(17) Managing bird strike risk through insect control: Two airport case studies

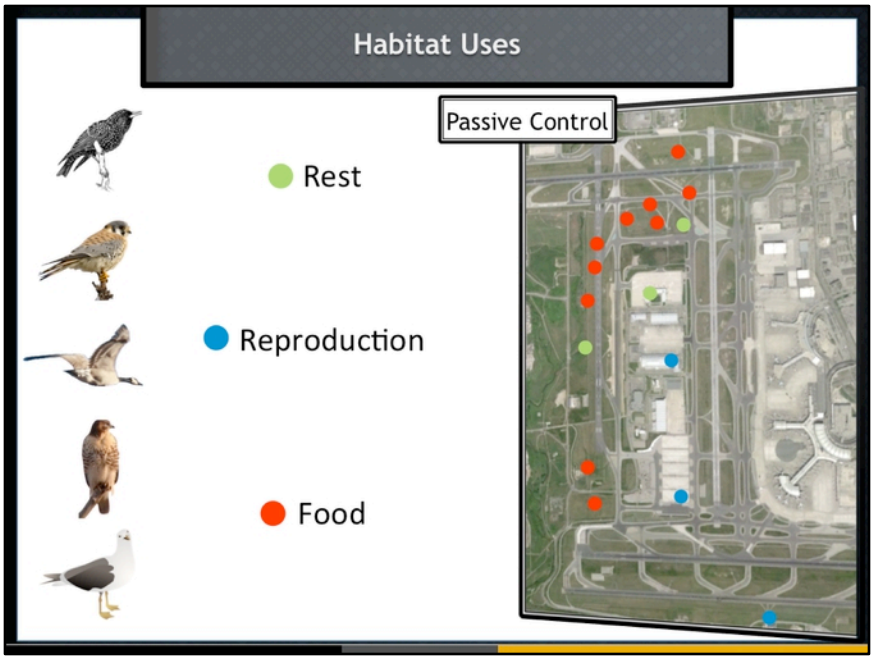
Maxime Allard, Pierre Molina and Luana Graham-Sauvé, Falcon Environmental Services, Saint-Lazare, Quebec, J7T 2Z7, Canada

Arthropods, like insects and spiders, with their great nutritional value, represent an indirect bird strike threat because they attract predatory species that are direct hazards, some being high-risk species for wildlife strikes (e.g., starlings, gulls, kestrels). In 2013 and 2014, FES conducted a study of arthropods at both Montreal Airport and Toronto Pearson Airport. Two distinct capture methods were used to sample different types of arthropods. This study had 3 goals: 1) to describe the arthropod community at the airport, 2) to identify which arthropods are eaten by birds and 3) to analyze the efficacy and applicability of pesticides to control arthropods on airfields. For the arthropod community study, over 20,000 specimens were collected. On both airports, the main groups found were Heteroptera (ex.: Cicadas), Hymenoptera (ex.: Wasp), Araneae (ex.: Spider), but Orthoptera (ex.: Grasshoppers), Coleoptera (ex.: Beetles) and Diptera (ex.: Flies) were found in significant numbers. Not all arthropod groups are problematic at the airport, and their abundance is not necessarily correlated to their attractiveness towards predators. The arthropods' attractiveness depends on several other factors like their size (quantity of food), their digestibility (quality), and if they are easy to catch (accessibility). European Starlings have been identified as a high-risk species for bird strikes in many North American airports. The second part of this study found that arthropods are an important food source for starlings. Indeed, out of the 78 starlings captured, 100 % had eaten arthropods, and this type of food represented 50 % of their stomach contents. The groups that were eaten the most during dispersion/flocking (birds) or dispersion and reproduction are: Hymenoptera (by 63 % of birds), Coleoptera (by 74 % of birds), Orthoptera (by 57% of birds) and Heteroptera (by 42 % of birds). Regarding Orthoptera, a total of 54 crickets and 16 grasshoppers were found in their gizzards. 25 birds captured during the dispersion period and autumn migration had eaten these insect groups. Orthoptera (i.e. crickets, grasshoppers) are often bigger and more visible than other arthropod species. They are known to attract larger predator species that present a high strike-risk with aircrafts. Therefore, special attention was given to orthopterans during the third part of the study. In 2013 and 2014, FES tested the effectiveness of the pesticides used to control orthopterans at Montreal Airport, an insect control method that has been implemented for at least the last decade. Sampling was done within a grass strip close to runways that was treated with pesticides and at similar locations, but without treatment (control). For both years, the treated sites had significantly lower orthopteran abundance than the control sites, and the repression effect seems to last more than 30 days. Pesticides seem to be an effective wildlife management tool that should not be neglected, however assessing the "insect" and predator relationship, as well as monitoring the attractant abundance must be considered to determine their cost/benefit.

Allard, M, P. Molina and L. Graham-Sauvé. 2015. Managing bird strike risk through insect control: Two airport case studies. Proceedings of the North American Birdstrike Conference 15. 21 pages.

