(19) A three-year long project to reduce bird strikes caused by the American Kestrel for the Pierre Elliott Trudeau Montreal International Airport

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From 1997 to 2008 we witnessed an exponential increase in the incidents involving American Kestrels from 1 to 23 bird strikes. Initially we set up a plan to capture and relocate these birds but a deeper analysis and long term solutions were needed to reduce their presence and reverse the trend of impacts. The presentation will look into the factors attracting these birds to an airport setting and methods to greatly reduce their attraction to our location. We will explore techniques to capture and relocate these birds as well as document and tag their presence in order to validate the effectiveness of the relocation program. We will also look at their eating habits and ways of controlling their primary food source. Our study will look at the method and product used to control insects as well as the timing for application of insecticide to ensure maximum results. An in-depth study will be discussed on suppressing the presence of their primary food source and the results found and their impact on the number of bird strikes. The stomach content analysis demonstrated that American Kestrels involved in bird strikes were eating abundant quantities of grasshoppers and crickets. The insecticide currently used by the Airport Authority (Diazinon) has little effect on these two types of insects. Through consultation with specialists and suppliers of insecticide we discovered that a pyrithine would be more effective. The choice of going with (Decis) would be more appropriate and came with a bonus of being more environmentally friendly. With the proper mixture of Decis applied during stage 2-4 of the larvae development in the 3 areas targeted, the presence of insects was greatly reduced as seen in the analysis and the bird strikes involving American Kestrels ceased trending upwards and declined during the project duration.We can be fairly certain that the protocol has a significant effect on reducing impacts for American Kestrels if the plan is followed. The targeted areas were close to active runways and the presence of insects in these areas were controlled. We can target the use of insecticide by calculating the optimum time when the larvae is between stage 2 thru 4. Before or after this period the insecticide is least effective. With the change in insecticide and a more effective way to determine the optimum timing for it`s application, we can achieve our goal to reduce the number of bird strikes. The period is different each year as temperature has a significant effect on larvae development. By using the calculations for degree/days we can target the timing. As well a program to capture and release American Kestrels will aid in the reduction of Bird Strikes involving this species.

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Project to reduce bird strikes caused by the American Kestrel for the Montreal-Trudeau International Airport (YUL)

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The American Kestrel loves Montreal-Trudeau

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1997: 1 impact
2007: 14 impacts

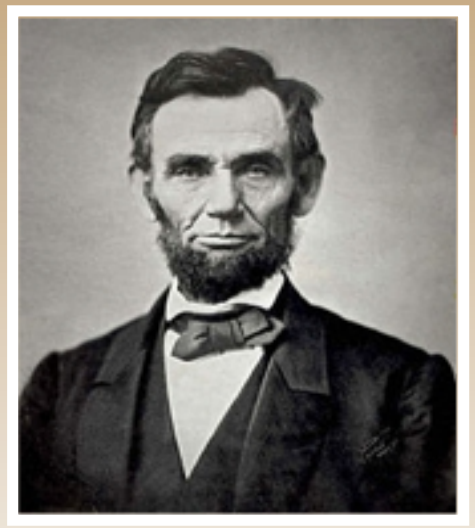
#1 in Canada!

- In 2007, 90% of impacts involving the Kestrel for Canada happened at Montreal-Trudeau (source Transport Canada)
- The Challenge: Find the cause and put solutions in place

We must prepare for war!

« Give me six hours to chop down a tree and I will spend the first four sharpening the axe »

- Abraham Lincoln



Our enemy: The American Kestrel

- Weighs between 90-140 grams
- Life expectancy of 16 yrs
- Found in open fields or sparsely wooded areas
- Does not build a nest
- The female lays 2 – 6 eggs
- Able to hover while targeting their prey and flies at low altitude near runways where the risk is highest for impacts

The territory

- 272,1 hectares
- Grass covered
- Buildings and hangars
- Close to a nature park

Statistics

YEAR	Number of strikes involving American Kestrel at YUL
2006	11
2007	14
2008	24

Primary objectives

- Reduce the impact index
- Save a species of Raptor

Inorder to reach our goal

- Study in collaboration with a researcher specializing in the American Kestrel
- A capture and relocation program
- Install bird spikes on all potential perches next to Runway and taxi ways
- Analysis of stomach contents of impacts and find ways to control its food source
- Look at insecticides being used, rate the effectiveness and look for alternatives
- Look into grass cutting heights and the type of vegetation
- Look for possible nesting sites in and around the airport

