



Aviation & Wildlife Hazard

Bangalore International Airport Limited, India

Focus areas

Wildlife Strike – Vigilant species

Density of birds in airspace

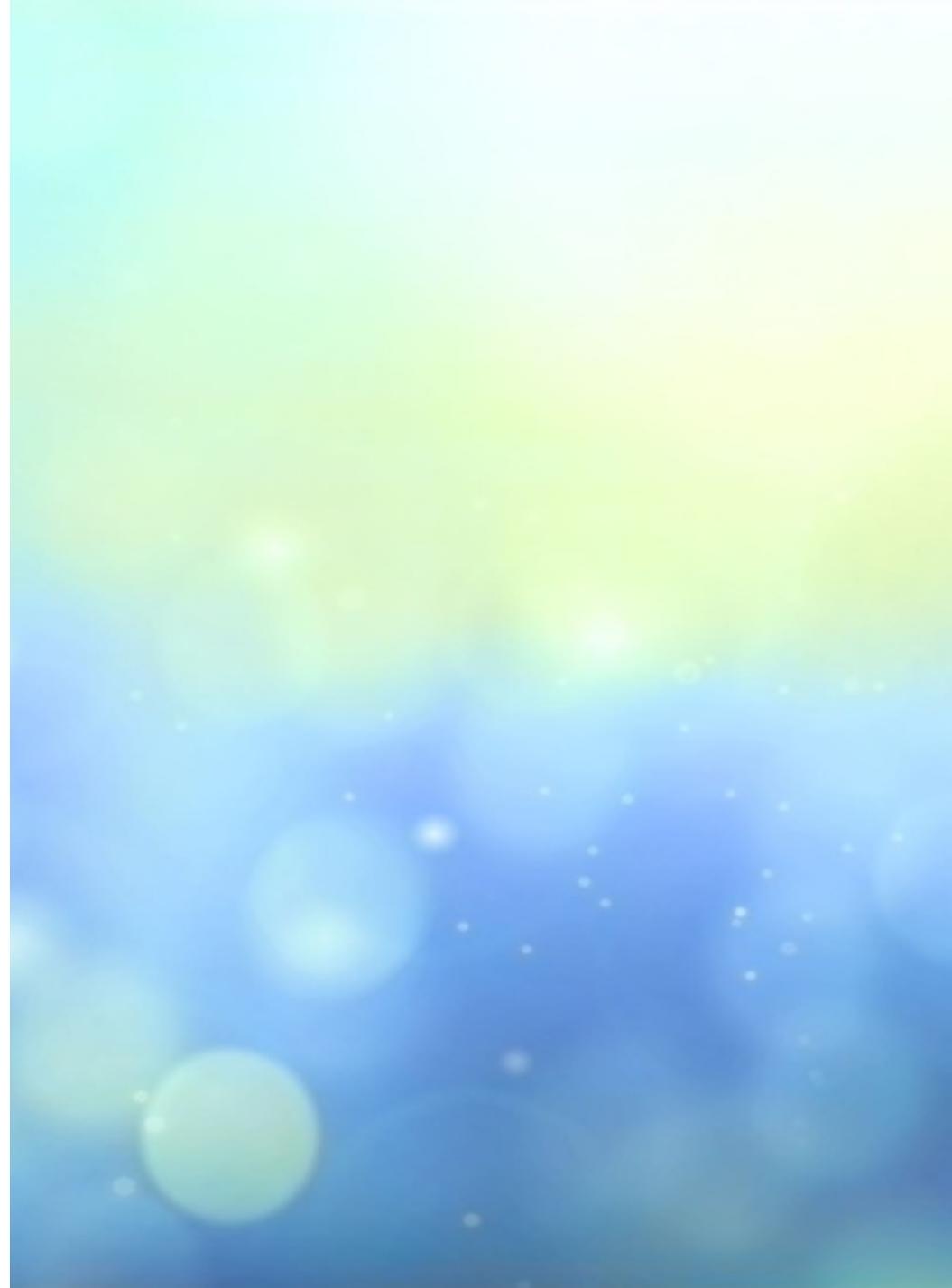
Bird abundance

International Bird Area(IBA)