Griillon = true criquet (grillidae)
Cricket= short-horned grasshoppers (caelifera)
Suterelle = Long-horned grasshooppers (bush crickets)

Airport having problems with wildlife and are using active methods to scare the birds away or get rid of.
Active tools help tu reduce the risk by restricting wildlife populations

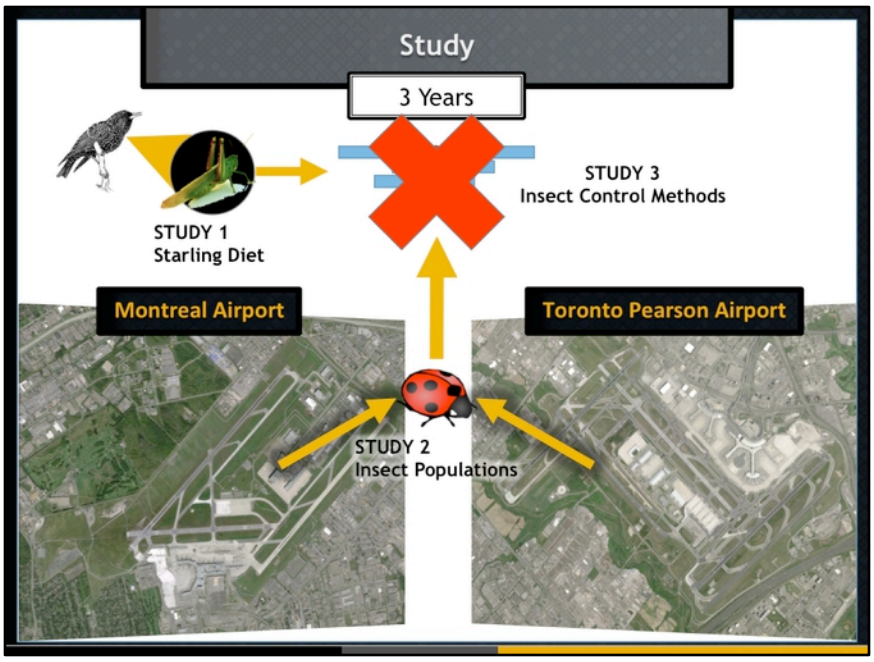


Rest
Hawk , bird spike

Reproduce
Ex swallows in/on buildings. Block access

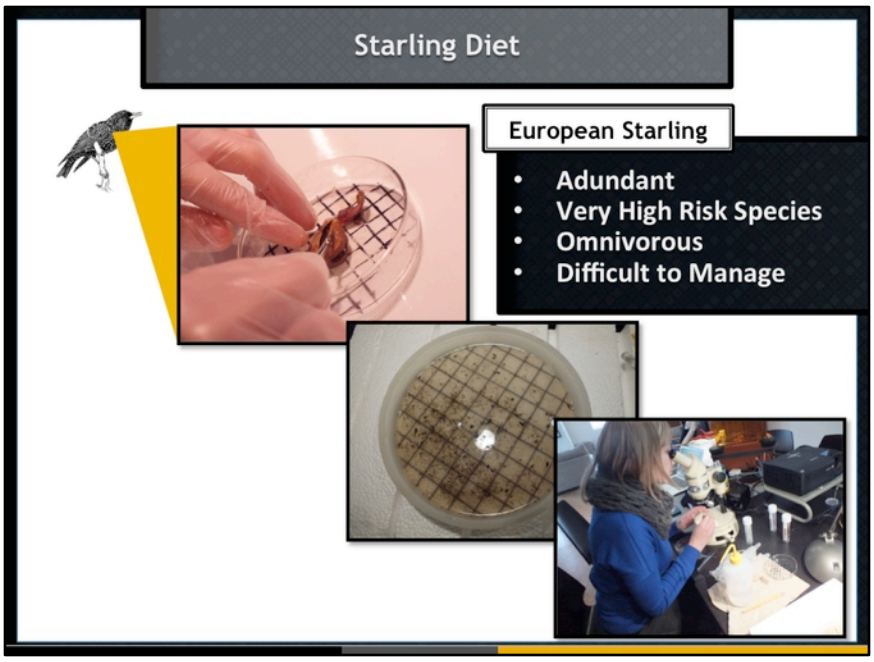
Food:
AirField -> Field-> many species adapted to live and feed in a field
Vegetation
Insects

If you remove food source, attractiveness of the site will become much lower.

