FEATHER FORECAST: RISK ASSESSMENT FOR LAND PLANNERS

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Director Science, R&D and Innovation

FALCON

How are we getting involved?

- Developers
- Airports
- Cities

GOAL

Safety

...

Compliance

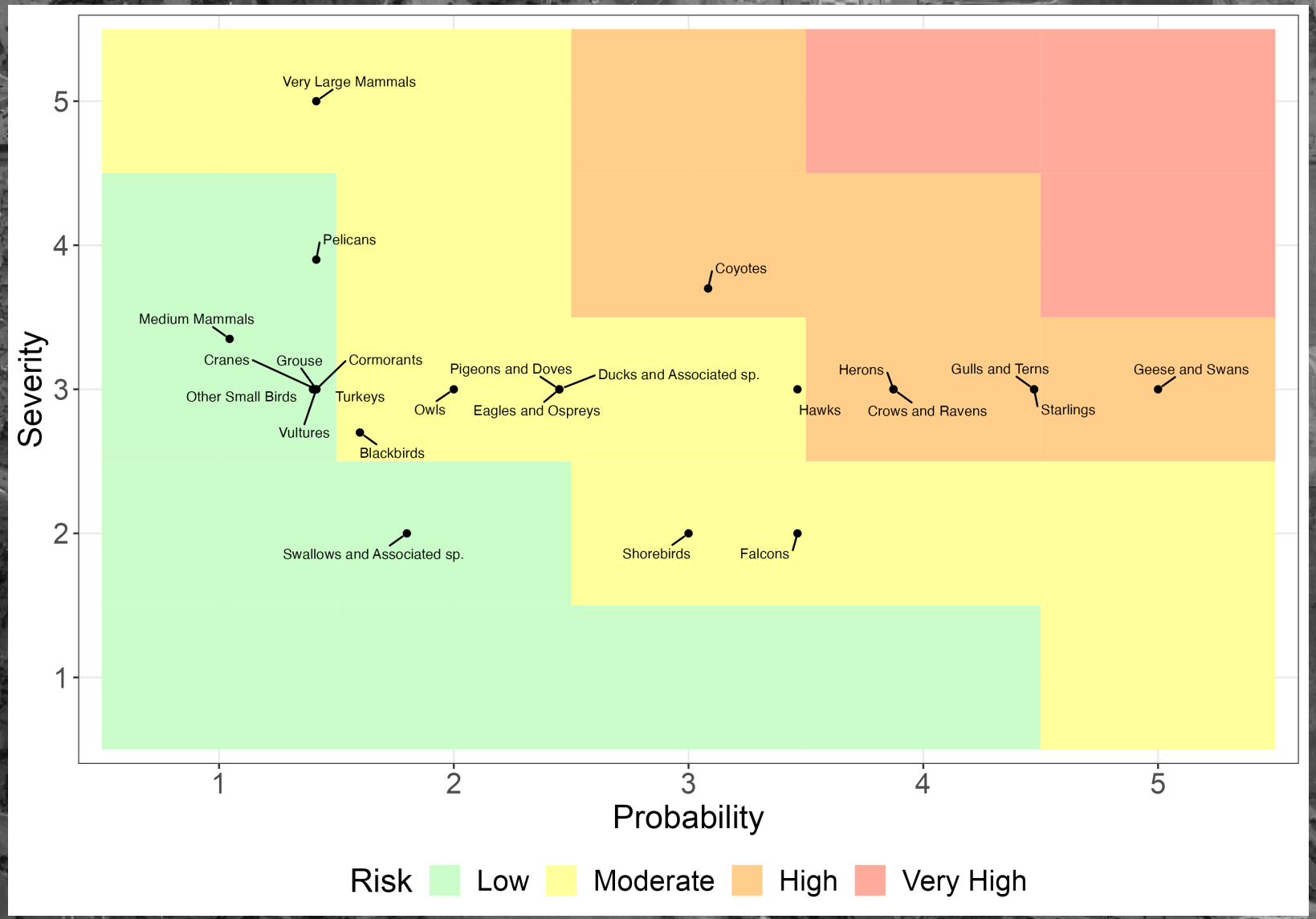
CASE STUDY #1

Langley Regional Airport

Langley Regional Airport, BC

City Operated Airport
85,000 movements / yr

Langley Risk Assessment

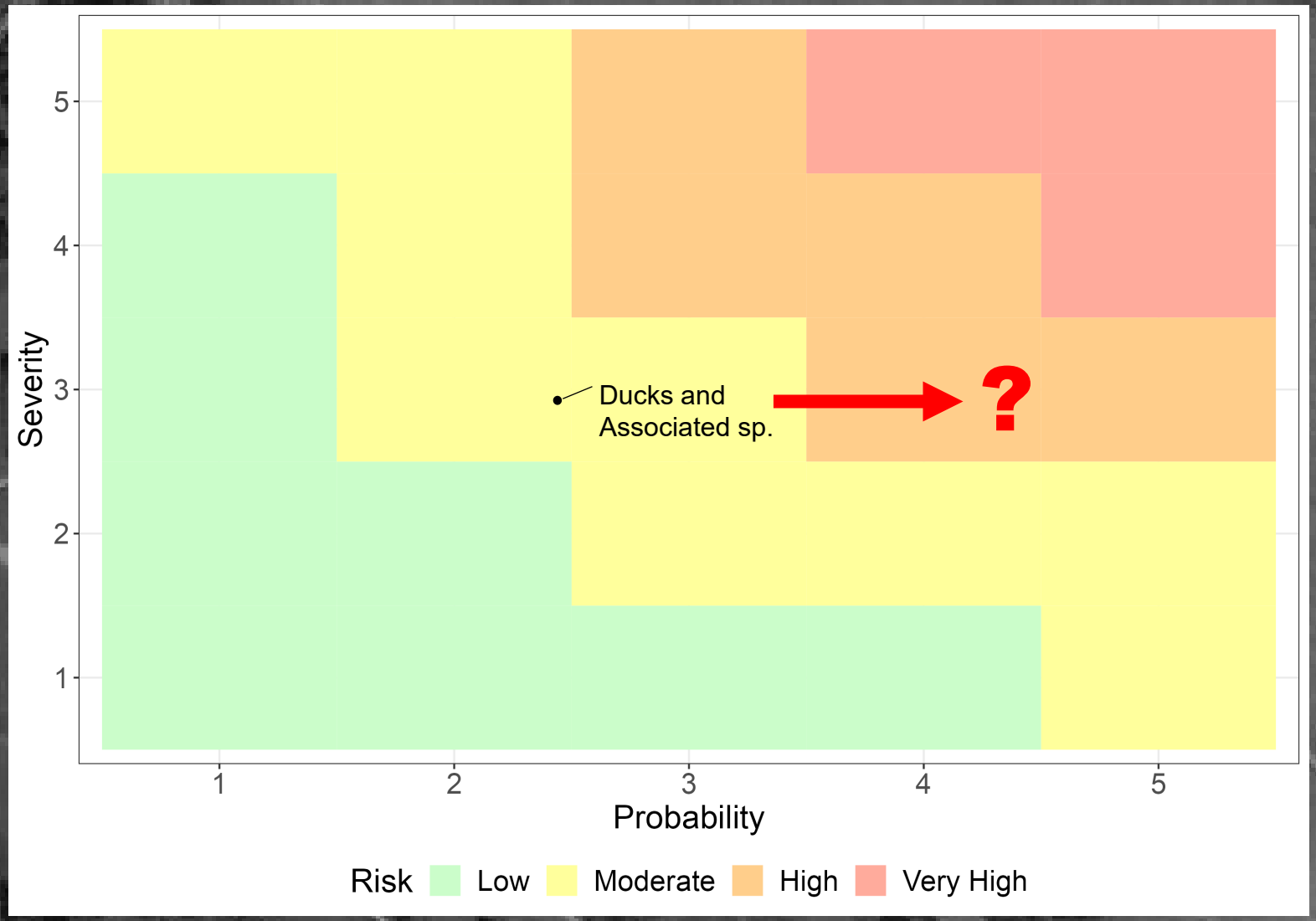


Langley Regional Airport, BC

Projected Stormwater Pond

Langley Regional Airport, BC

Projected Stormwater Pond

