

# Evaluation Approach for Assessing Wildlife Management Programs at Airports

Pierre Molina, M. Sc. biol., Executive Director

Rob Shevalier, Executive VP

Marilou Skelling, Post-Grad. Dipl.

Maxime Allard, M. Sc. biol.

Luana Graham-Sauvé, M. Sc. biol.

**LEADERS IN THE FIELD SINCE 1989**

Wildlife Management & Consultation

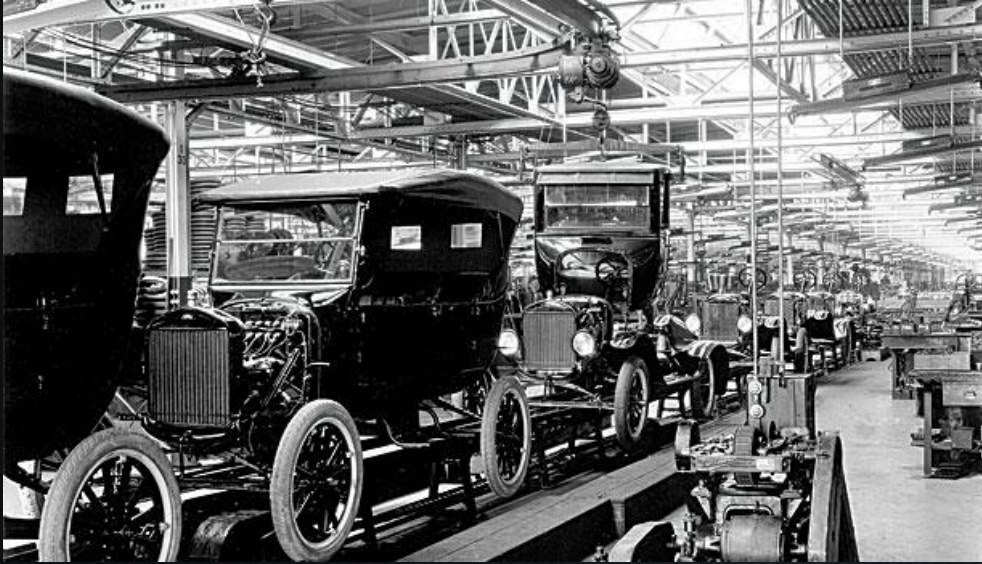


# First Request for Assessing a Wildlife Program

**2002 Pearson Int. Airport**

**2003 Montreal Int. Airport**

# Quality Control is an Old Process



**First industrial application of QC**

# Why airports MUST measure the effectiveness of their program?

## ✈ Regulations



# Canadian Aviation Regulation (CAR)

- ✈ CAR 107.03 A safety management system shall include:
  - ✈ a process for **setting goals** for the improvement of aviation safety and for **measuring the attainment of those goals**;

If you don't **measure** it,  
You can't **improve** it!

- ✈ A **QUALITY CONTROL (QC)** indicator is needed

**Key Performance Indicators (KPIs)  
are QC Indicators**

# Why airports MUST measure the effectiveness of their program?

## ✈ Regulations



✈ Because you want to know if you meet your **OBJECTIVES**

✈ Maybe because you want to improve your program or infrastructure

# Want to improve your wildlife program?



# Building a KPI

- ✈ Identify wildlife management challenges
- ✈ Identify the stakeholders
- ✈ Set specific goals and measurable objectives
- ✈ Make sure you have the supporting data to generate KPIs



# What We Want to Prevent!



# Strike Rates Seemed the Logical Choice

✈ Shall we compare RAW number of strike...

- Per species?
- Per year?
- Among airports?

**NO!**

✈ Number of strikes per 10,000 movements was largely adopted by the wildlife strike community in early '70.