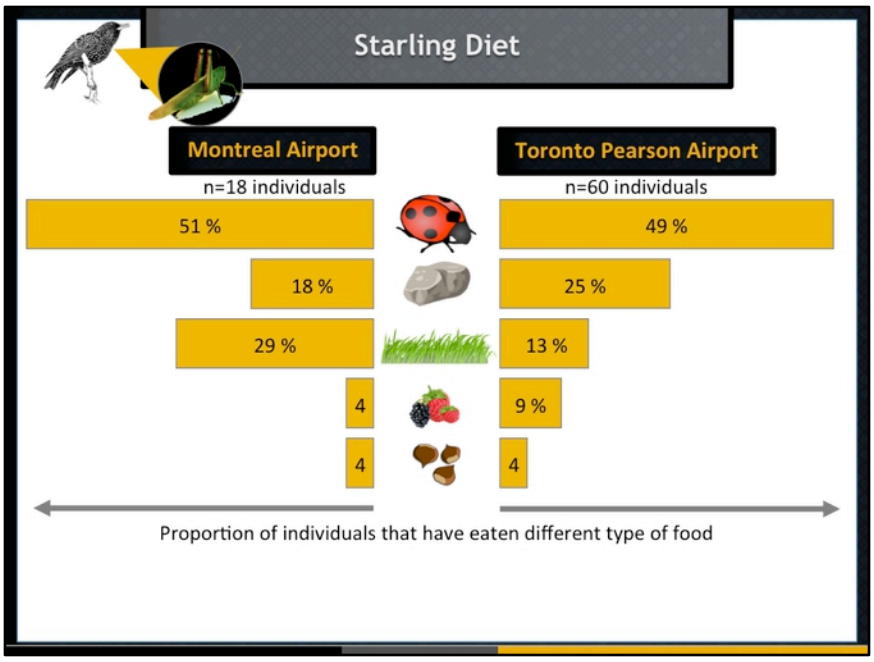


Starlings are a concern for two majors airports in Canada. Whe know where they rest, nest and feed… mostly. What do they eat?
3 years ago, FES started several sampling program and bioessay to understand the food availability on the airfield.

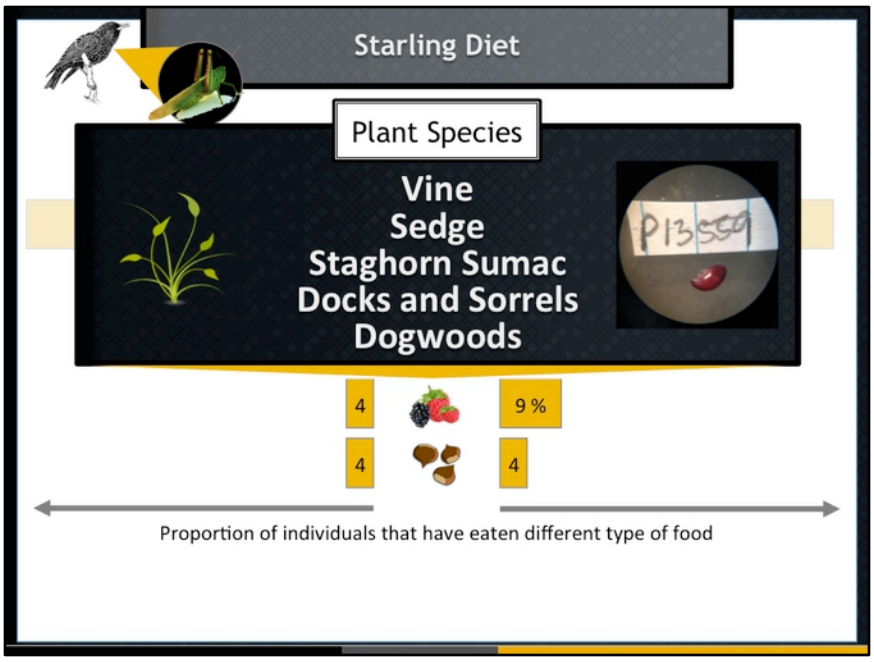
Résumé



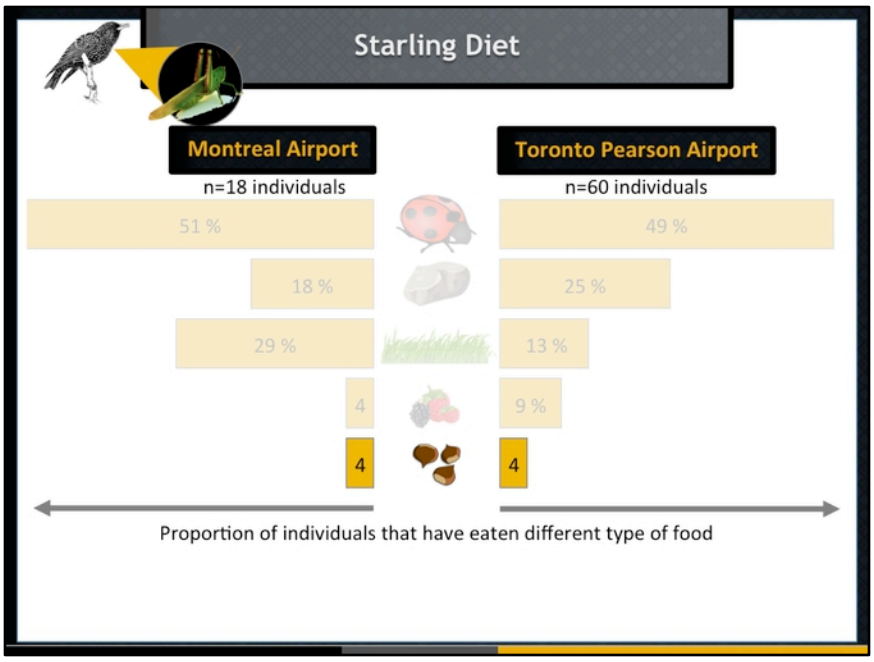
Capture Starlings to get their gut content extracted and identified