Natural Spectacle

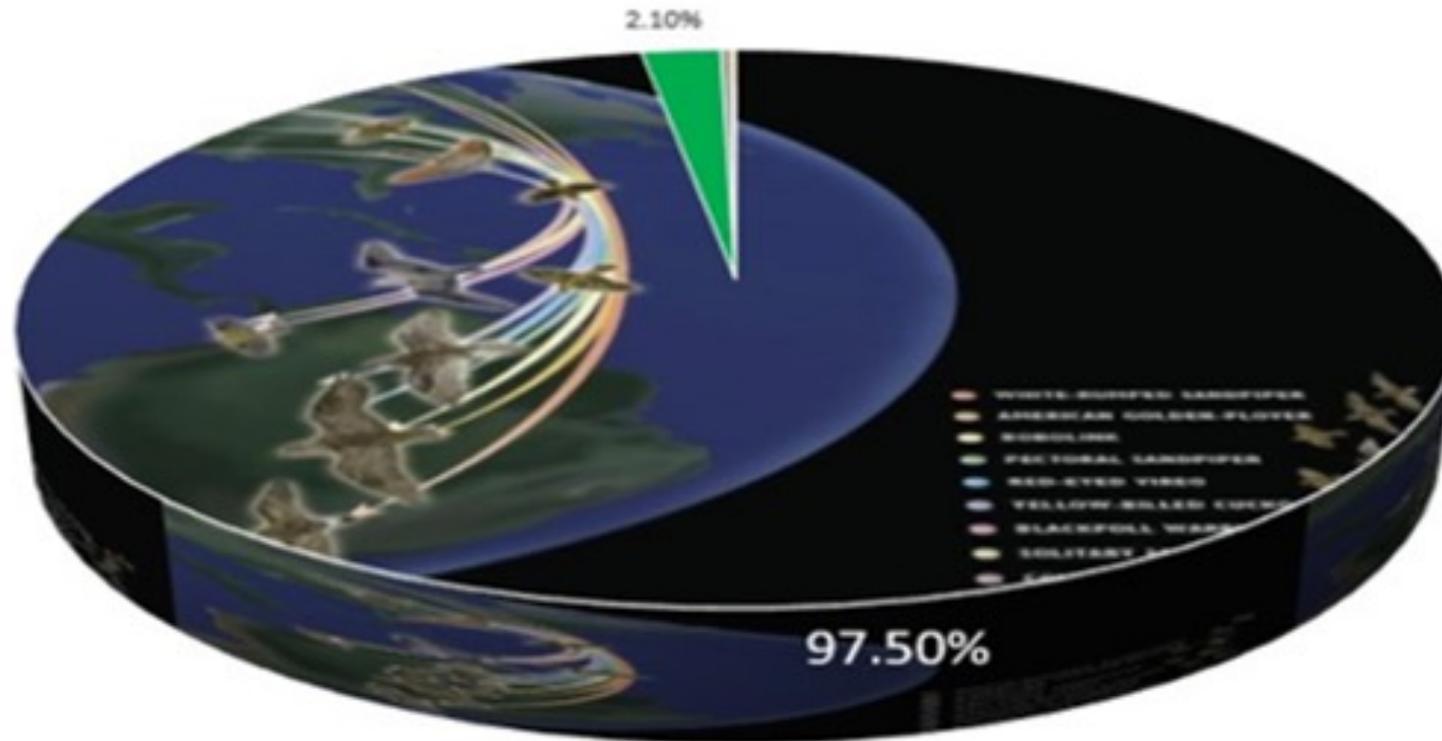
Wildlife Strike and its impact

Instincts of birds



Wildlife Strike data – Vigilant species

Wildlife Strike data



■ Birds

97.5%

■ Terrestrial animals

2.10%

■ Bats

0.30%

■ Reptiles

0.10%

8 Biogeographic realms

Having 50-450 billion birds

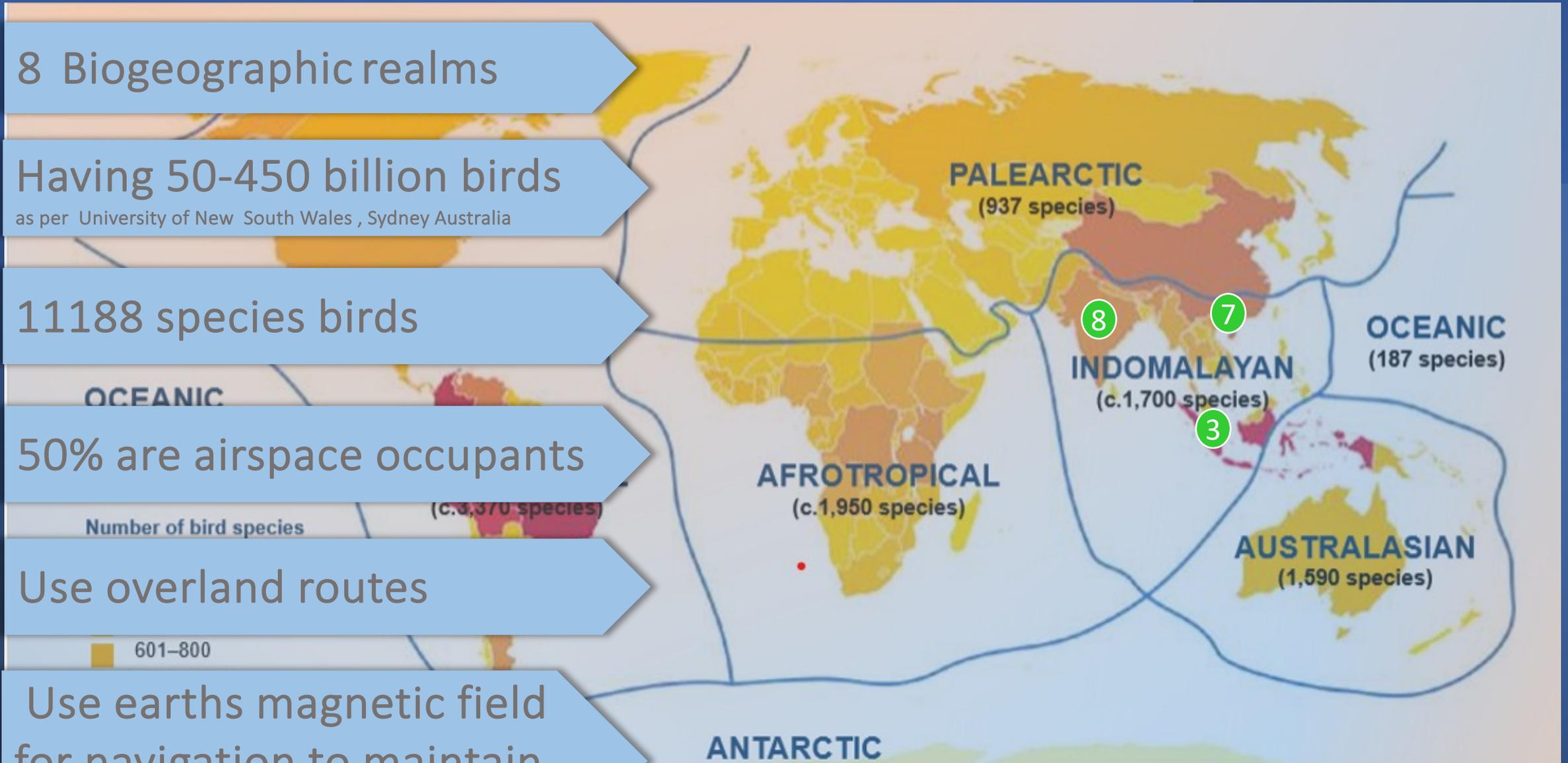
as per University of New South Wales , Sydney Australia