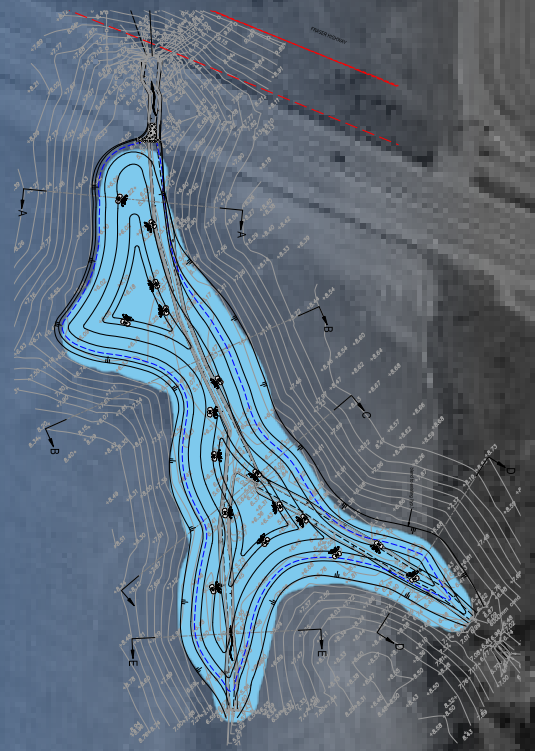


Process

1. **Gathering project information**
   - Deadlines
   - Goal
   - Plans and maps
   - Current habitat characteristics and wildlife use
   - Post-implementation maintenance
   - Planned wildlife mitigation
   - Regulations

2. **Risk assessment**

3. **Mitigation measures**



Type of risk assessments

Qualitative

- Short-term
- Require on-site knowledge and experience
  - Species biology
  - Regional behaviour
- Often require support from official documentation
- Best used when site has little or no data available