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Collaboration

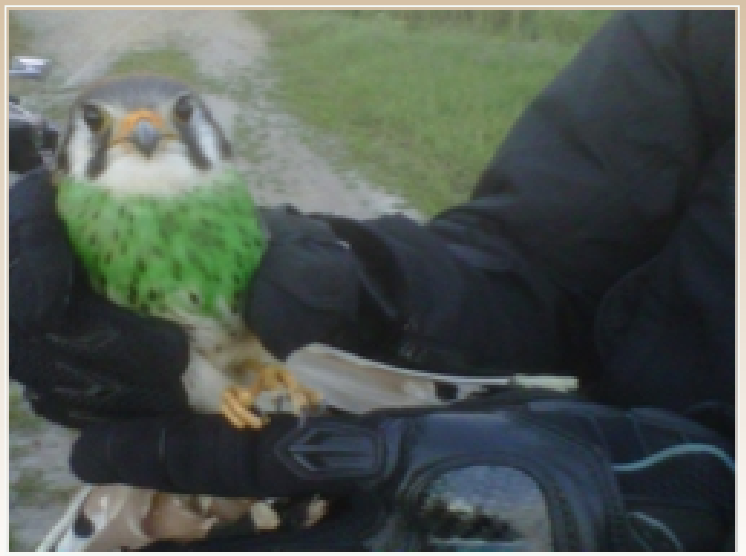
Collaboration on a study with a researcher specializing on the American Kestrel (Dr. Bird from McGill University)

- The area is ideal for the species
- Certain areas of the airport are more of a problem
- 2 critical times in the day(9am to 1pm & 4 – 8pm)
- Vaste majority of the stomach contents were insects

Enact a capture and relocation program

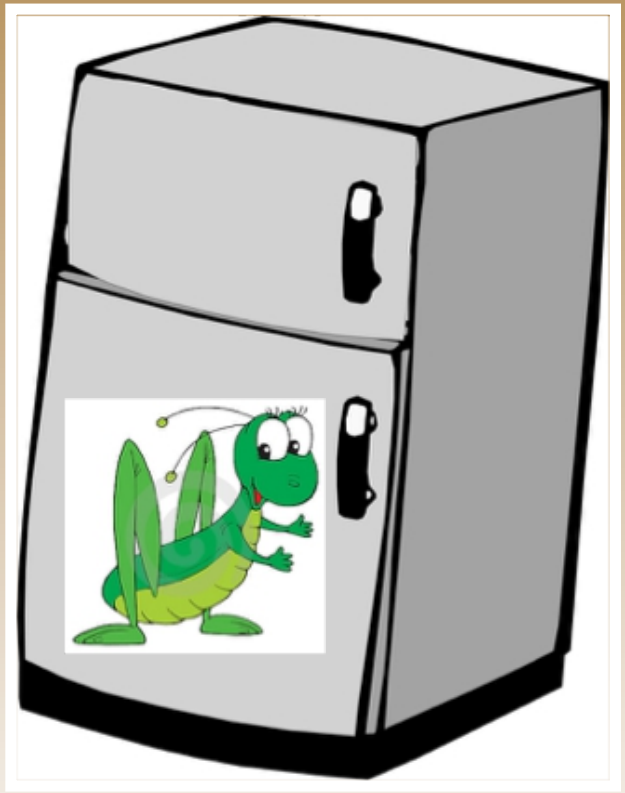
- Permit to band and mark
- Improved live capture traps
- Relocate approximately 100 kms form airport

Banding, marking and relocation



Installation of bird spikes

What's in the fridge!

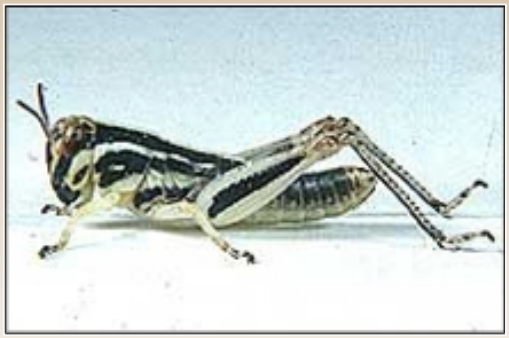


Results of stomach contents

Majority Grasshoppers and Crickets

Look into options to control specific insects

- The current insecticide used (Diazinon) was found to be in-effective for grasshoppers and crickets.
- Decis is effective and more environmentally friendly
- Decis must be applied during the larvae stage 2 -3 inorder to be effective
- We used the degree/days calculation to determine when to apply the insecticide



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Finding related to the test areas