11188 species birds

50% are airspace occupants

Use overland routes

Use earth's magnetic field for navigation to maintain sense of direction



International Bird Areas



European starling – 1.3 billion



Most abundant House sparrow – 1.6 billion



Ring billed gulls – 1.2 billion



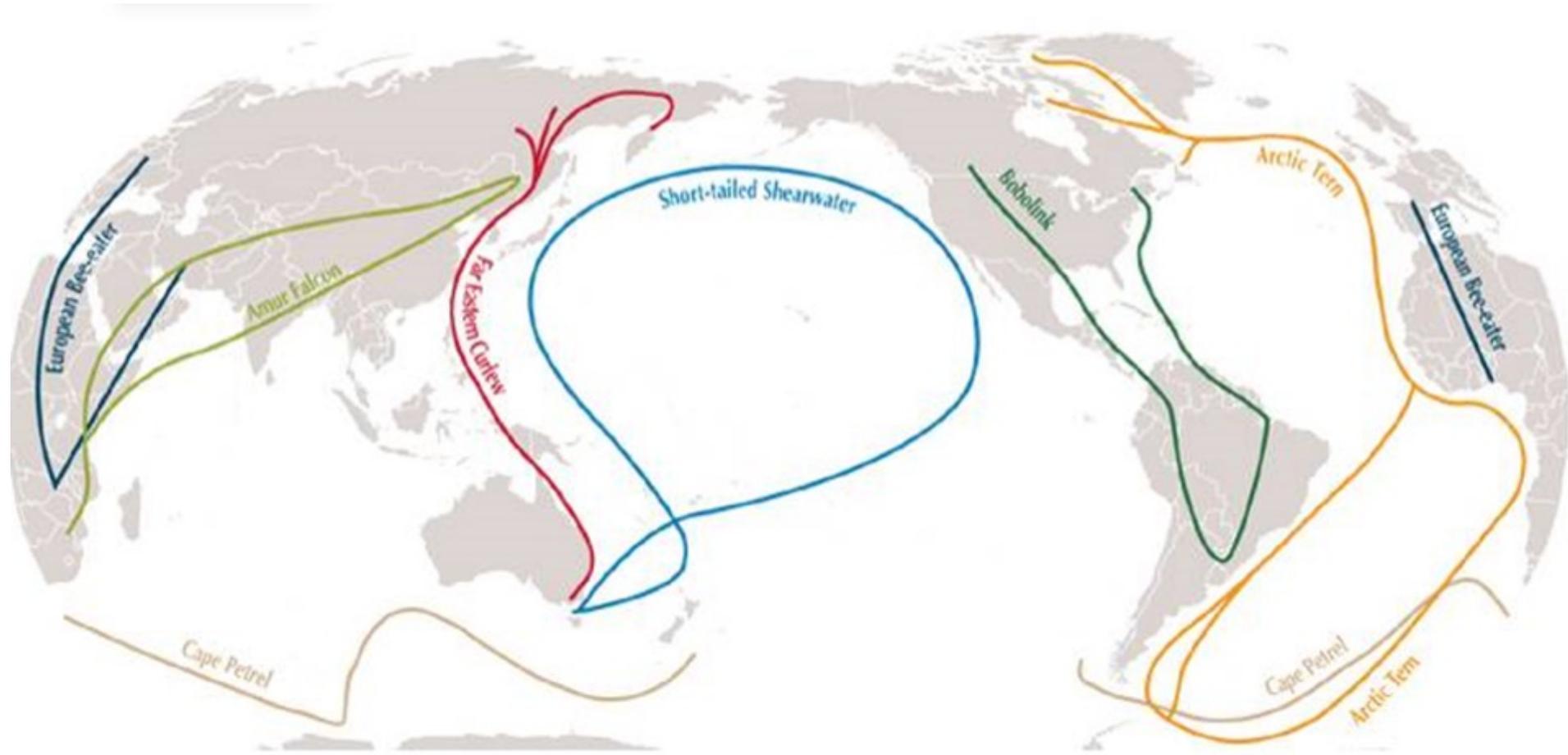
Barren swallows – 1.1 billion



Glaucous gulls – 949 million



Alder flycatcher – 896 million



Natural Spectacle of aviation migrations

Chiroptera (Bats)

