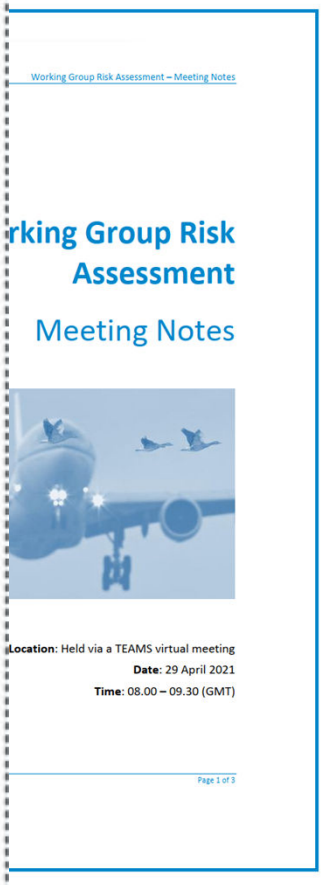


[13]

Safeguarding Aviation against Wildlife Hazards

How it all started





[13]

Hazard, Threat and Risk

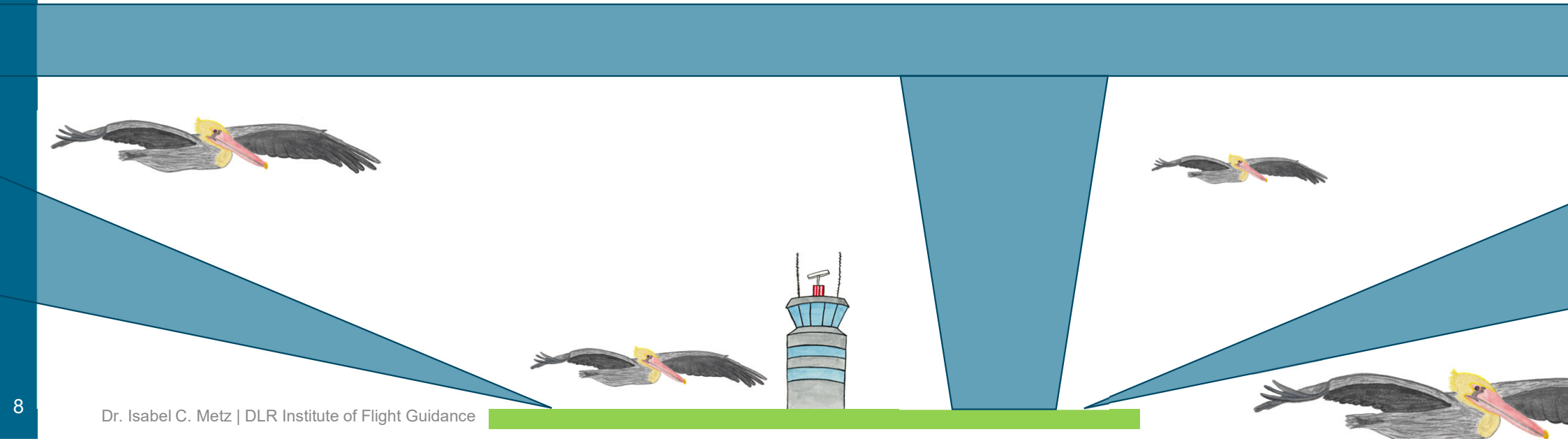
what is the matter?

Hazard	Wildlife occurring **in the vicinity of** an aerodrome or any aircraft flight path
Threat	Wildlife actually being present in airspace or surfaces used by aircraft
Risk	Wildlife and aircraft concurrently being present in the same airspace or on the same surfaces

Hazard, Threat and Risk

what is the matter?

