



Wildlife Strike Data Analysis and Application

WBA Webinar

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FAA
Office of Airports

EXPECTATIONS OF STRIKE DATA

REGULATOR NEEDS ENOUGH QUALITY / QUANTITY DATA TO:

- determine high risk species
- track national trends
- evaluate wildlife programs at airports
- provide scientific foundation for regulatory guidance

AIRPORTS NEED ENOUGH QUALITY / QUANTITY DATA TO:

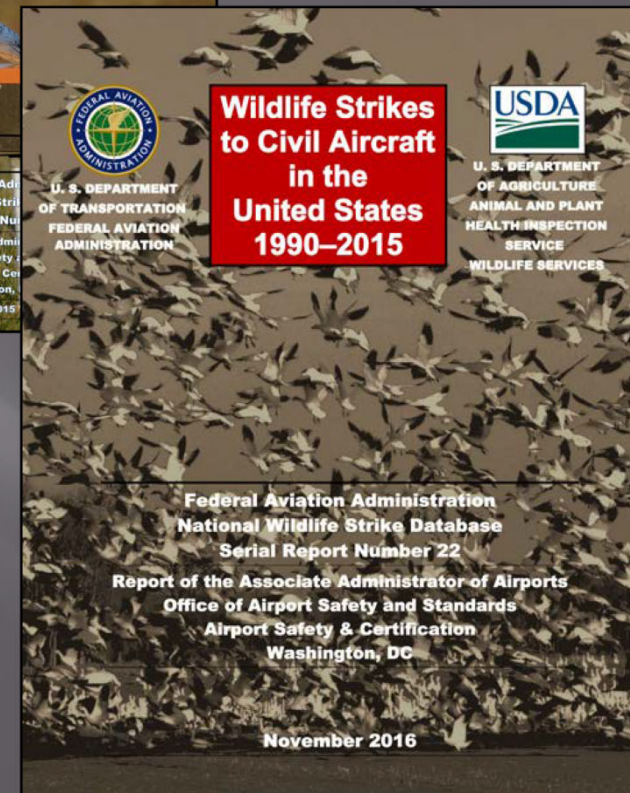
- identify & mitigate hazardous species, strike dynamics and attractants and evaluate effectiveness of wildlife management program

INDUSTRY NEEDS ENOUGH QUALITY / QUANTITY DATA TO:

- evaluate effectiveness of aircraft components

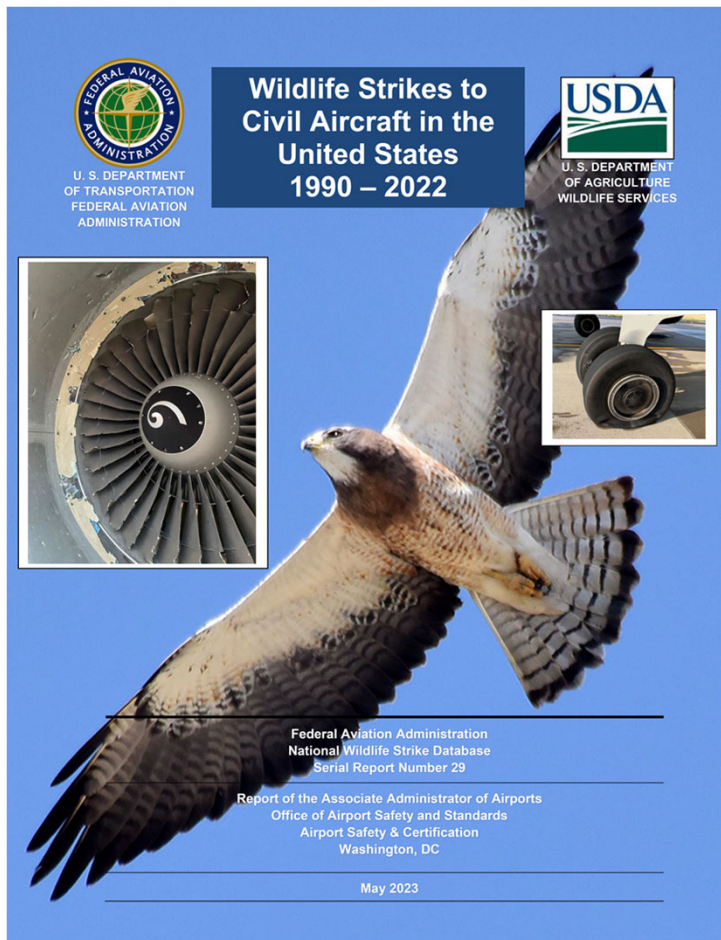
34 years of
strike data
1990 - 2023

National Wildlife Strike Database Report



Federal Aviation
Administration

FAA HIGHLIGHTS: Wildlife Strikes to Civil Aircraft in the United States Annual Report 1990-2022