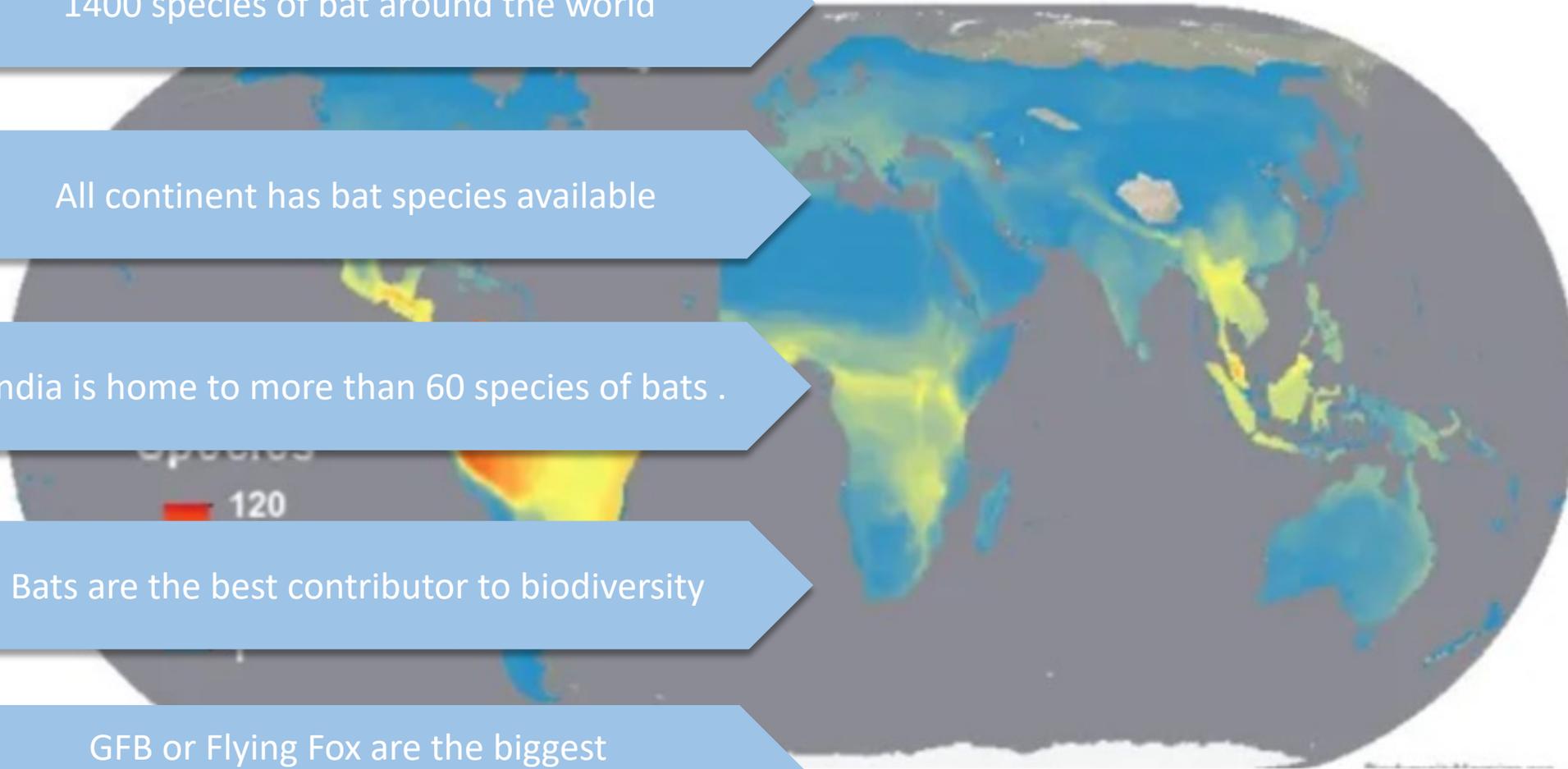
1400 species of bat around the world

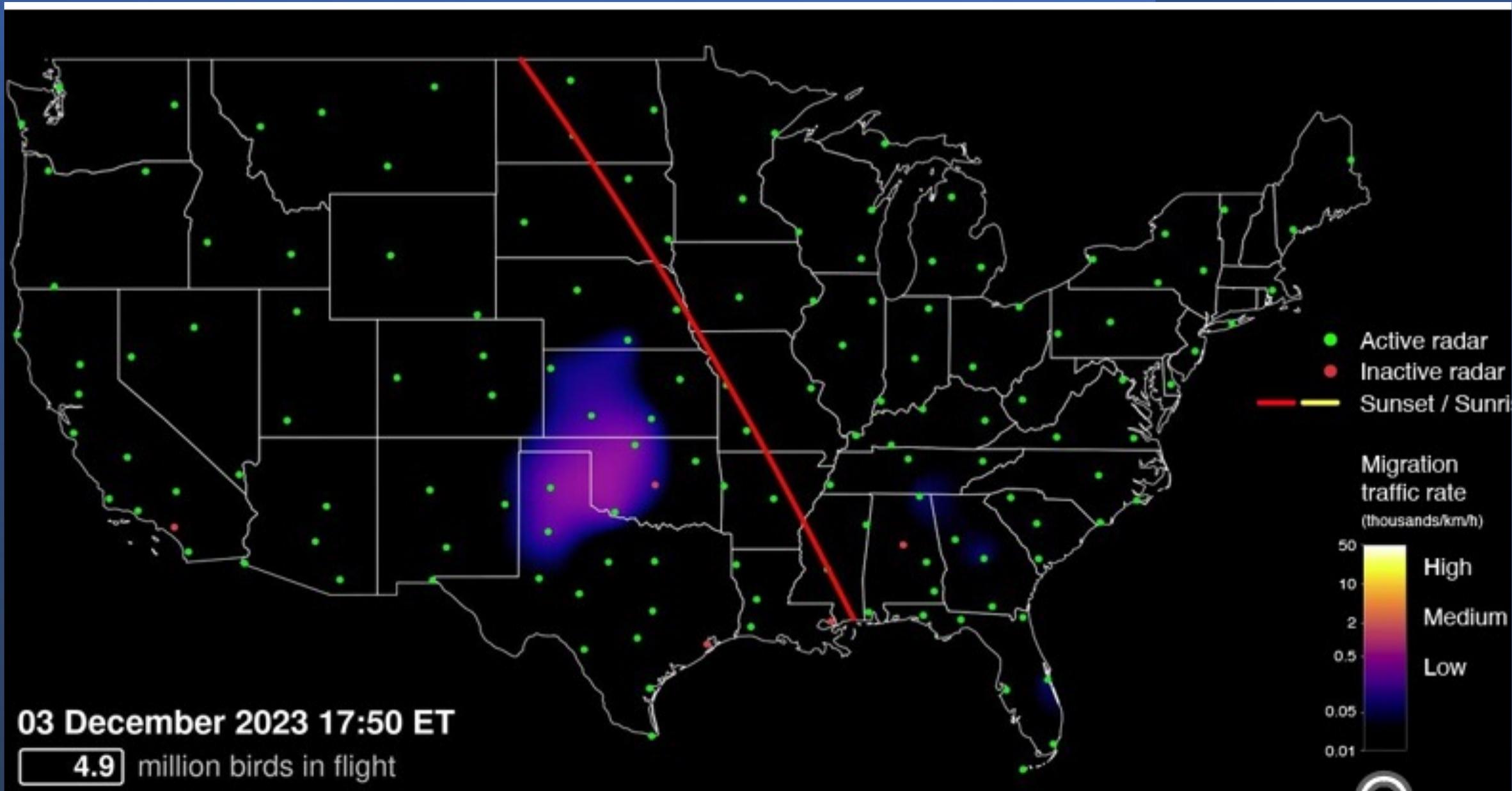
All continent has bat species available

India is home to more than 60 species of bats .