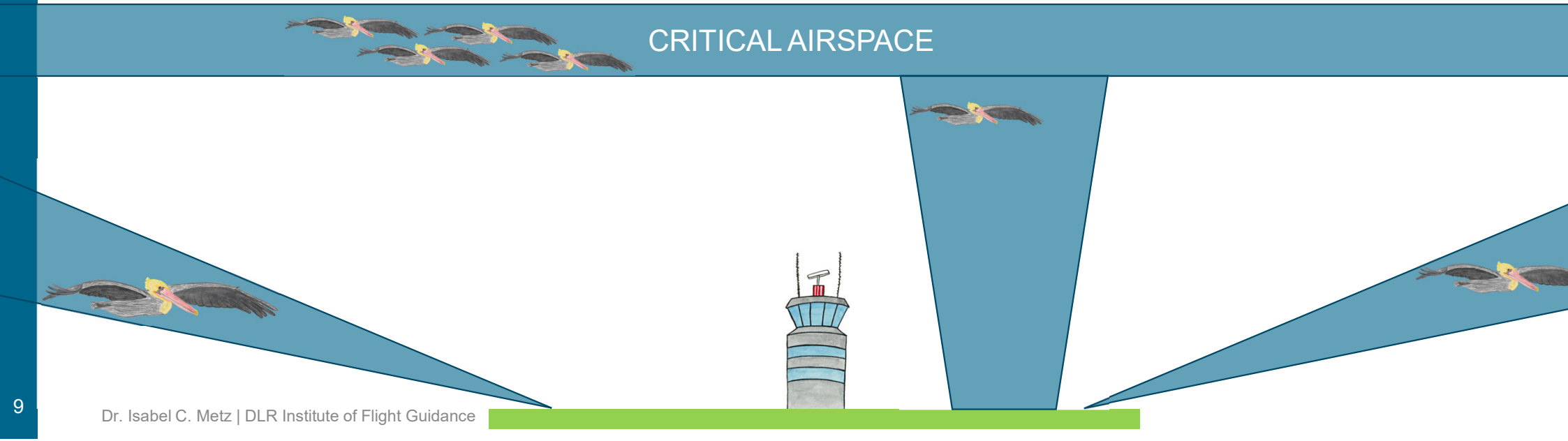
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Hazard, Threat and Risk

what is the matter?

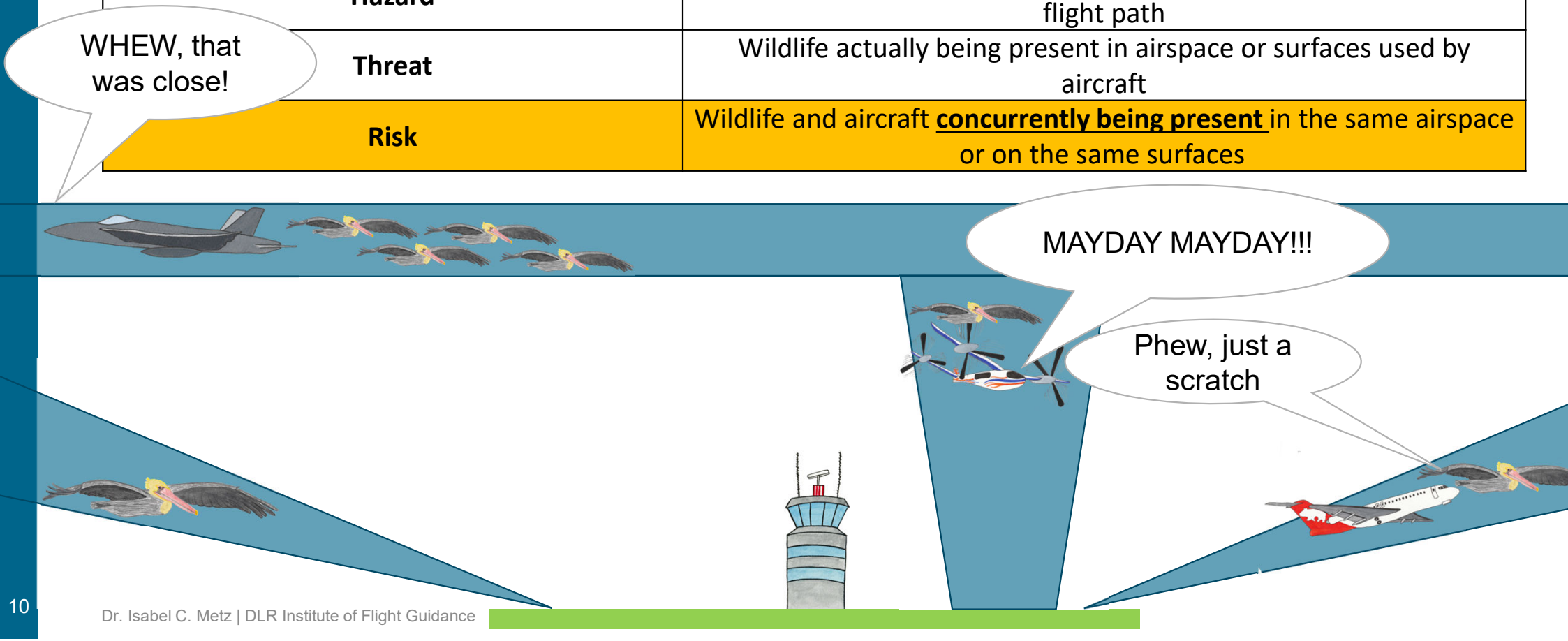
Hazard	Wildlife occurring in the vicinity of an aerodrome or any aircraft flight path
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Hazard, Threat and Risk