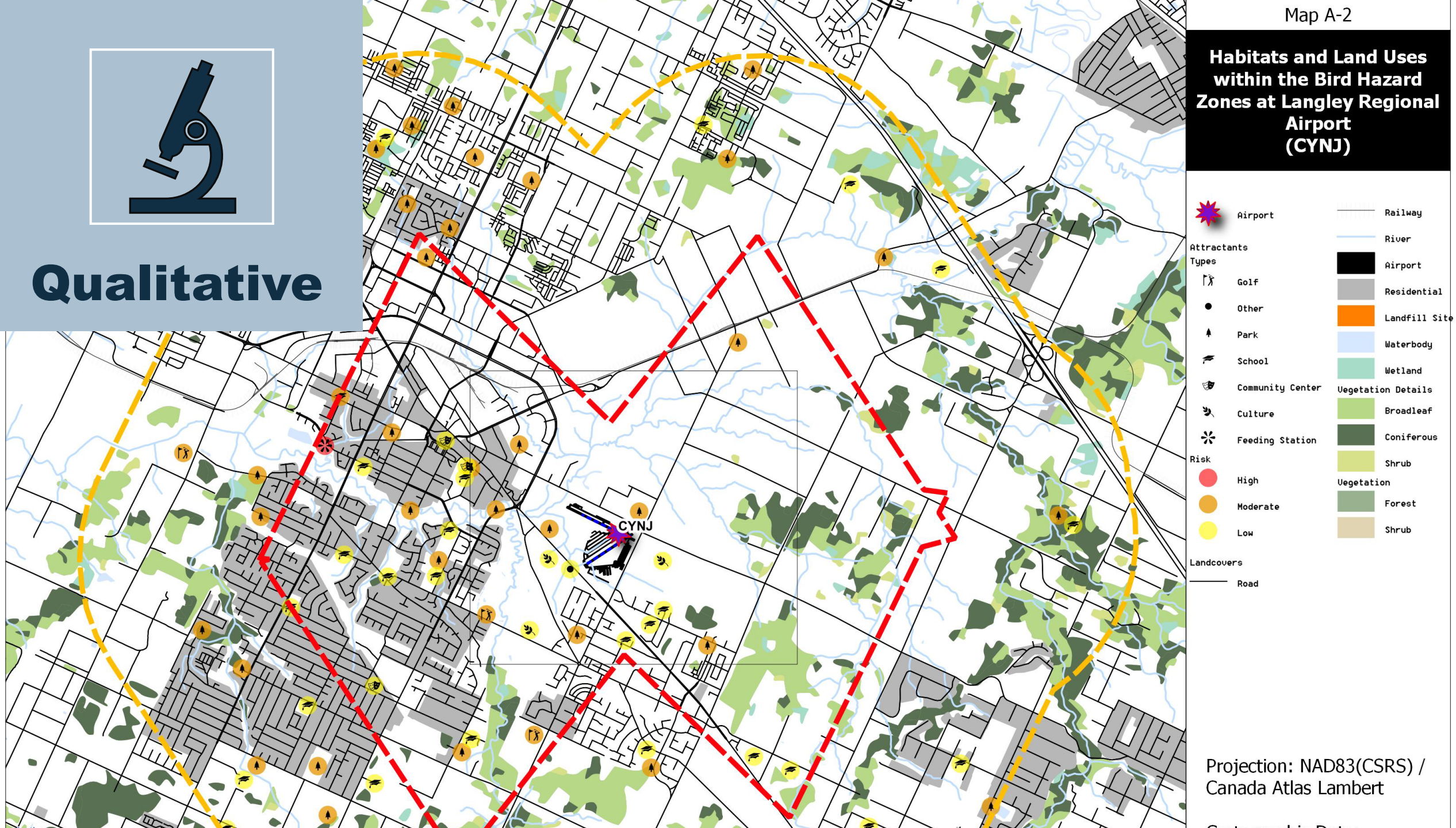
Level of Risk		Land-Use Acceptability by Zone		
		Primary	Secondary	Special
Potentially High	Wildlife Refuge	NO	NO	NO
	Waterfowl Feeding Stations	NO	NO	NO
Potentially Moderate	Municipal Parks	NO	NO	YES
	Picnic Areas	NO	NO	YES
	Sewage Lagoons	NO	NO	YES
	Marshes, Swamps & Mudflats	NO	YES	YES
Potentially Low	Stormwater Management Ponds	NO	YES	YES