Bats are the best contributor to biodiversity

GFB or Flying Fox are the biggest
(40cm x 1.7m)





An aerial photograph of an airport terminal and runway, surrounded by a dense urban area with many small buildings and green spaces. The terminal is a large, rectangular building with a flat roof, and the runway is a long, straight strip of asphalt. The surrounding area is a mix of residential and commercial buildings, with some green spaces and trees scattered throughout.

Birds' instincts on Aerodrome eco system

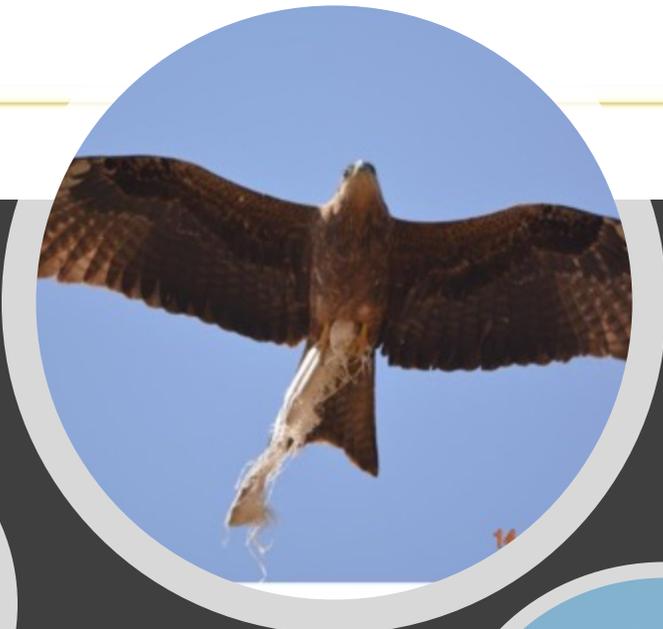
Use for updrafts gain altitude and floats on top

Significant height gain to glide horizontally covering large distance without effort to scale another thermal to gain further height

Improved visibility to scan & shadow food source

Energy efficient navigation to cover long distance to locate food sources

Rapid localization to reach back to nest



Wildlife & instincts

43 Million birds used VOBL airspace since AOD

30 million during morning hours

11 million kites with 67 collisions

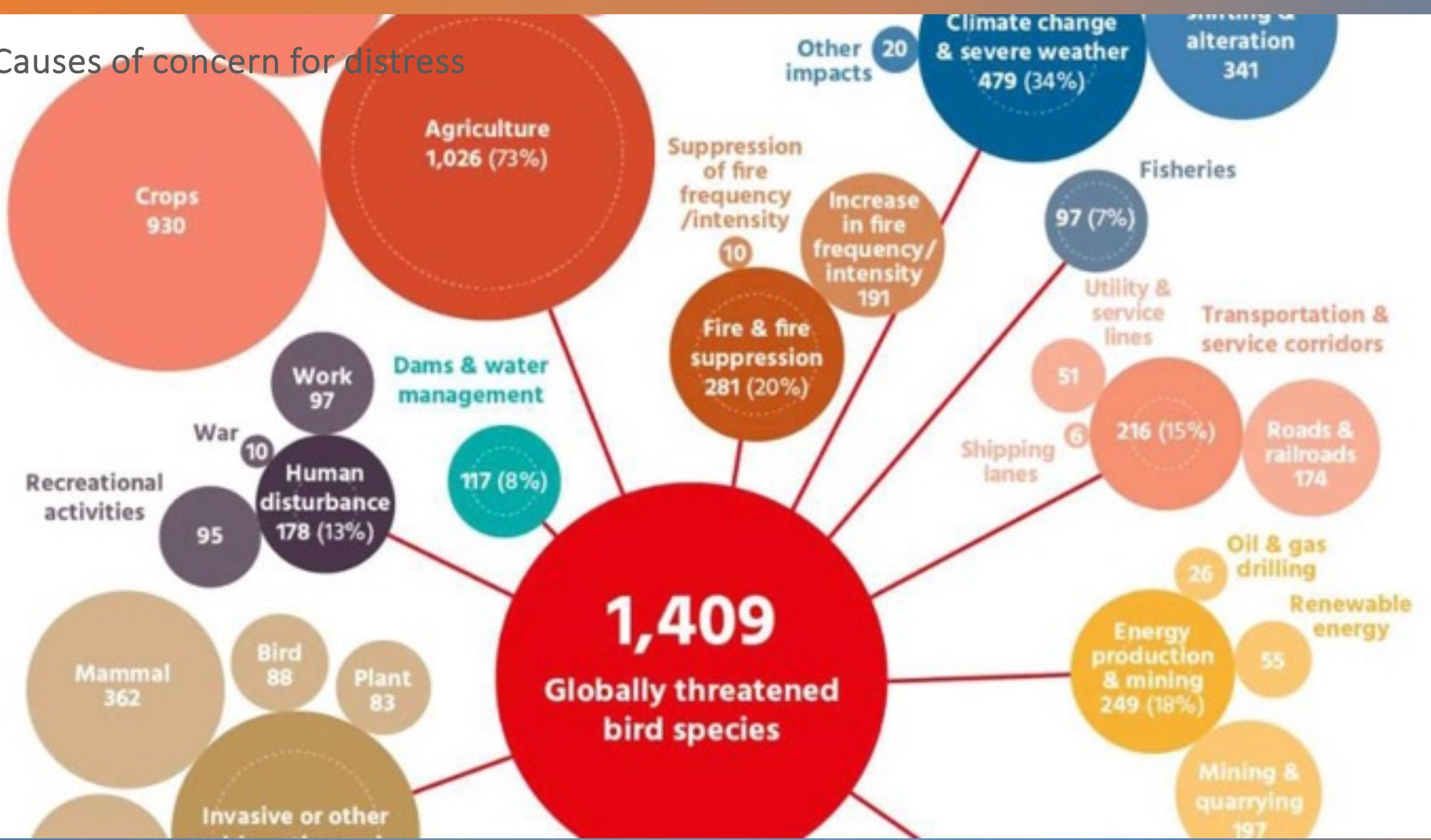
Endemic birds accustomed with airport ecosystem