- The population of grasshoppers were estimated using a sample collected in a measured square
- The collection process was repeated immediately after applying insecticide
- The area collection process was repeated again after one week

Degree-days calculation

Understanding the degree-days calculation is the key to success

- $\frac{(\text{max temp} + \text{min temp})}{2}$ - base temp= degree-days
- The insect needs a total of 438 degree-days to reach stage 3

Precautions when using Decis

- The agent is toxic for fish and water bound organisms as well as bees and certain useful insects
- Care must be taken to keep a buffer zone next to water sources.
- It is recommended to limit applications to 3 times/ yr and avoid use in the same field repetitively
- Apply when temperatures are less than 25 degrees Celsius or 78 Fahrenheit for maximum effect

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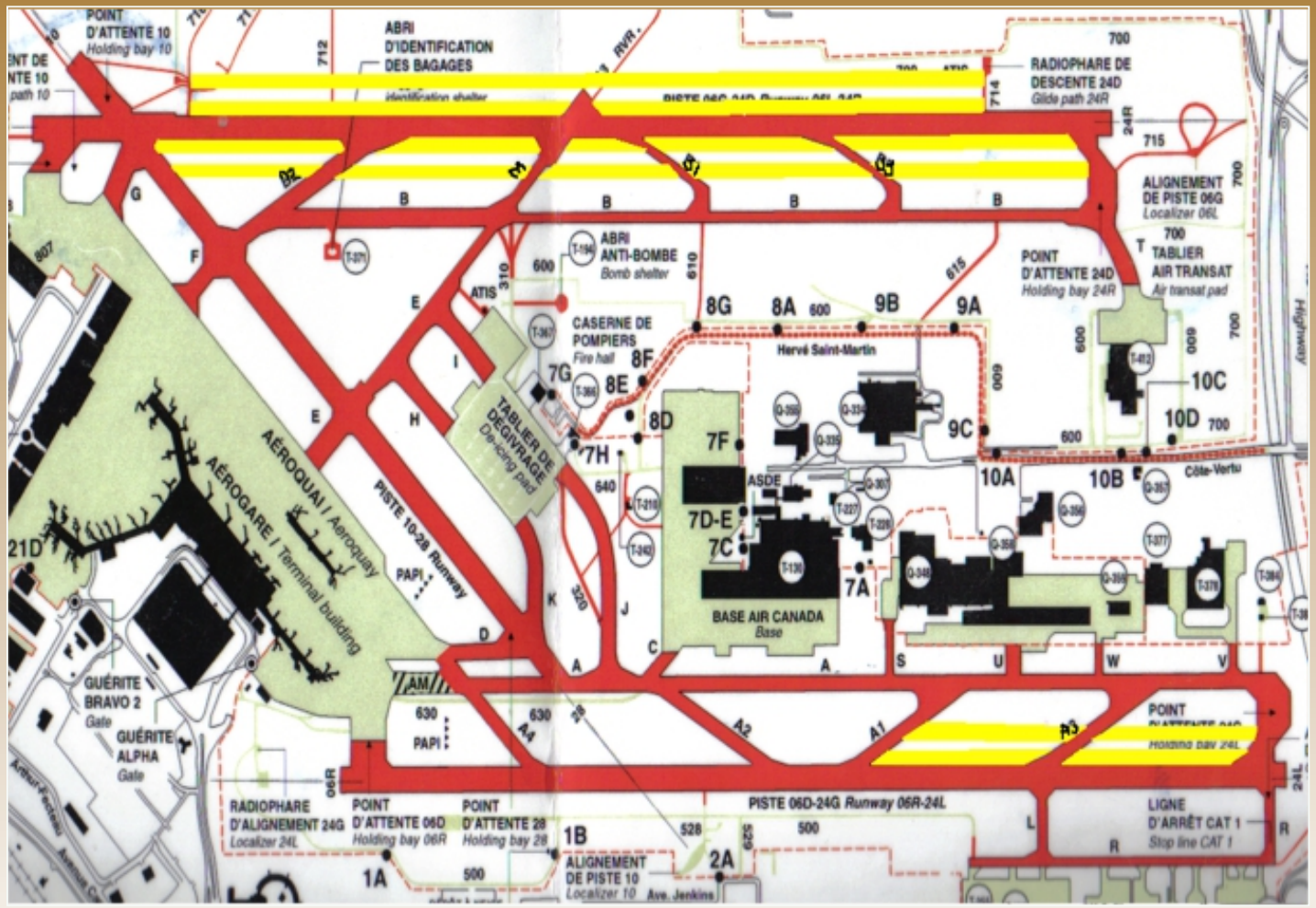
YUL Decis application plan