Transports Canada Transport Canada

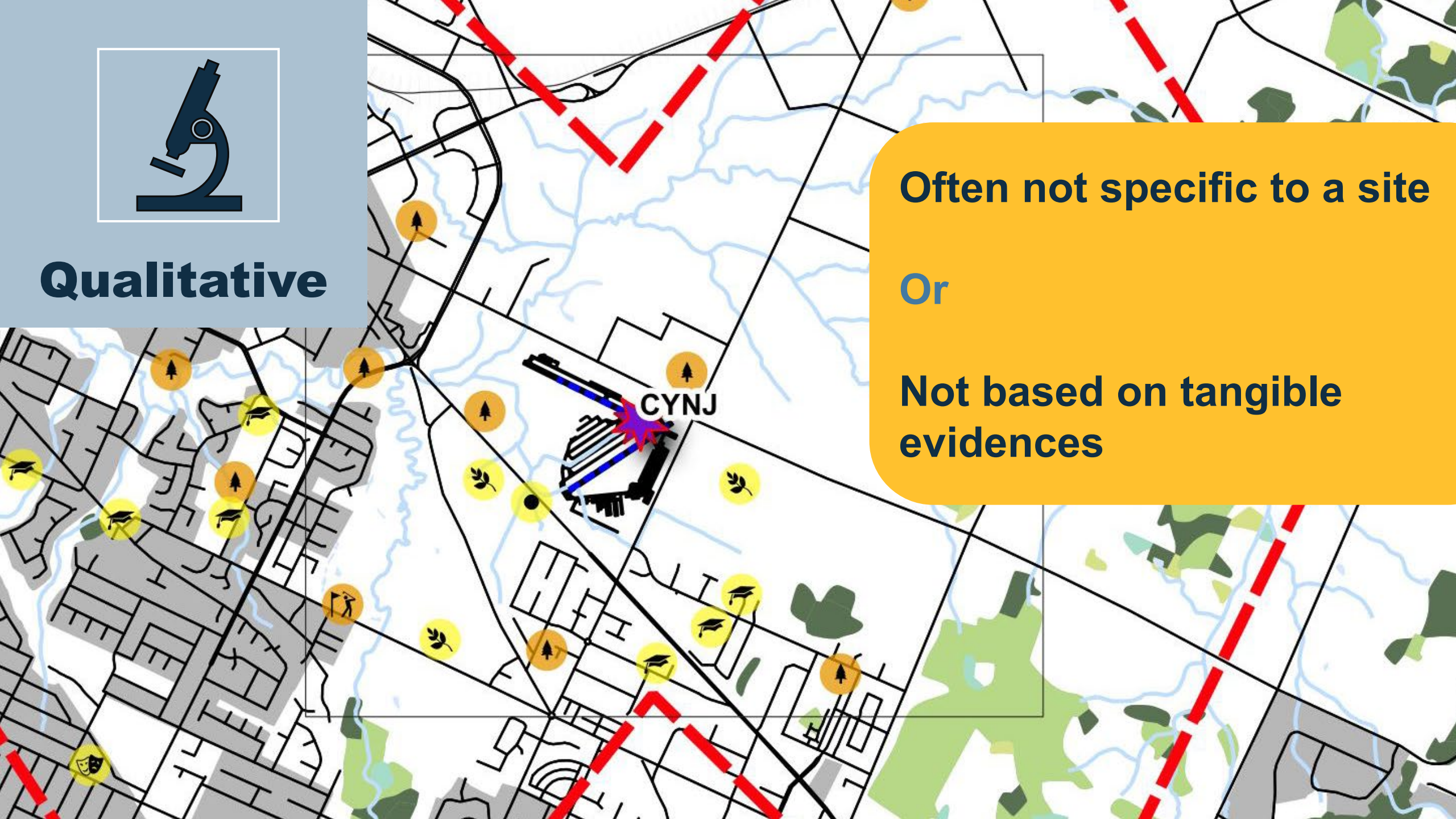
Qualitative

Map A-2

Habitats and Land Uses within the Bird Hazard Zones at Langley Regional Airport (CYNJ)