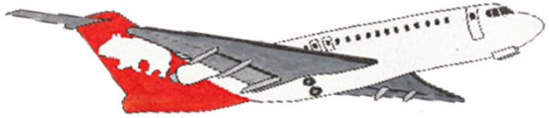
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Involving all Parties in the Loop

ATC and Pilot Communication





Couple of bats on approach.
Do you want to proceed?

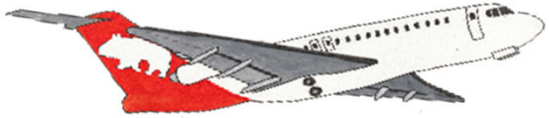


With thanks to David Wiman, AAWHG



Involving all Parties in the Loop

ATC and Pilot Communication




[11]

WILDLIFE HAZARD, ALMOST CERTAIN STRIKE THREAT RUNWAY 19. A LARGE FLOCK OF LARGE BATS, 3 MILES ON FINAL TO RUNWAY 19 AT ONE THOUSAND, LEVEL AND CIRCLING

aawhg.org/resources/recommended-practices/


[9]

With thanks to David Wiman, AAWHG

Involving all Parties in the Loop

Real-Life Example from Vancouver Airport, Canada

With thanks to David Bradbeer, YVR [12]

- Snow Geese commute crossing the airport or the approach/departure corridors
  - During winter
  - Connected to twilight

Involving all Parties in the Loop

Real-Life Example from Vancouver Airport, Canada

With thanks to David Bradbeer, YVR [12]

Airport

- Use of avian radar to identify patterns
- Create radar alert zones
- Initiate geese departure to achieve crossing of a single flock
- Communicate to ATC

ANSP

- Provide detailed NOTAM
- Update ATIS
- Delay departures

Involving all Parties in the Loop

Real-Life Example from Cairns Airport, Australia


[11]

- Flying Foxes appear in airspace close to the airport
  - Seasonal and during twilight


[9]

- Close collaboration between
  - Airport
  - Air Navigation Service Providers (ANSP)
  - Airlines

With thanks to J. Brix, B. Greeves and P. Shaw, AAWHG

Involving all Parties in the Loop

Real-Life Example from Cairns Airport, Australia

Airport

- Regular wildlife counts
- Additional seasonal controls

- Pre-seasonal information to airlines and suggestions for rescheduling
- Continuous update of ANSP