**First KPI !**

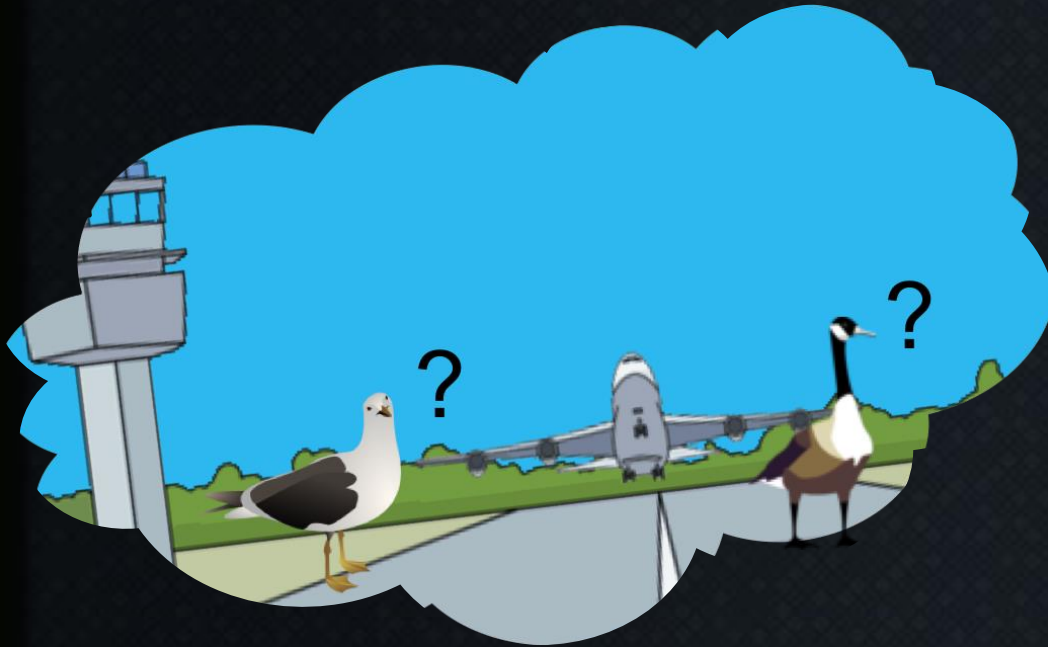
# Choosing YOUR Threshold ?

- ✈️ Canada has an average of 2.6 strikes / 10,000 mvts from 2010 to 2014.
- ✈️ One Canadian target was 3 strikes / 10,000 mvts. (TP 11500, 2002)

Rather than simply counting the number of incidents, strike rates should be calculated (as the number of strikes per 10,000 movements) to accurately evaluate the strike risks in a particular region. It is generally accepted that a rate exceeding three strikes per 10,000 movements indicates the need to improve or re-evaluate the existing bird-management program.