Projection: NAD83(CSRS) / Canada Atlas Lambert



Qualitative

Often not specific to a site

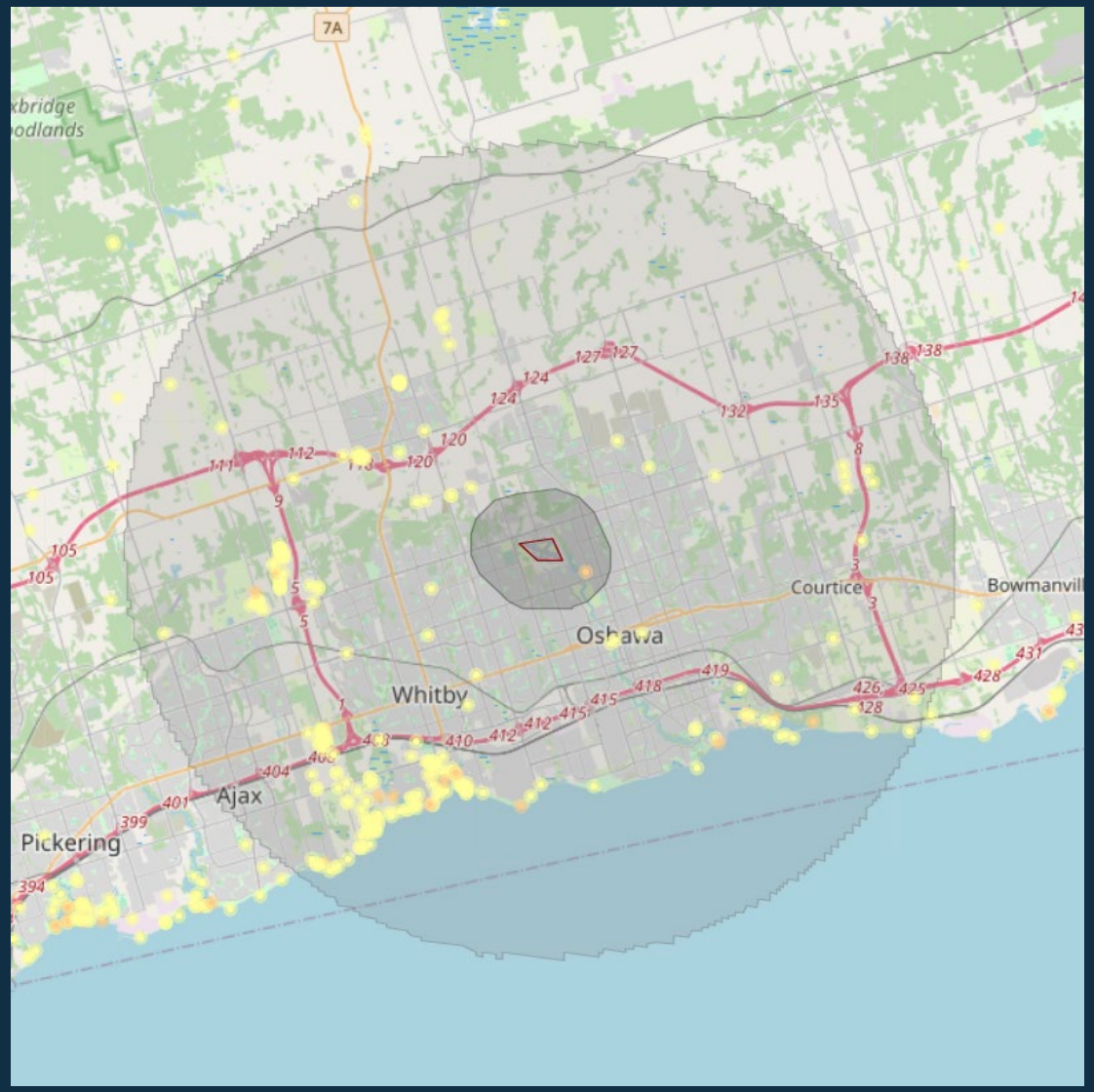
Or

Not based on tangible evidences

Type of risk assessments

Qualitative

Type of risk assessments



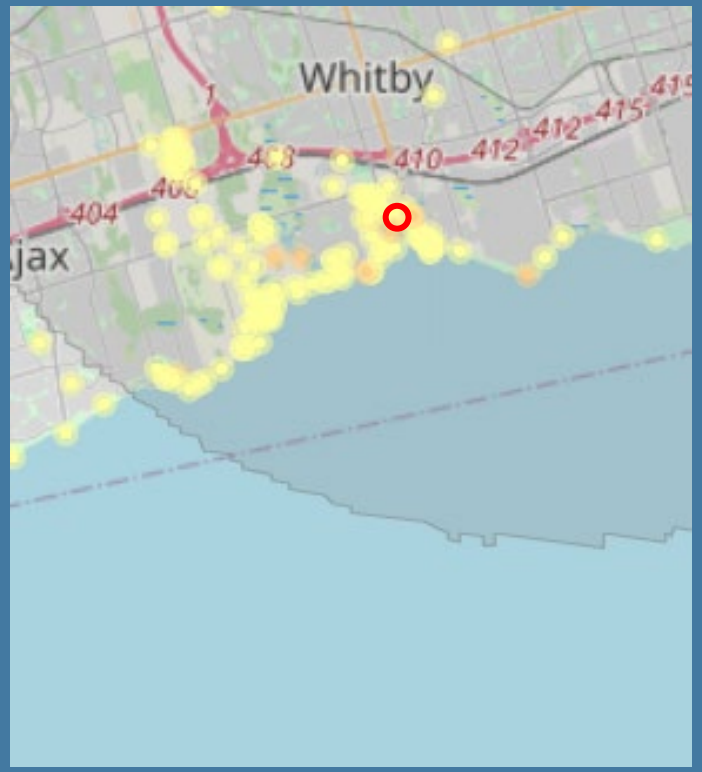
Quantitative

- Short to long term
- Requires data
- Stronger argument

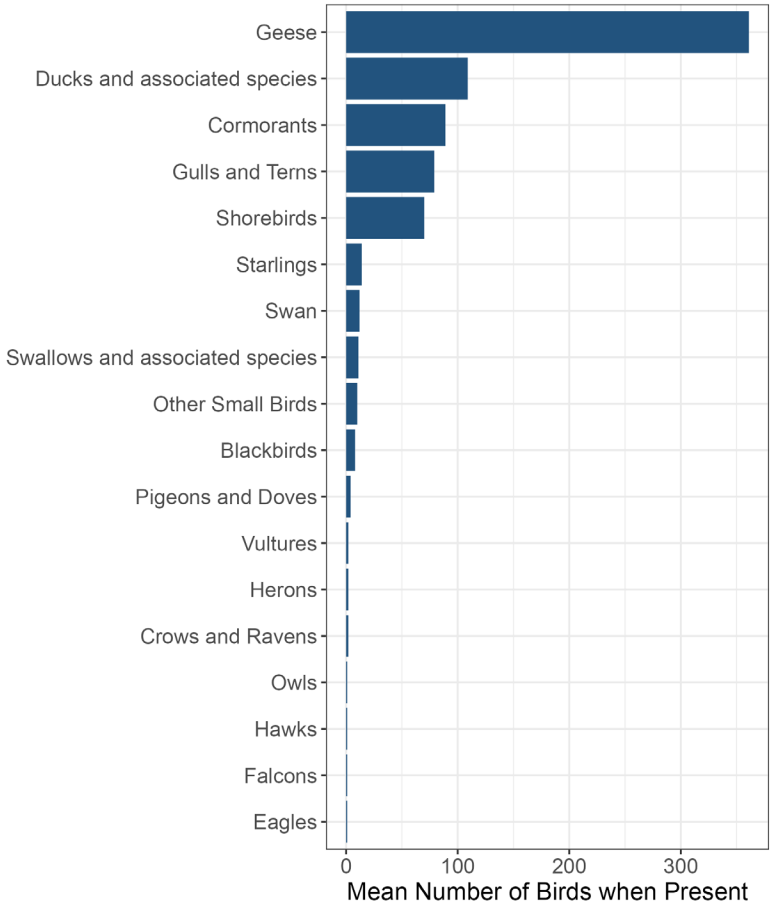
Databases OR **Field Surveys**