ANSP

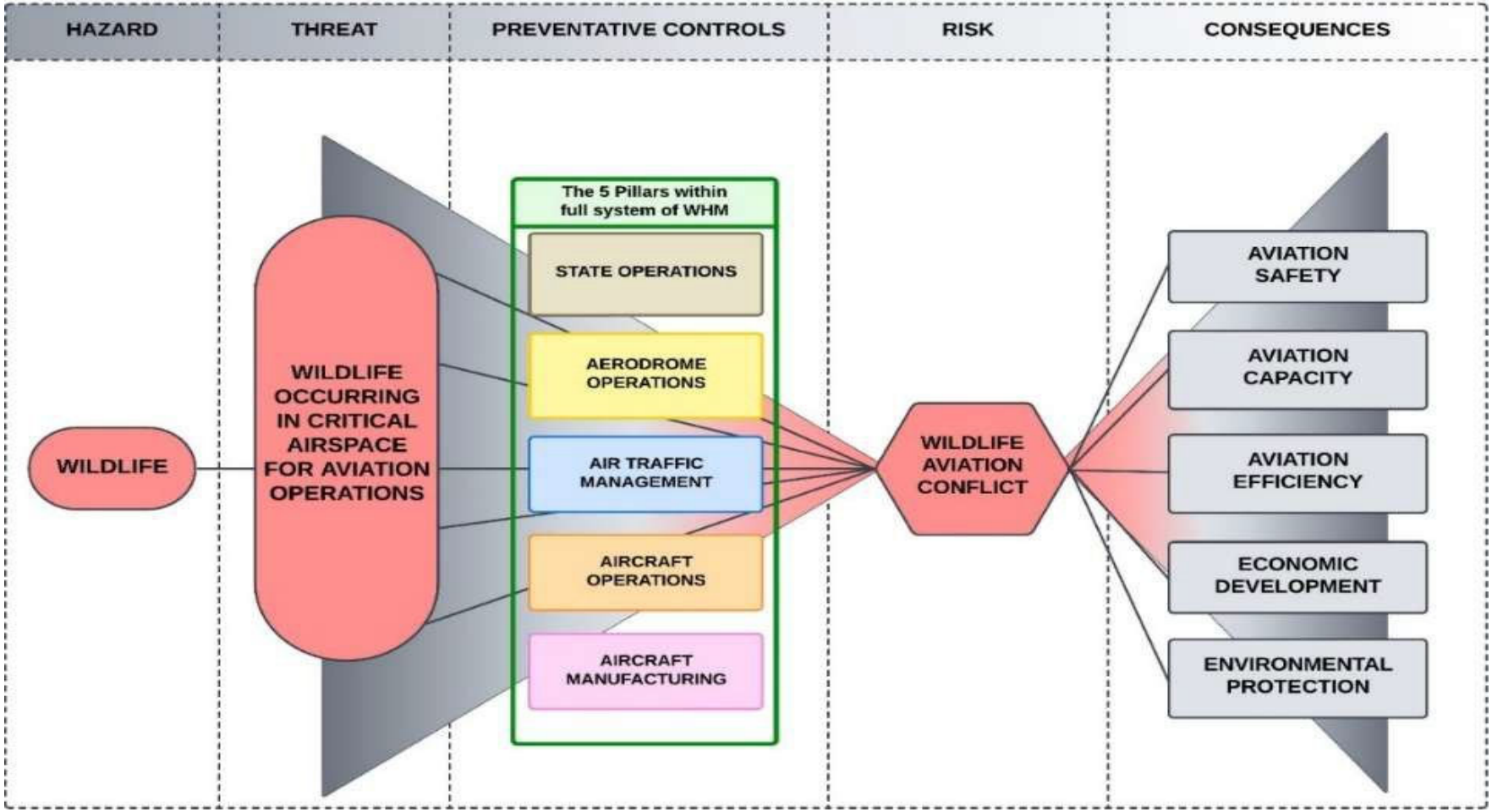
- in-depth observation during critical times
- Provision of specific NOTAMs/Wildlife Hazard Information
- Potential advices for
  - Runway change
  - Departure Delays
  - Holdings
  - Deviation of aircraft to alternate sites

Airlines

- Rescheduling where feasible
- Preflight crew briefing information
- Requirement to carry extra fuel
- Encouragement for holdings or deviations if situation requires

With thanks to J. Brix, B. Greeves and P. Shaw, AAWHG

Safeguarding Aviation against Wildlife Hazards



[8]