Grass cutting technique

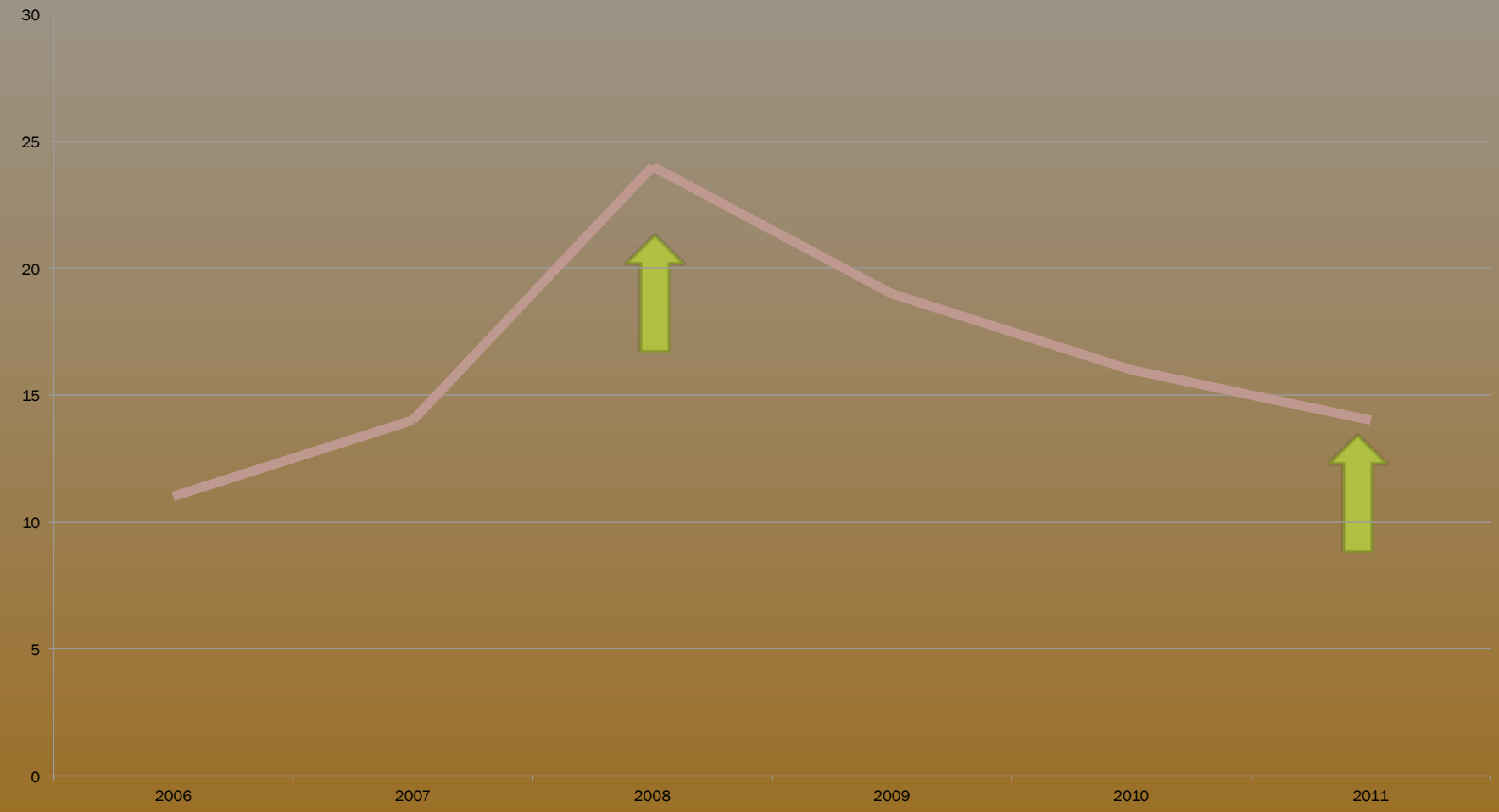
The addition of a new tractor resulted in shorter grass heights

Eliminate potential nesting sites

- Inspect buildings and hangars through out the airport
- Visit businesses around the outside perimeter of the airport

- Did we succeed in reducing impacts involving Kestrels?

Did we succeed in reducing impacts involving Kestrels?



Results

- We now know a lot more about the American Kestrel
- Changing pesticides and its application
- An effective capture and relocation program
- Making sure the grass height is optimum
- BONUS: these measures also reduced impacts for Gulls and sparrows!

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