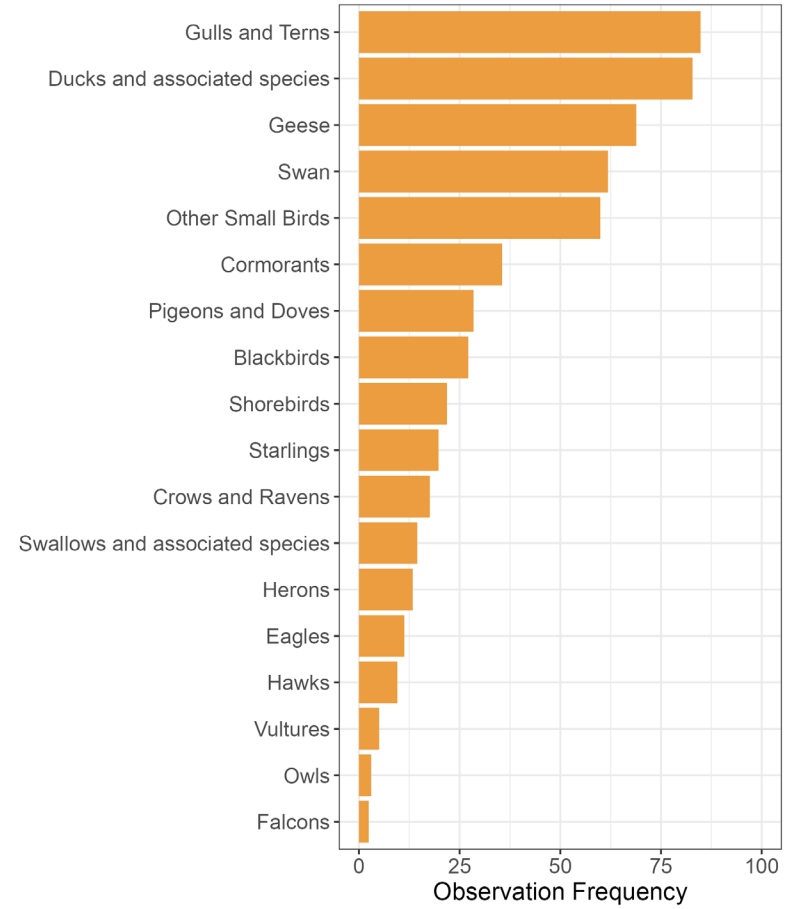
eBird

Type of risk assessments - Quantitative



Whitby--Harbour; n=1153

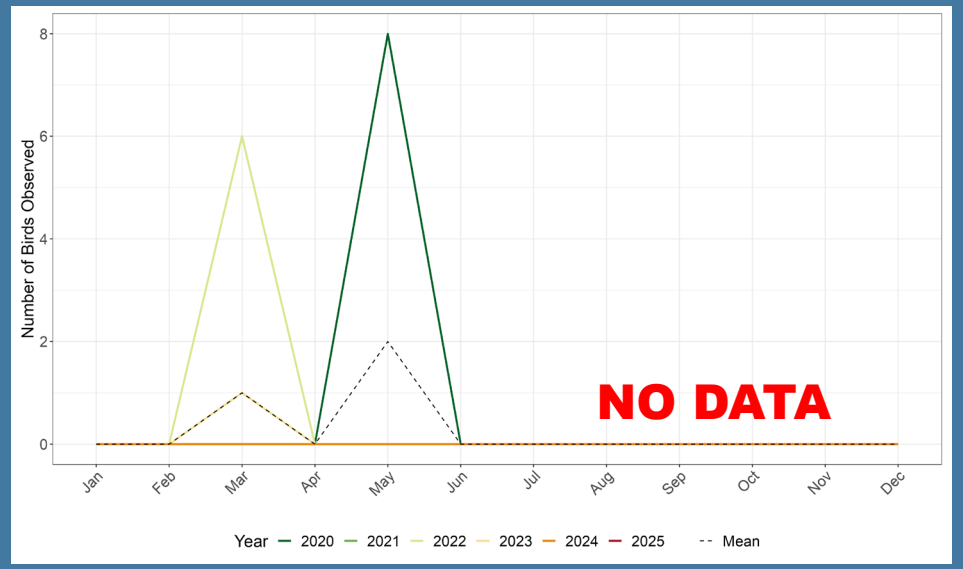




Type of risk assessments - Quantitative

Databases

- Not enough temporal data
- Not enough sites
- Reliability



Field Survey

- Time Period(s)
- Replicates
- Cost
- Takes time
- Skills

Process

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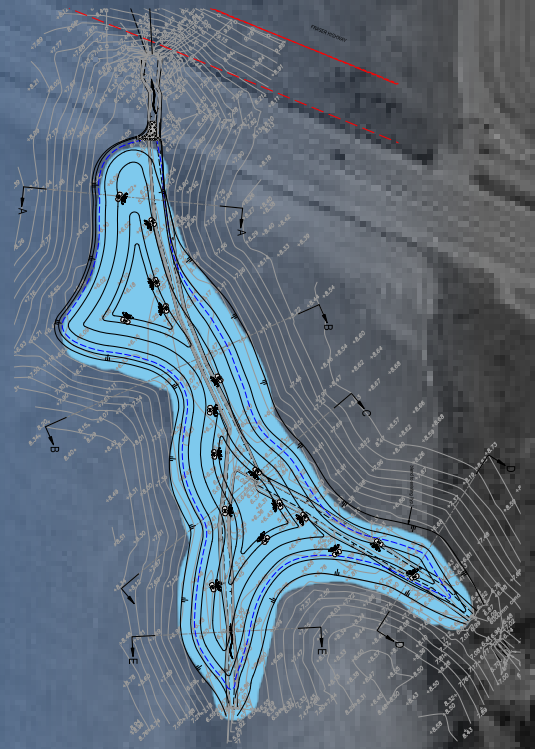