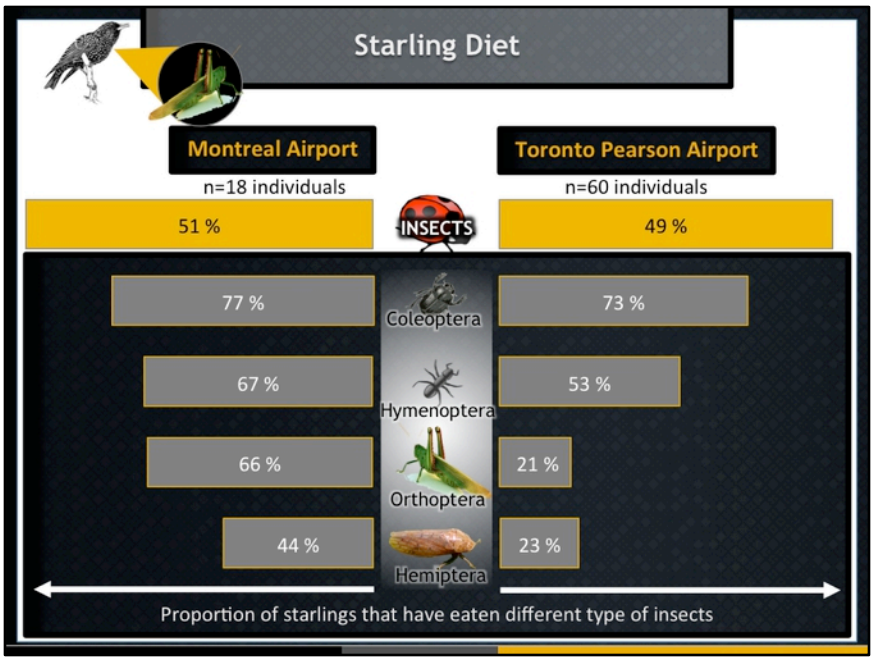


Captured all over the year
Mostly during reproduction/nesting and dispersion period (may to september)

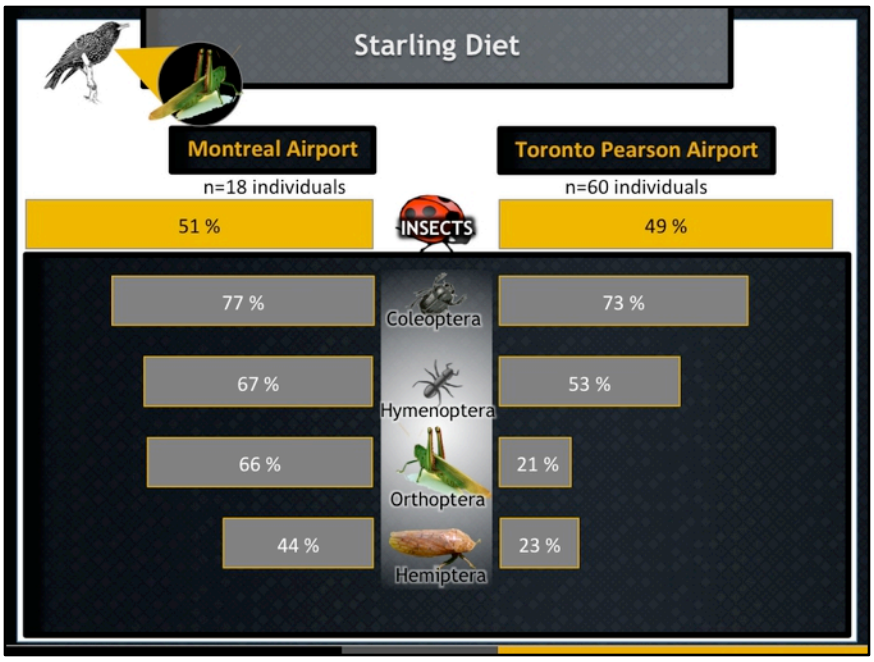


Identified major plant species eaten by starlings
We are mapping and investigating these plant species occurrence