- **277,000+** strikes have been reported to the National Wildlife Strike Database over the past 33.5 years.
- **17,190** strikes were reported in 2022 which is an increase of 10% from the 15,639 strikes reported in 2021 and an increase of 48% from the fully impacted COVID year of 2020 (11,623 strikes).
- **693** airports reported strikes in 2022 (429 Part 139-certificated airports and 264 general aviation airports).
- **2,062** different US airports have reported strikes between 1990-2022.
- **Commercial transport and general aviation aircraft** comprised 86% and 14% of the reported strikes in 2022.

$\leq 3,500$ ft AGL = 92% of strikes

Wildlife

$\leq 1,500$ ft AGL = 82% of strikes
*(these strikes are within the 5 mile separation distance)

Aircraft

≤ 500 ft AGL = 71% of strikes

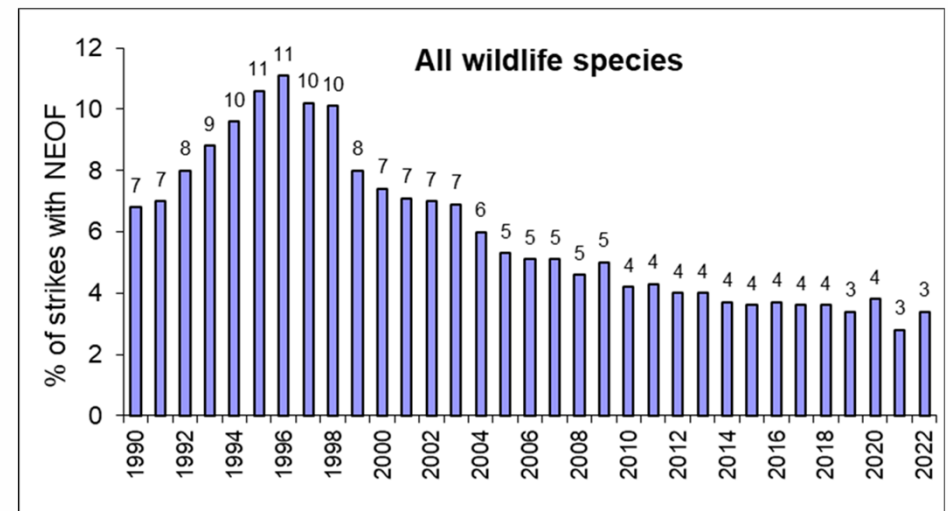
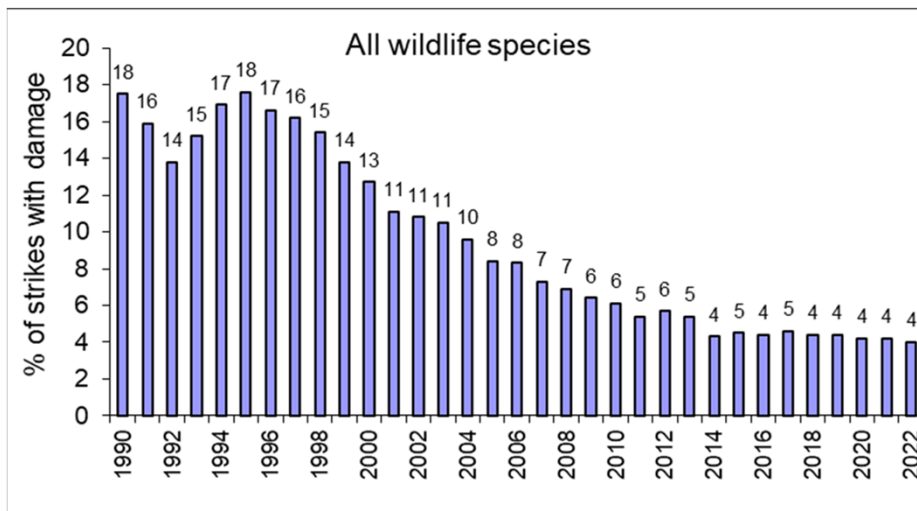
Strikes

Ground Level = 41% of strikes



FAA HIGHLIGHTS: Wildlife Strikes to Civil Aircraft in the United States Annual Report 1990-2022

- Damaging strikes in 2022 comprised only 4% of all strikes. This number has declined from 20% in 1990 and averaged 7% between 1990-2022.
- Damaging strikes declined since 2000 for commercial aircraft in the airport environment (<1,500 feet [AGL] - but have not declined for GA aircraft.