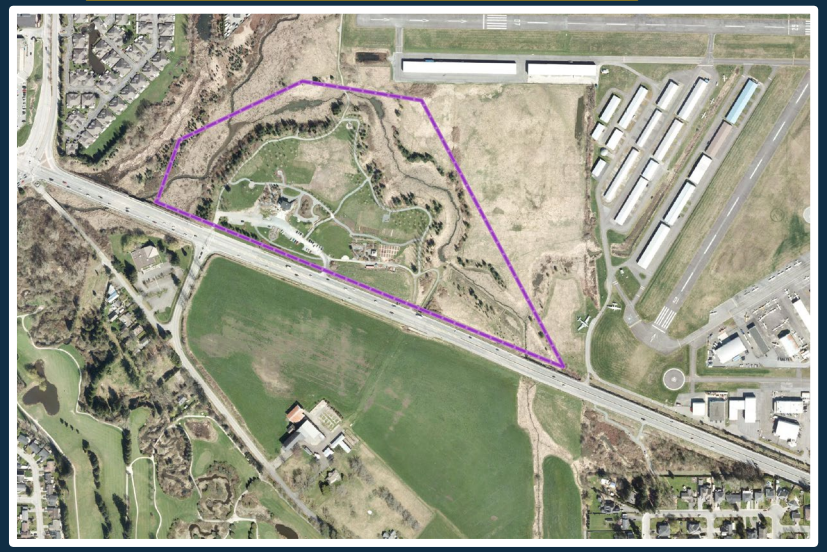
Langley Projected Stormwater Pond

Risk Assessment Steps

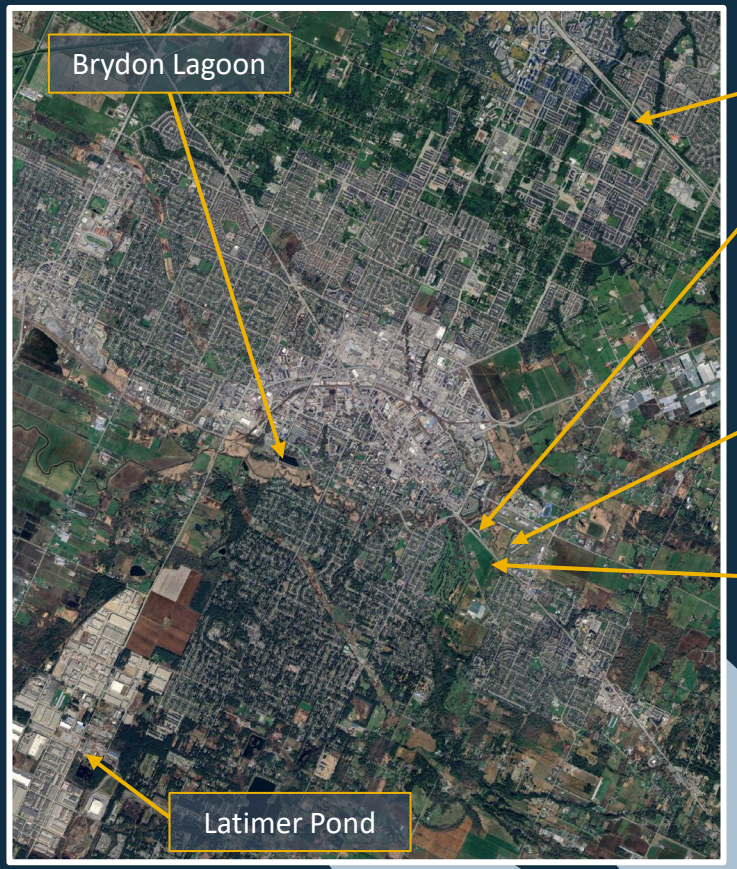
- Comparison
  - Find similar sites
  - Gather data
- Risk assessment
  - Determine current risks and type of habitat
  - Extrapolate birds’ occurrence
  - Extrapolate birds' movements
  - Compute the risk