# Who Measures the EFFECTIVENESS of Their Program?



✈ 26 National Airports in Canada

↓  
47% with KPI

✈ Airports with more than 100,000 movements

↓  
90% with KPI

# KPI #1 – Montreal Int. Airport

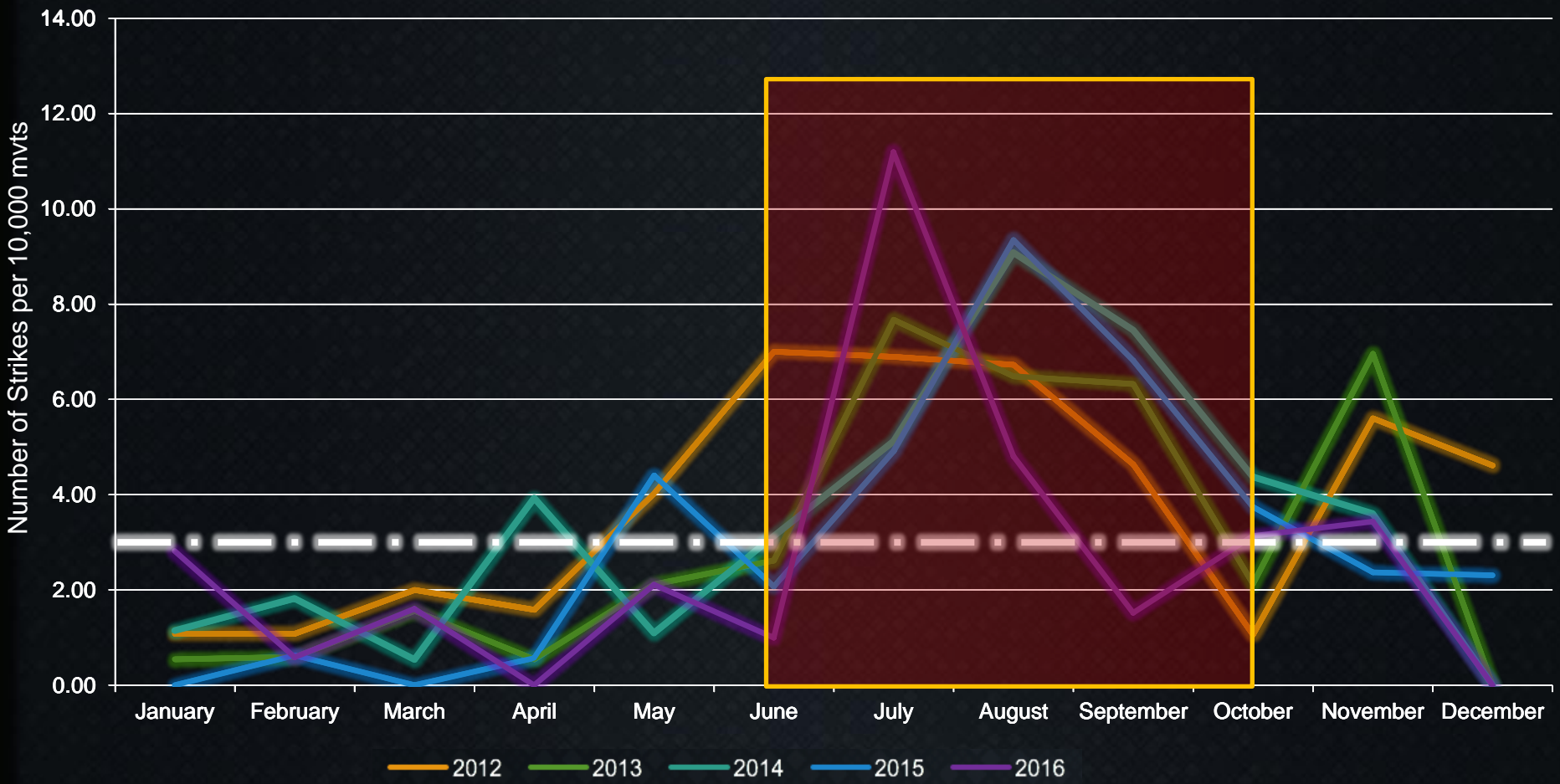
## ✈ Annual Strike Rate per 10,000 mvts

Year	Nb Strikes / 10,000 mvmts
2003	2.7
2004	1.8
2005	2.8
2006	3.0
2007	2.7
2008	3.3
2009	3.9
2010	3.7
2011	2.6
2012	3.7
2013	3.5
2014	3.6
2015	3.2
2016	2.8

**KPI threshold = 3 strikes / 10,000 mvts**

# KPI #1 – Montreal Int. Airport

## Monthly Strike Rate per 10,000 mvts from 2012 to 2016



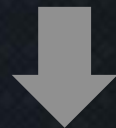
**Are you satisfied in terms of Risk Management?**



# KPI #1 – Montreal Int. Airport

✈ **KPI: Monthly Strike Rate per 10,000 mvts**

✈ **Threshold:** When Above 3 Strikes / 10,000 mvts



Review Assessment of Risk

✈ **Action Triggered:** Add Manpower According to Risk

# What are the features of a good KPI?

- **Quantitative (Measurable value);**
- **Trendable;**
- **Risk based;**
- **Take into account changing conditions;**
- **Actionable – effect change;**