Strike pattern – Rwy change, juvenile outbreak, migratory season

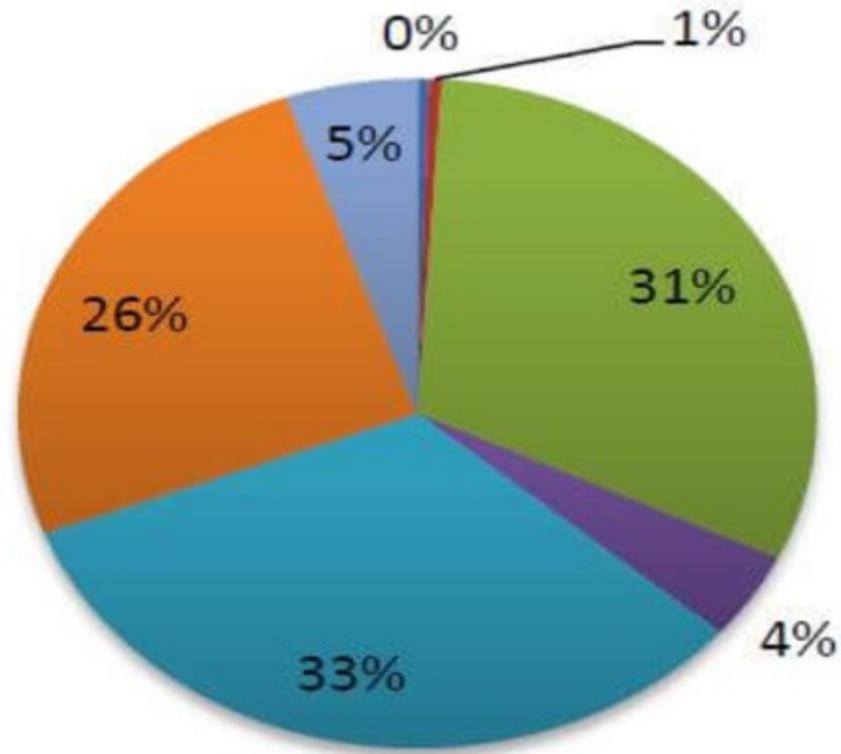
**Average Horizontal speed > 110 kmph
Diving speed > 389 Kmph
NO MIDFLIGHT ADJUSTMENT FROM TRAJECTORY**



Causes of concern for distress



Why WHM at airports



Taxi	- 4 %
Take off	- 31 %
Approach	- 33%
Landing	- 26%

Total - 94%

Source : Bird strike statistics (ICAO) for the flight phase at which incidents occur

Airframe Certification Standards 14 CFR Part 25-571& in EASA CS-25.631

A333, vicinity Orlando FL USA, 2013

On 19 January 2013, a Rolls Royce Trent 700-powered Virgin Atlantic Airbus A330-300 hit some medium sized birds shortly after take off from Orlando, sustaining airframe impact damage and ingesting one bird into each engine. Damage was subsequently found to both engines although only one indicated sufficient malfunction

B738, Rome Ciampino Italy, 2008

On 10 November 2008, a Boeing 737-800 about to land at Rome Ciampino Airport flew through a large and dense flock of starlings, which appeared from below the aircraft. After the crew had made an unsuccessful attempt to go around, they lost control due to malfunction of both engines when full thrust was applied and a very hard impact half way along the runway caused substantial damage to the aircraft.