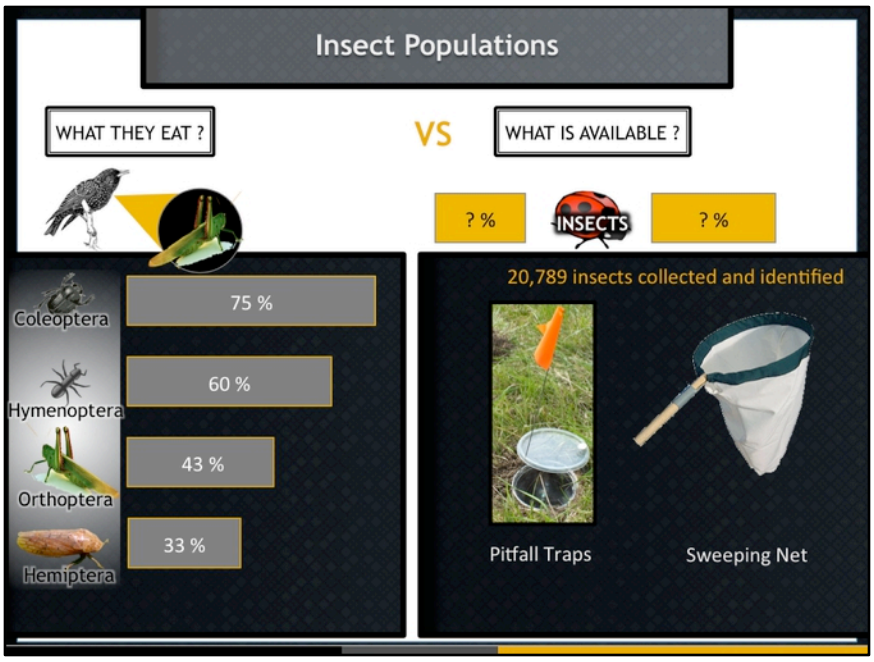

Starling Diet
Montreal Airport
n=18 individuals
Toronto Pearson Airport
n=60 individuals
51 %
49 %
18 %
25 %
29 %
13 %
4
9 %
4
4
Proportion of individuals that have eaten different type of food