# KPI #2 – Toronto Pearson Int. Airport

## Monthly # High Risk Species Strikes / 10,000 mvts

### Primary High Risk Events (prevention events)



#### High Risk Species :

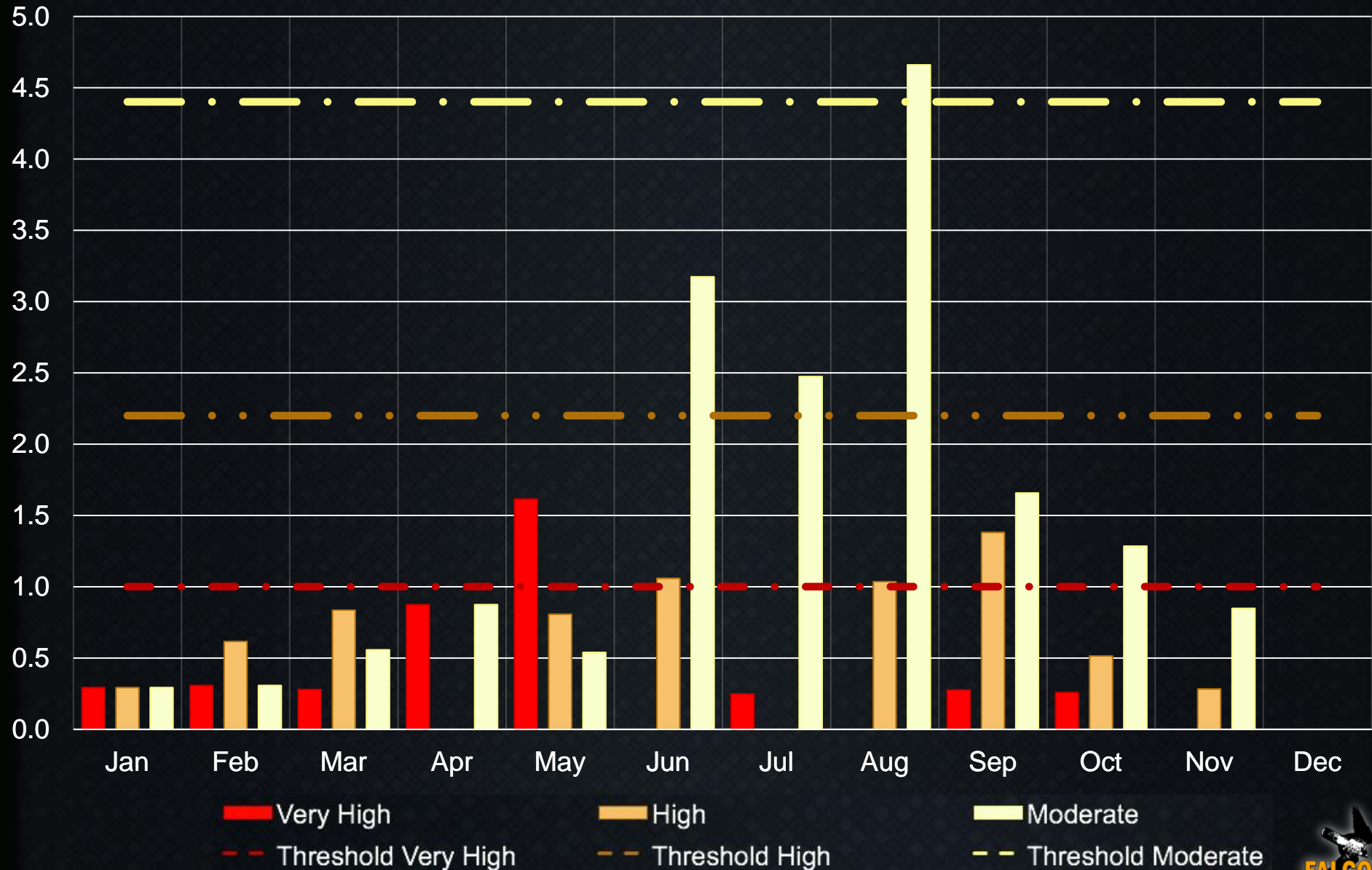
- ✓ **Most likely** to be involved in collisions with aircraft & cause the **greatest damages**
- ✓ **Take into account RISK**

# KPI #2 – Toronto Pearson Int. Airport

## Wildlife Management Priorities for Toronto Pearson Airport

Wildlife Group	Management Priority
Geese	Very High
Snowy Owls	Very High
Gulls and Terns	Very High
Coyote	Very High
Hawks	High
Ducks and Associated Species	High
Starlings	High
Hérons	Moderate
Blackbirds	Moderate
Crows and Ravens	Moderate
Kestrels	Moderate
Large Mammals	Moderate
Turkeys	Moderate
Vultures	Moderate
Other Small Birds	Moderate
Shorebirds	Moderate
Eagles	Moderate
Medium Mammals	Moderate
Pigeons and Doves	Moderate
Swallows and Associated Species	Moderate
Owls	Moderate
Snow Buntings	Low
Falcons	Low
Small Mammals, Reptiles and Amphibians	Low

# Monthly Risk Species Strikes / 10,000 mvmts



# KPI #3 – AEE in Many Airports

## Yearly # Wildlife Adverse Effect Events (AEE)

### DEFINITION of AEE

Any occurrence involving wildlife:

- ✈ Resulting in damage, or;
- ✈ Effect on flight:
  - ✈ Emergency/precautionary landing
  - ✈ Rejected take-off or missed approach
  - ✈ Obstructed vision
  - ✈ Fire, smoke in cabin, or
  - ✈ Any change to the flight plan.
  