A20N, Atlantic City NJ USA, 2021

On 2 October 2021, an Airbus A320neo ingested a large bird into its right engine (a Pratt & Whitney PW1100G) during take-off at Atlantic City and a high speed rejected take-off followed.



Aerodrome WHM an Indecisive battle

Birds in distress



Conclusion

Priority areas of WHM

Protected Aerodrome airspace

Wildlife Hazard Assessment survey

Development of WHMP

Wildlife Hazard Mapping

Engagement of Active & Passive control

Review of WHMP

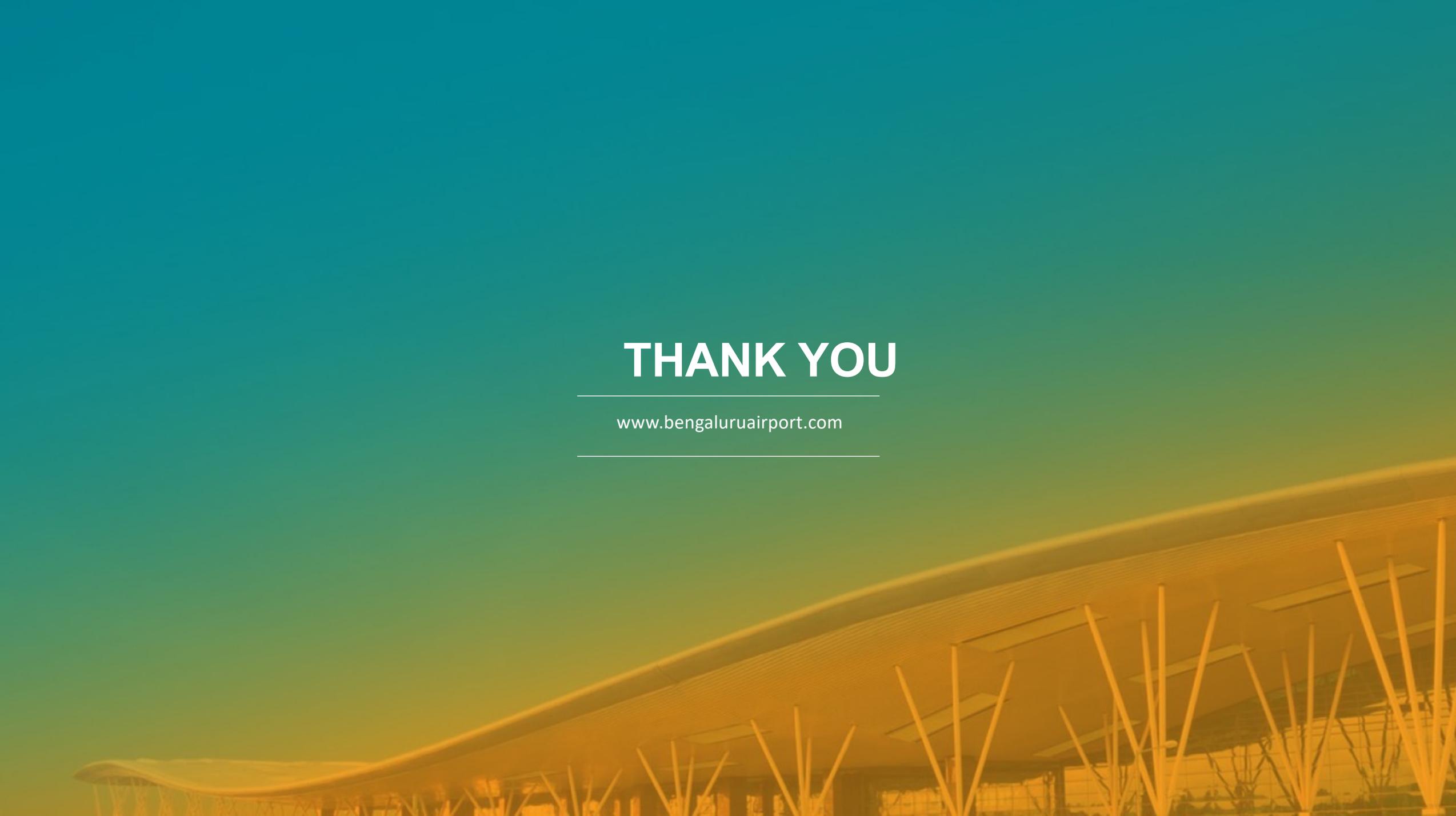
References:

14 CFR

Cornell Lab

Bird Cast

Natural Geographic



THANK YOU

www.bengaluruairport.com