Not all strikes result in a Negative Effect On Flight

Strikes = Safety/Financial Impact NEOF = Financial Impact

Strike Data Analysis and Trends

- **USA Strikes – Birds (639 Species, 98% of all strikes); Terrestrial Mammals (55 species); Bats (46 species); Reptiles (34 species) for a total of 774 wildlife species since 1990.**
- **Waterfowl, gulls and raptors are the species groups of birds that cause the most damaging strikes.**
- **Hooved mammals (mainly deer) and carnivores (mainly coyotes) cause the most damaging strikes of terrestrial mammals.**
- **Improved species identification and higher number of strike reports submitted per strike event.**



The sandhill crane population in North America has increased 4-fold, 1990-2021. As with other wildlife such as Canada geese, cranes are adapting to human habitats. From 1990-2022, 193 strikes involving sandhill cranes and civil aircraft were reported, USA. Photo, Sanford-Orlando International Airport, John Weller.

FAA Metrics 2022

- **Metric 1. Monitor WHAs, WHMPs, Site Visits and Continual Monitoring for Part 139 and GA airports.**
- **Metric 2. Monitor ratio between numbers of strikes with damage compared to total reported strikes.**
- **Metric 3. Monitor Negative Effect On Flight for Part 139 and GA aircraft.**

Year	Total strikes reported	Damaging strikes reported	Percentage damaging strikes vs. total strikes
2010	9,889	595	6.0%
2011	10,104	542	5.4%
2012	10,903	613	5.6%
2013	11,406	609	5.3%
2014	13,683	587	4.3%
2015	13,788	622	4.5%
2016	13,353	589	4.4%
2017	14,788	667	4.5%
2018	16,233	720	4.4%
2019	17,381	757	4.4%
2020	11,666	486	4.2%
2021	15,556	657	4.2%
2022	17,190	691	4.0%



FAA Metrics 2022 cont'd...

- **Metric 4. Monitor strike rate (wildlife strikes/100,000 movements).**
 - Strike rate at Part 139-certificated airports increased 270% from 12.70 in 2000 to 34.84 in 2022. However, damaging strikes/100,000 movements changed by only 4%, from 1.40% in 2000 to 1.46% in 2022.
 - Strike rate at general aviation airports increased 260% from 0.78 in 2000 to 2.80 in 2022. In contrast to Part 139-certificated airports, the damaging strike rate increased 31%, from 0.26% in 2000 to 0.34% in 2022.

- **Metric 5. Monitor the altitude of reported strikes including a comparison of damaging vs nondamaging strikes to evaluate off-airport hazards.**
 - Damaging strikes declined since 2000 for commercial aircraft in the airport environment (<1,500 feet [AGL] - but have not declined for GA aircraft.

1. ASSESS

Wildlife Hazard
Assessment, Site Visit,
Continual Monitoring

2. PLAN

Wildlife Hazard Mgt Plan
(e.g., Responsibilities,
Habitat / Wildlife Mitigation
& Monitoring,
Communication, Training,
Resources, etc.)

3. MITIGATE

Proactive (modify and
exclude) and Reactive
(Harass / disperse &
nonlethal / lethal removal)

4. EVALUATE

Data Collection, Data
Analysis, Trends, Gaps,
Metrics, KPI's, Wildlife
Hazard Working Groups,
"Compliance vs
Excellence"

5. MODIFY

Prioritization of
Resources, Funding &
Personnel

Mitigation of
Wildlife
Hazards
To Aviation
Requires Data



HAZARD

VS

RISK

A **HAZARD** is something that has the potential to harm you



RISK is the likelihood of a hazard causing harm



Hazard vs Risk (mammals are easy)

- Wildlife Hazard = Severity ranking of the animal
- Wildlife Risk = Severity x Probability