Goal: New ICAO Guidance on Flight Safety and Wildlife Hazard

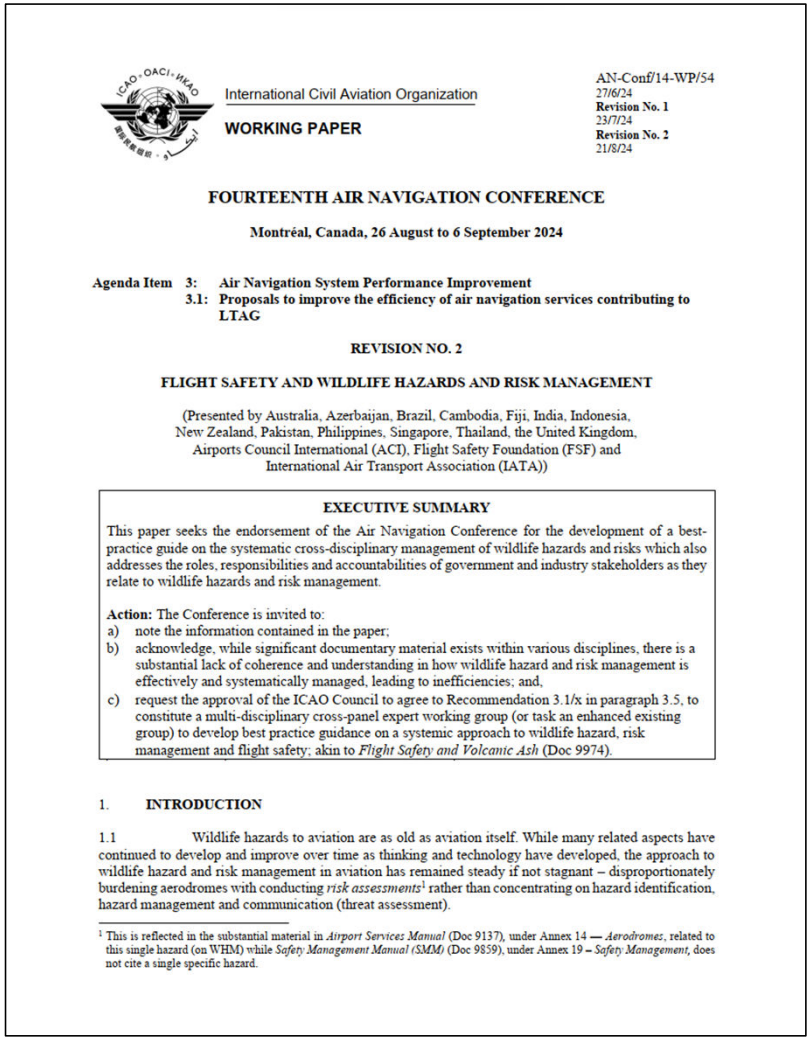
Why?



- Aerodrome-centric approach in legislation (and mindset)
- However, it is aircraft which collide in ***critical airspace*** with wildlife

→Aerodrome WHM is **one** crucial element of safeguarding aviation against wildlife hazards

The Path to ICAO



International Civil Aviation Organization

WORKING PAPER

AN-Conf/14-WP/54
27/6/24
Revision No. 1
23/7/24
Revision No. 2
21/8/24

FOURTEENTH AIR NAVIGATION CONFERENCE

Montréal, Canada, 26 August to 6 September 2024

Agenda Item 3: Air Navigation System Performance Improvement
3.1: Proposals to improve the efficiency of air navigation services contributing to LTAG

REVISION NO. 2

FLIGHT SAFETY AND WILDLIFE HAZARDS AND RISK MANAGEMENT

(Presented by Australia, Azerbaijan, Brazil, Cambodia, Fiji, India, Indonesia, New Zealand, Pakistan, Philippines, Singapore, Thailand, the United Kingdom, Airports Council International (ACI), Flight Safety Foundation (FSF) and International Air Transport Association (IATA))

EXECUTIVE SUMMARY

This paper seeks the endorsement of the Air Navigation Conference for the development of a best-practice guide on the systematic cross-disciplinary management of wildlife hazards and risks which also addresses the roles, responsibilities and accountabilities of government and industry stakeholders as they relate to wildlife hazards and risk management.