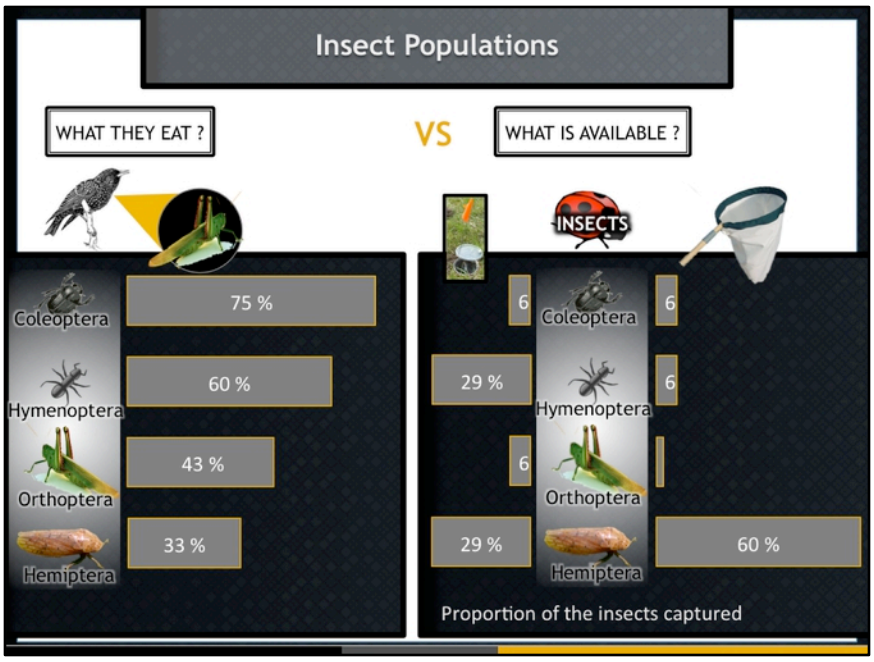
Leafhoppers,



Leafhoppers,

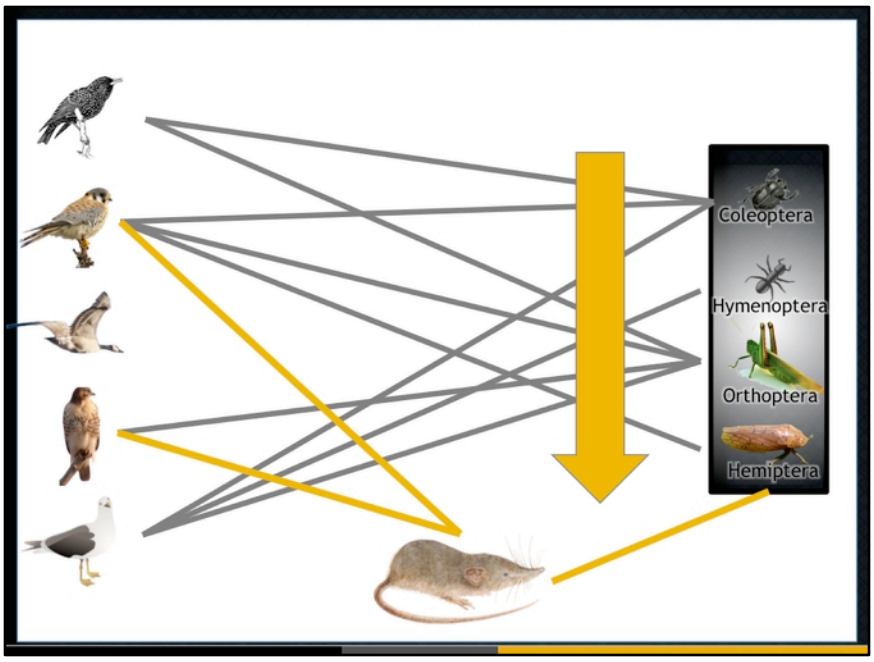


Leafhoppers,

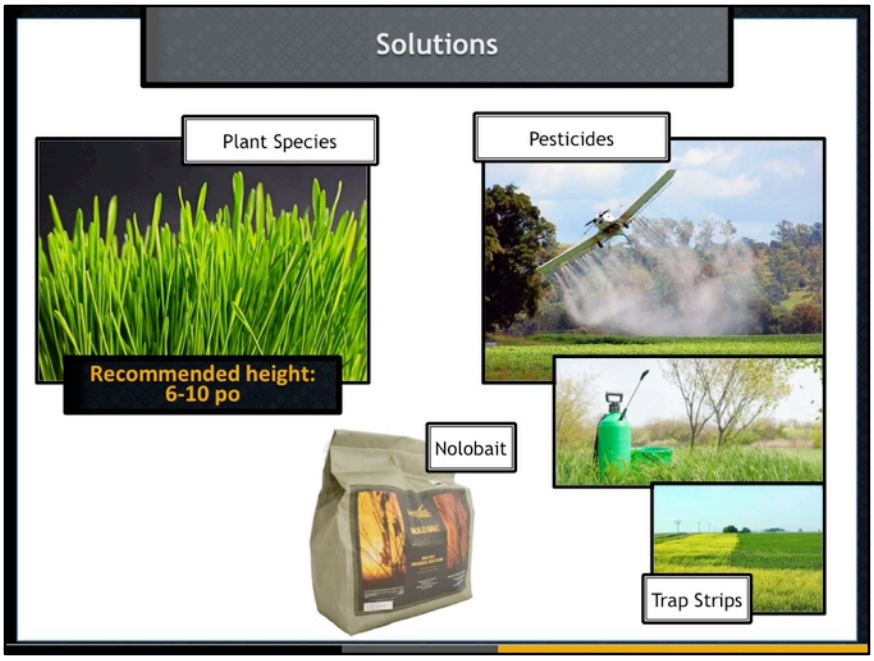


Pitfall trap to collect specimen close to the ground
Nyph, ground dwelling insects

Most of the insects captured in sweep net were Diptera, flies. Almost none in the starlings alimentation.



Réduire insecte, réduire starlings, et autres espèces. Manière directe ou indirecte (mamm)