- ✈ Relatively rare events
- ✈ The strike events that “count” in the end

# KPI #3 – AEE in Many Airports

## Yearly Nb Wildlife Adverse Effect Events (AEE)

Year	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
AEE	10	5	11	10	8	7	5	4	4	10

**KPI threshold = SITE SPECIFIC**

## KPI #4 – Mass of Wildlife Struck

### Average Mass Struck of confirmed strikes

10,000 mvts

Year	2012	2013	2014	2015	2016
Average Mass Struck (g)	1,475	1,339	1,255	1,312	1,350
Avg Mass Struck (g) / 10,000 mvts	34.0	31.2	29.6	30.7	30.8

**KPI threshold = SITE SPECIFIC**

# KPIs are mainly used as a Yearly QC Indicator

✈ Actual use of KPIs are reactive



# Proactive Risk Management!

**Operational KPIs**



**Proactive Risk Indicator**



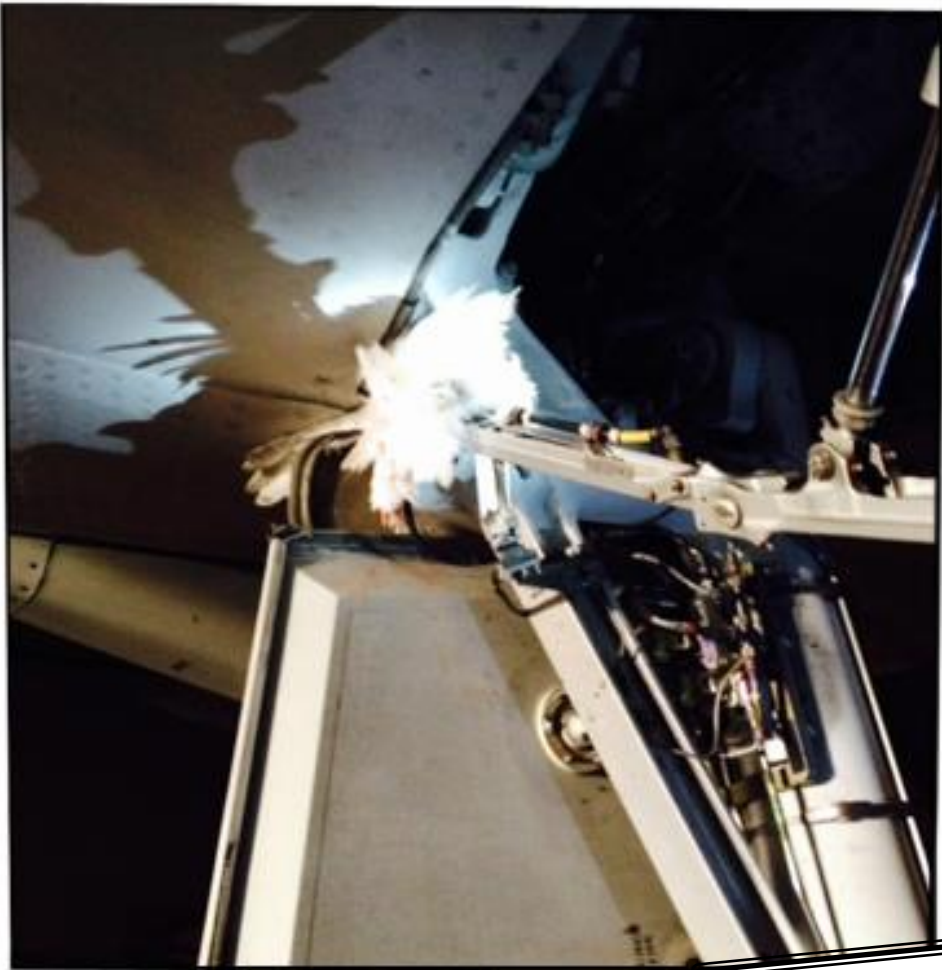
# KPI #5 (Operational) – Snowy Owl YUL and YYZ