Action: The Conference is invited to:

a) note the information contained in the paper;
b) acknowledge, while significant documentary material exists within various disciplines, there is a substantial lack of coherence and understanding in how wildlife hazard and risk management is effectively and systematically managed, leading to inefficiencies; and,
c) request the approval of the ICAO Council to agree to Recommendation 3.1/x in paragraph 3.5, to constitute a multi-disciplinary cross-panel expert working group (or task an enhanced existing group) to develop best practice guidance on a systemic approach to wildlife hazard, risk management and flight safety; akin to *Flight Safety and Volcanic Ash* (Doc 9974).

1. **INTRODUCTION**

1.1 Wildlife hazards to aviation are as old as aviation itself. While many related aspects have continued to develop and improve over time as thinking and technology have developed, the approach to wildlife hazard and risk management in aviation has remained steady if not stagnant – disproportionately burdening aerodromes with conducting *risk assessments*[1] rather than concentrating on hazard identification, hazard management and communication (threat assessment).

[1] This is reflected in the substantial material in *Airport Services Manual* (Doc 9137), under Annex 14 — *Aerodromes*, related to this single hazard (on WHM) while *Safety Management Manual (SMM)* (Doc 9859), under Annex 19 – *Safety Management*, does not cite a single specific hazard.

FLIGHT SAFETY AND WILDLIFE HAZARDS AND RISK MANAGEMENT

(Presented by Australia, Azerbaijan, Brazil, Cambodia, Fiji, India, Indonesia, New Zealand, Pakistan, Philippines, Singapore, Thailand, the United Kingdom, Airports Council International (ACI), Flight Safety Foundation (FSF) and International Air Transport Association (IATA))

EXECUTIVE SUMMARY

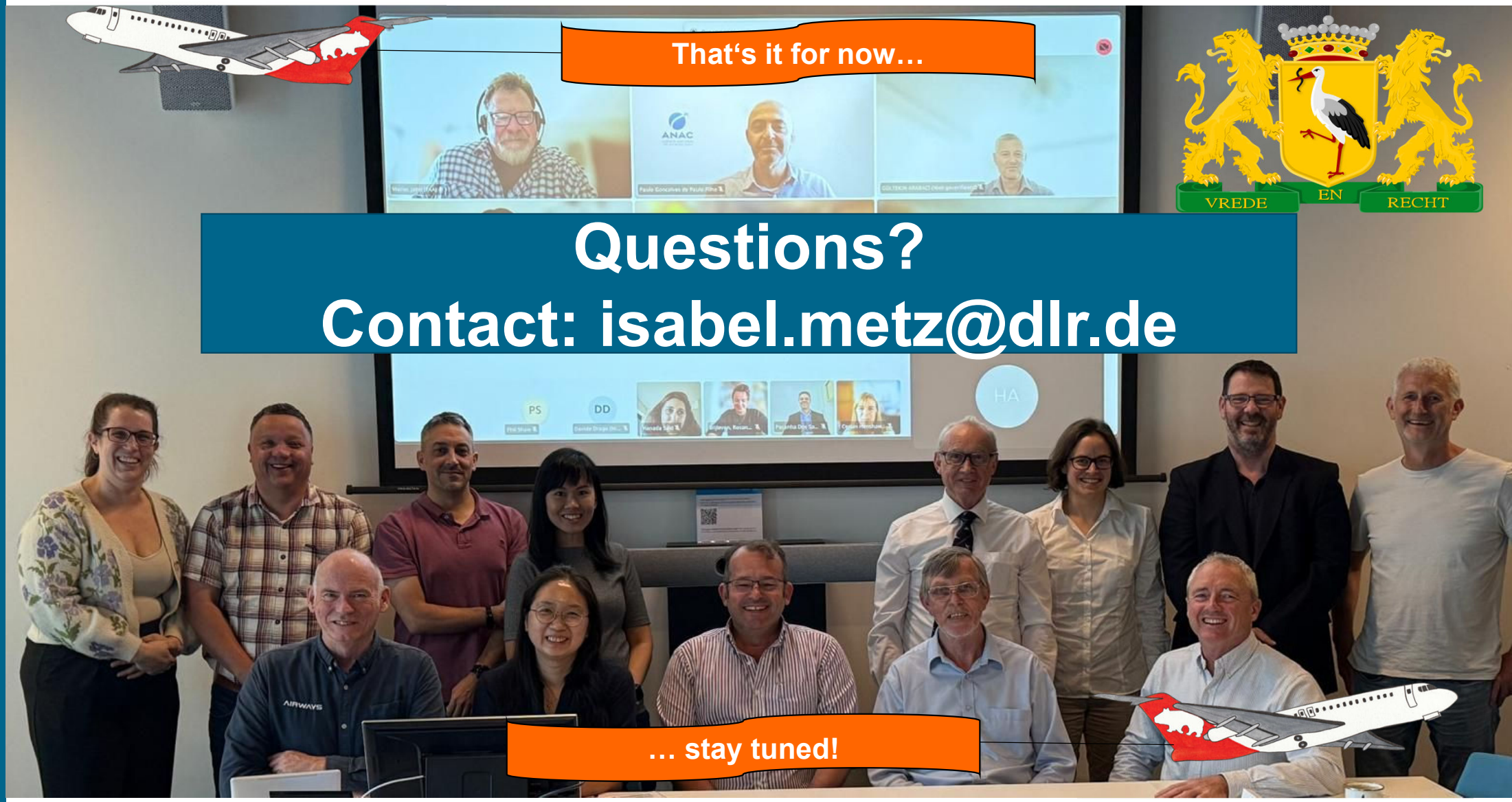
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Approved 8/2024