Hazard level = high hazard species
Risk level = low

Hazard level = high hazard species
Risk level = high



Hazard vs Risk (birds are tough)

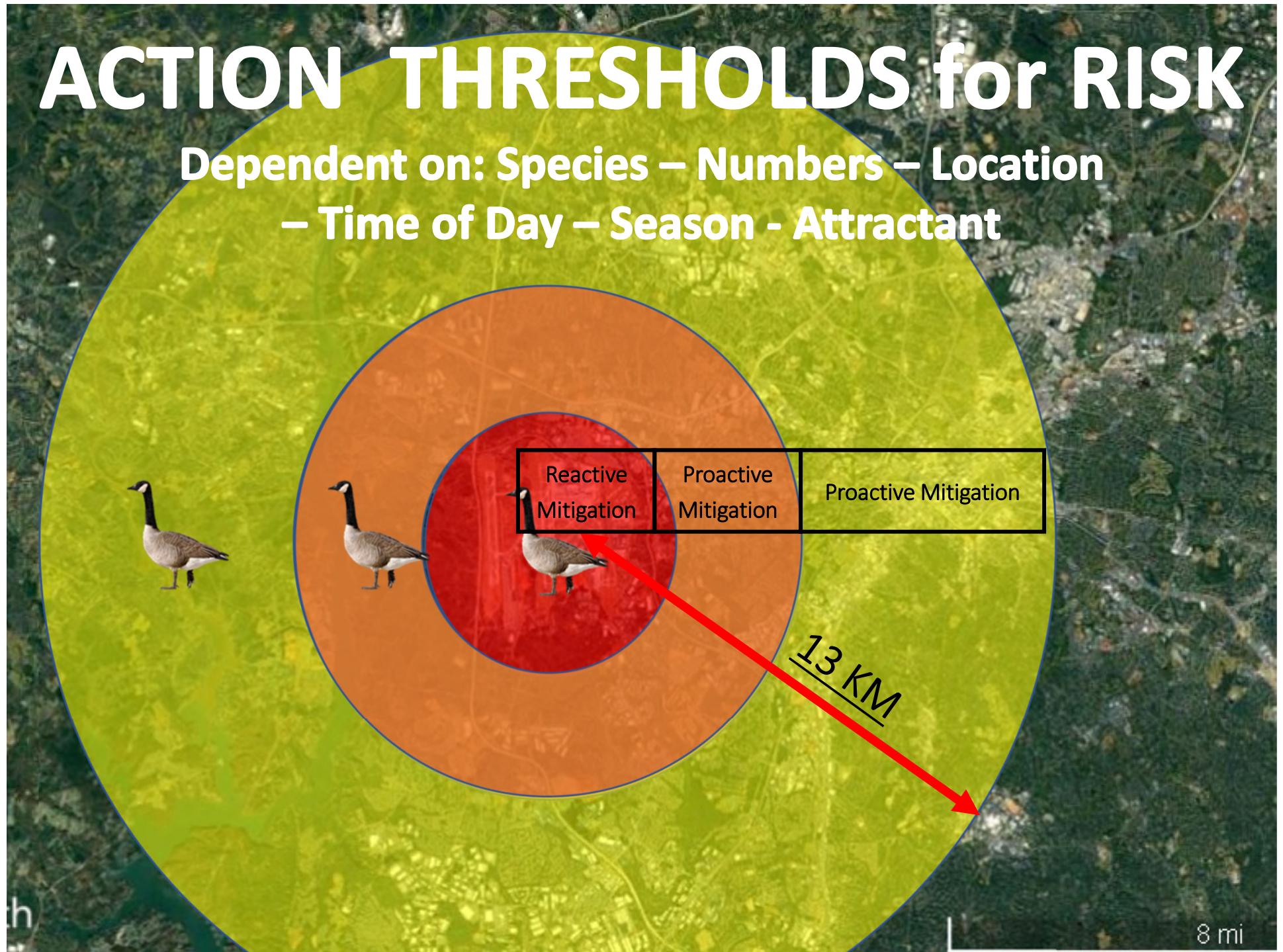
There are no fences for birds
When is a risk unacceptable?
Is it explained in your Plan?