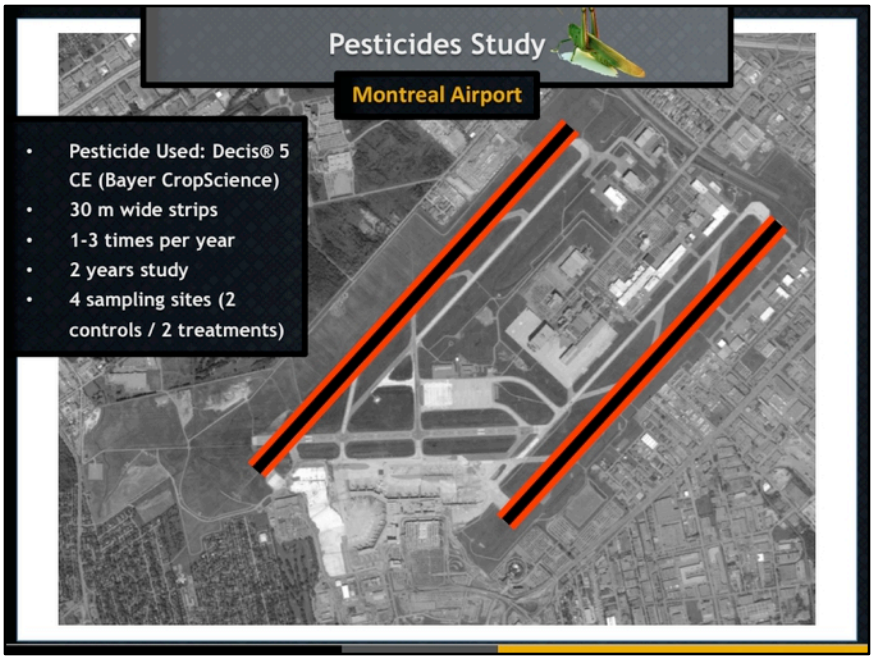


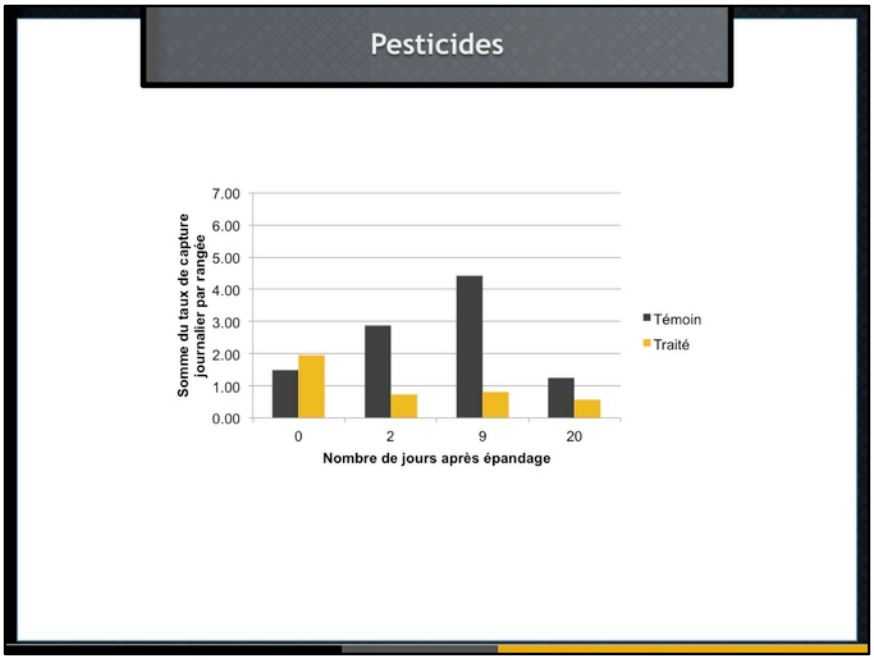
Concrete
Espèce végétale
Avanex, turf grass less attractive to birds and insects

Pesticide have been used intensively in crops and airfield. Srpay the whole airfield, just part of it, or using trap strip to reduce the amount of pesticides used.

Pesticide = affect many species.

Nolobait, natural insecticide based on fungi. Now available in Canada. 100$ / 25 acre (4 $/acre) 0.4 ha 65x65m (55$/ha) (Decis 2$/ha, 2x moins cher)

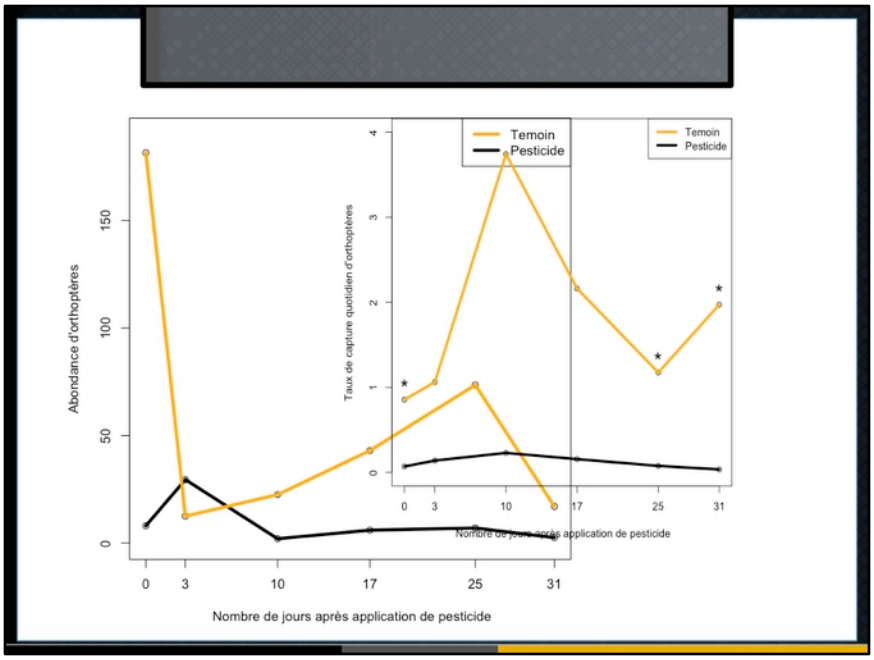

Pesticides Study
Montreal Airport
• Pesticide Used: Decis® 5 CE (Bayer CropScience)
• 30 m wide strips
• 1-3 times per year
• 2 years study
• 4 sampling sites (2 controls / 2 treatments)