AN-CONF/14
14th Air Navigation Conference
26 August to 6 September 2024 | Montréal, Canada


That‘s it for now…
Questions?
Contact: isabel.metz@dlr.de
… stay tuned!

Imprint

Topic: Getting everyone on board: the need for cross-disciplinary Wildlife Hazard Management

Date: 2026-09-22

Author: Dr. Isabel C. Metz

Institute: Institute of Flight Guidance

Photo sources:

[1] S. Bollmann – own work and Image: Airports New York City Map Julius Schorzman with Floyd Bennett Field.jpg, Flight path data from www.flightaware.com, Grid from Google Earth., CC BY-SA 3.0, https://commons.wikimedia.org/w/index.php?curid=5755002,

[2] Greg L, CC BY, https://commons.wikimedia.org/wiki/File:US_Airways_Flight_1549 (N106US)_after_crashing_into_the_Hudson_River_(crop_1).jpg

[3] https://commons.wikimedia.org/wiki/File:Jeju_Air_flight_2216,_Muan_Int%27l_Airport,_29_December_2024_16.png, CC-BY 3.0

[4] Sun Jiao, CC BY 4.0, https://commons.wikimedia.org/w/index.php?search=baikal+teal&title=Special%3AMediaSearch&type=image

[5] AIP Republic of Corea, own additions

[6] Peter Prokosch, https://www.grida.no/resources/4368, use with permission

[7] own figure, based on https://www.faa.gov/airports/airport_safety/wildlife/arp-Wildlife-Strike-Report-1990-2024.pdf

[8] C. Henshaw, I.C. Metz, B. Greeves, A. Moffat, D. Wiman & A. McAlpine (n.d.) White Paper on A System-Based Approach to Safeguarding Aviation against Wildlife Hazards.

[9] Charles J. Sharp, CC BY-SA 4.0, https://commons.wikimedia.org/wiki/File:Large_flying_foxes_(Pteropus_vampyrus)_in_flight_from_Pulau_Kalong_Rinca.jpg

[10] Uwe Schmidt, CC BY 4.0, https://commons.wikimedia.org/wiki/File:Desmo-boden_(cropped).jpg

[11] Zara603, CC BY-SA 4.0, https://commons.wikimedia.org/wiki/File:Flying_foxes.png

[12] David Bradbeer, Vancouver International Airport, personal communication, 02/2025, use with permission

[13] Used with permission of the depicted persons

Drawings: Isabel C. Metz