Orlando International Airport

Orlando International Airport (MCO)_

ACTION THRESHOLDS for RISK

Dependent on: Species – Numbers – Location
– Time of Day – Season - Attractant



Action Threshold – BIRD Risk



We are
Airports



FAA
Office of Airports

Action Threshold – Large BIRDS / Flocks Risk



Strike data & wildlife survey trends are the foundation for ATIS or NOTAM notifications



Action Thresholds Different for All Species



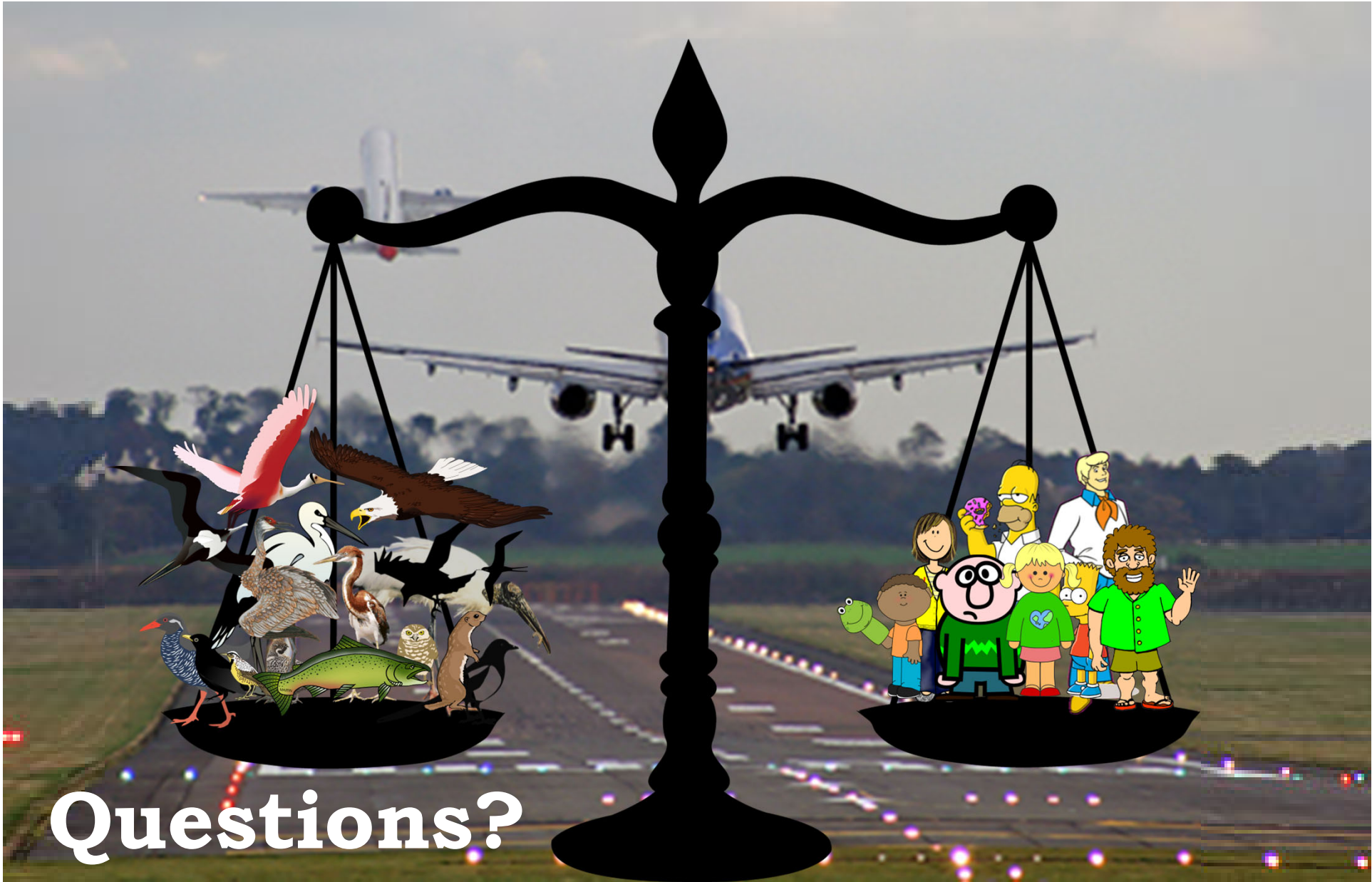
Don't Wait for Reality to Smack You in the Face



- Systematically evaluate strike data
- Determine data gaps
- Target data gaps – locally and nationally through outreach or regulatory guidance



Federal Aviation
Administration



Questions?



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