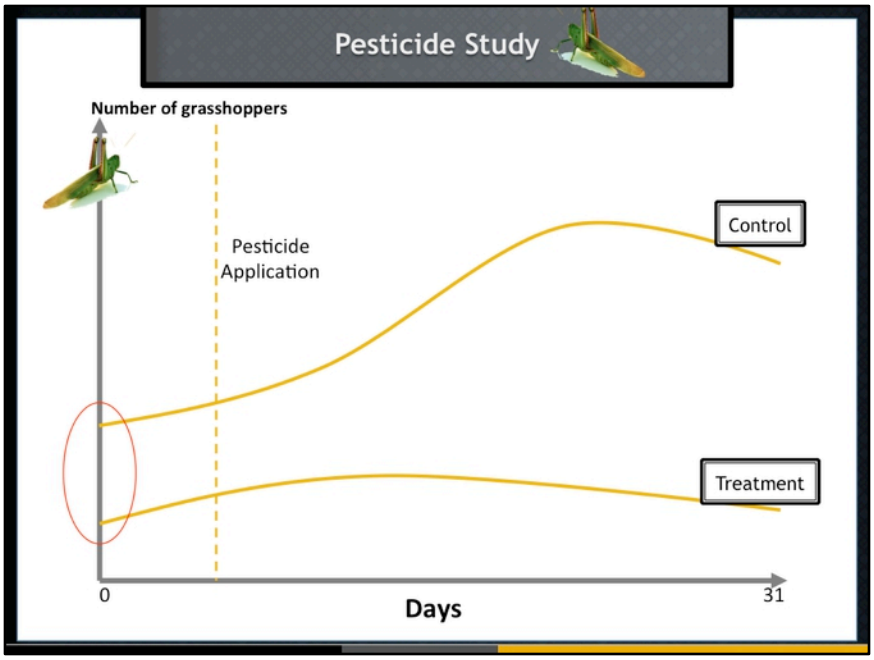


3 locations

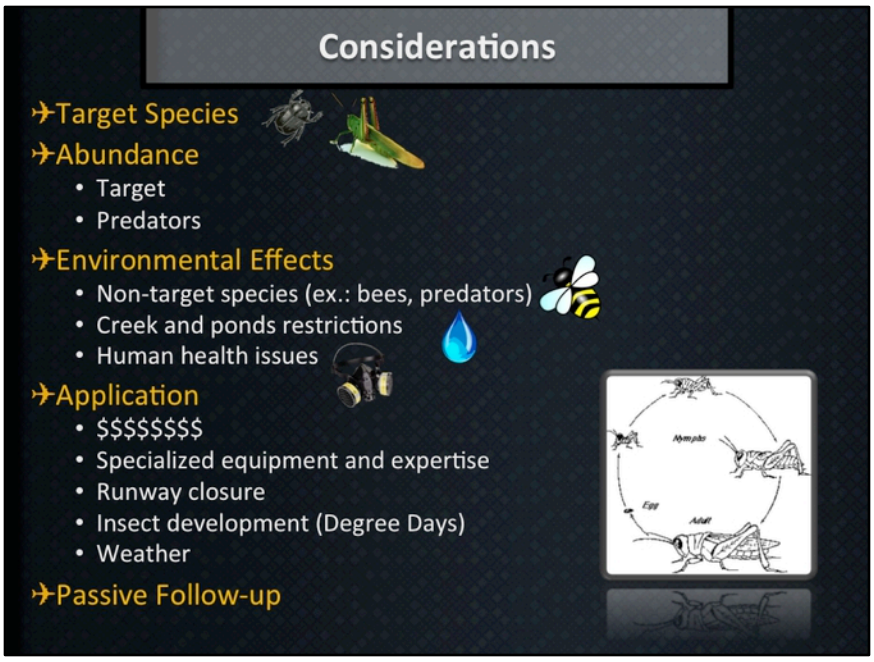
Effet clair, toutefois, effet long terme, diminue la quantité d'œufs produits, donc dans la majorité des cas, les populations de l'an prochain.

Difficultées

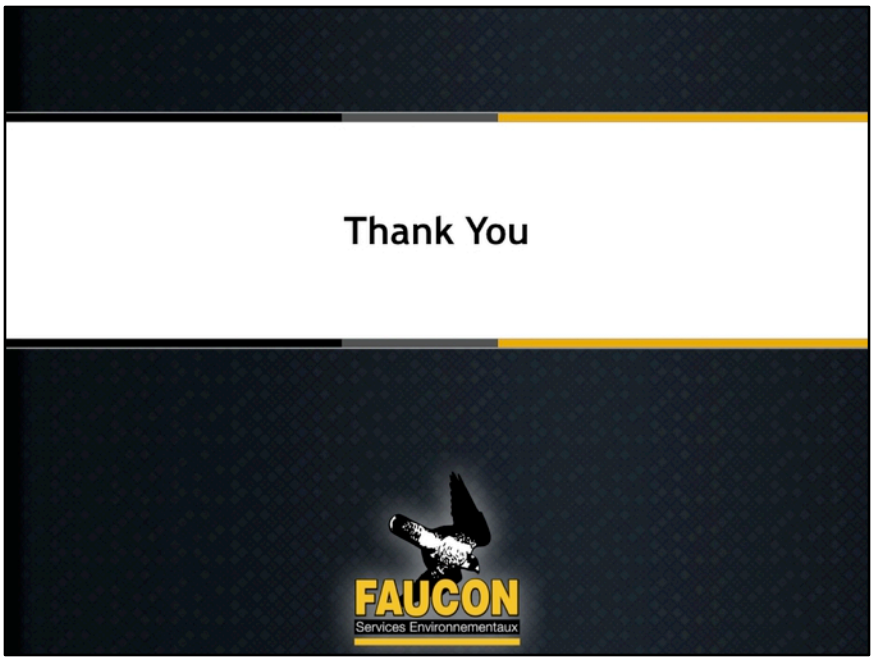

Abondance d'orthoptères
0
50
100
150
0
3
10
17
25
31
Nombre de jours après application de pesticide
Temoin
Pesticide
Taux de capture quotidien d'orthoptères
0
1
2
3
4
*
*
*
Temoin
Pesticide
0
3
10
17
25
31
Nombre de jours après application de pesticide



Effet à long terme



(pearson 2-5 fois moins que ADM)
Rebound effect
Different species=different development
Passsive follow-up



Griillon = true criquet (grillidae)
Cricket= short-horned grasshoppers (caelifera)
Suterelle = Long-horned grasshooppers (bush crickets)