✈️ Snowy Owl (SNOW) invasion 2013 to 2016



41 000 CAN\$

# Snowy Owl Strikes



12 000 CAN\$

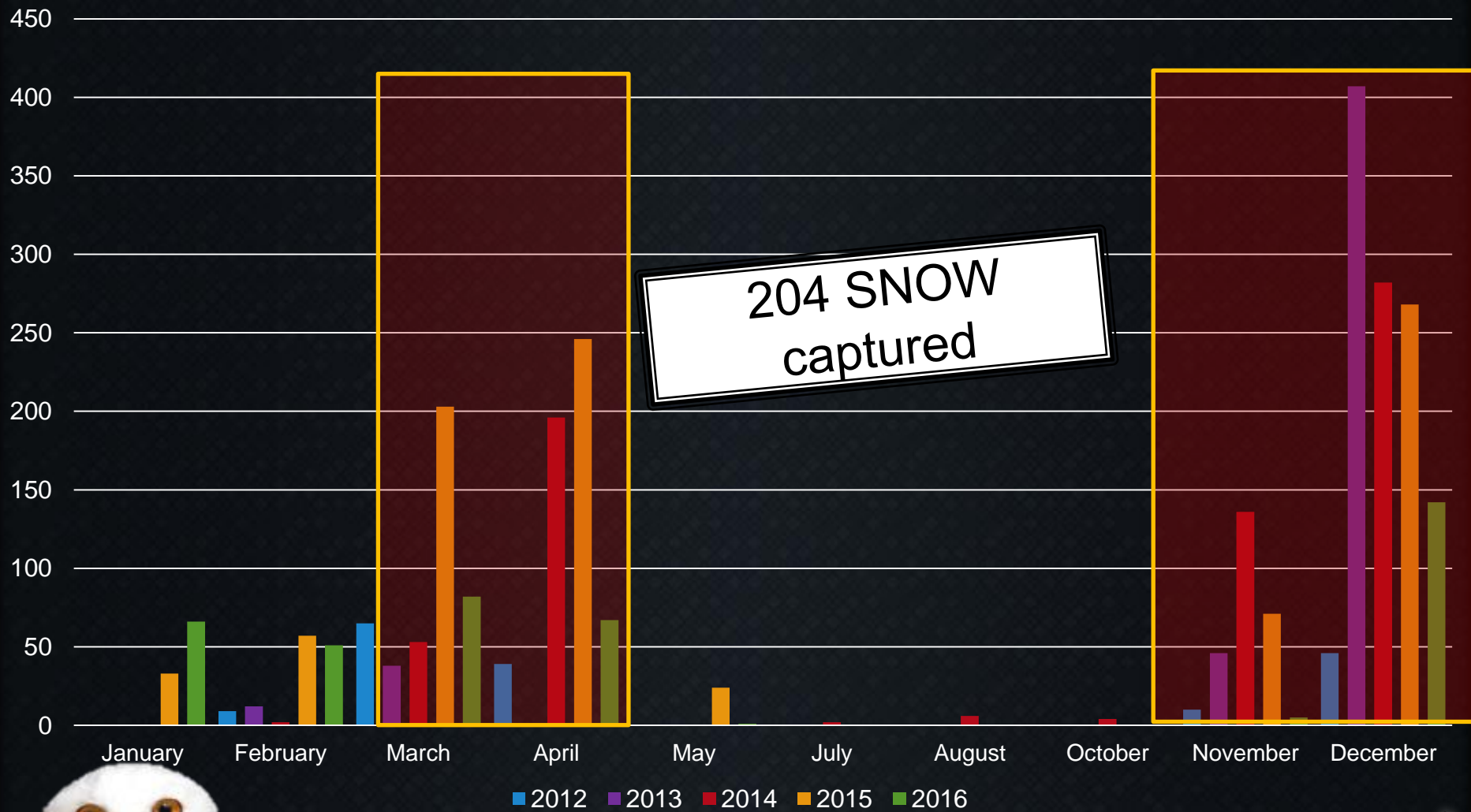
# Snowy Owl Strikes



+500 000 CAN\$

# KPI #5 (Operational) – Montreal Int. Airport

✈ Number of SNOW Encountered from 2012 to 2016



# KPI #5 (Operational) – Montreal Int. Airport

- ✈ **KPI:** Daily Number of SNOW
- ✈ **Threshold:** When Above 2 SNOW on the airfield
- ✈ **Action Triggered:** Add manpower = extra 32hrs per week for capturing SNOW until below threshold

# KPI #5 (Operational) – Toronto Pearson Int. Airport

- ✈ **KPI:** Daily Number of SNOW
- ✈ **Threshold:** When Above 4 SNOW on the airfield
- ✈ **Action Triggered:** Add manpower = bring 4<sup>th</sup> WCO for capturing SNOW until below threshold

# KPIs Challenge



- ✈ Get the stakeholders interested
- ✈ Set measurable objectives,
- ✈ Capturing the data to generate KPIs – use digital support!
- ✈ Monitor the KPIs on the identified recurrence ex. daily, weekly, monthly, yearly, etc.
- ✈ Reassess objectives and KPIs relevance

# Acknowledgements



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