Comparison - SIMILAR SITES

Derek Doubleday Arboretum



Brydon Lagoon

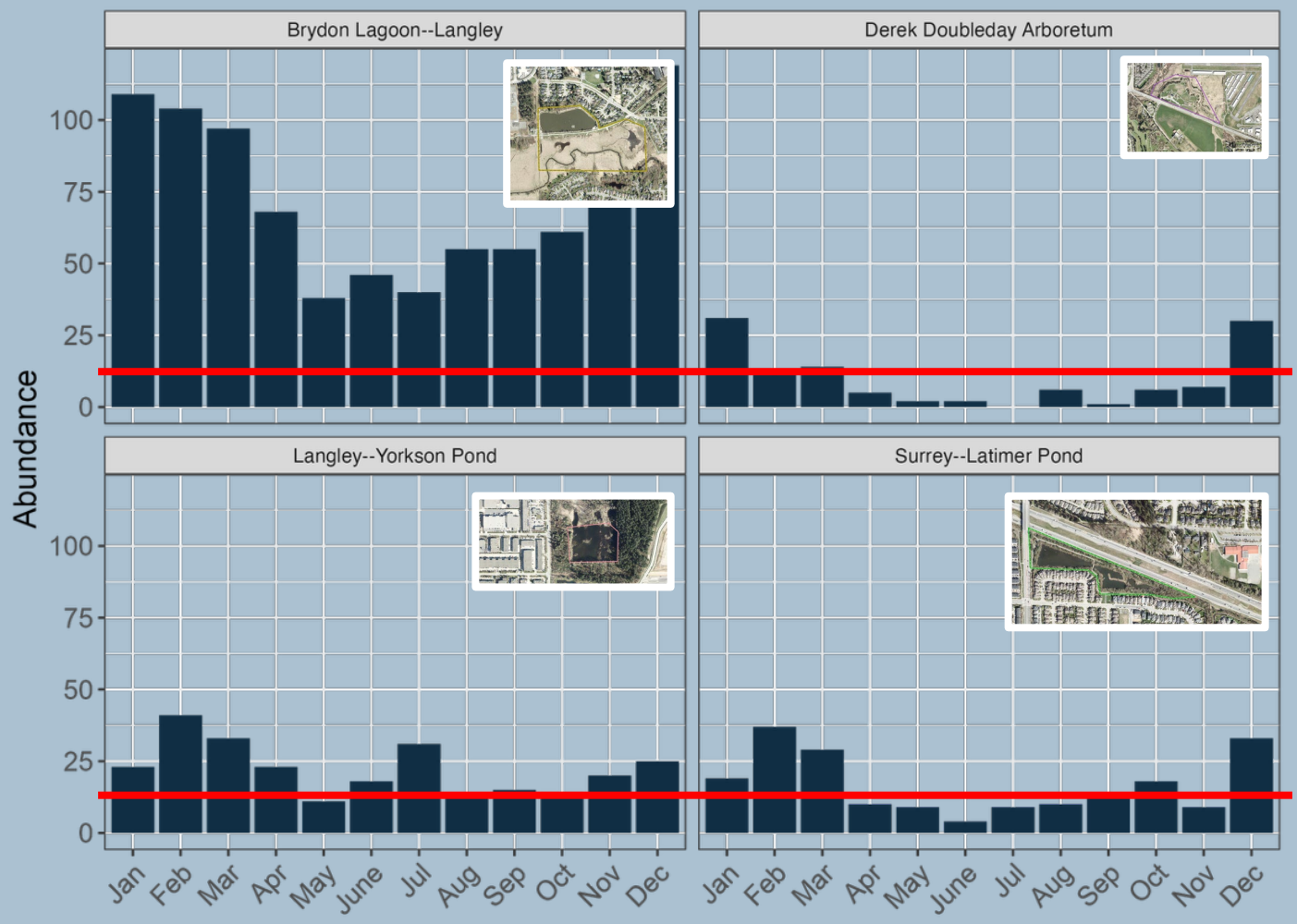


Yorkson Pond

Latimer Pond

Comparison - SIMILAR SITES

Duck Occurrence



12 INDIVIDUAL THRESHOLD

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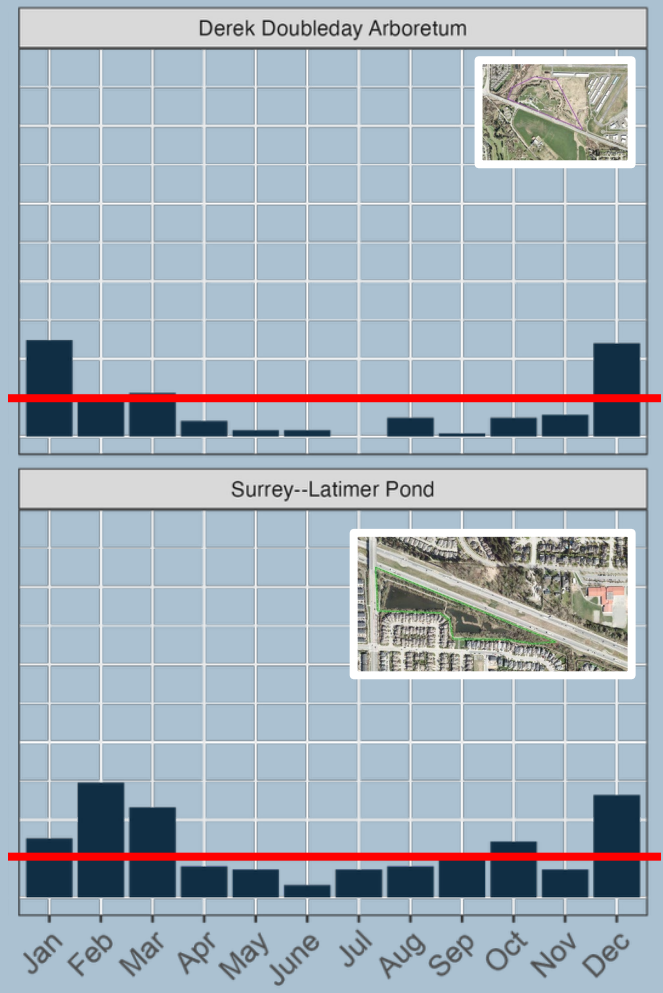
Comparison - SIMILAR SITES

Duck Occurrence

16%

ANNUAL OCCURRENCE FREQUENCY above threshold

36%



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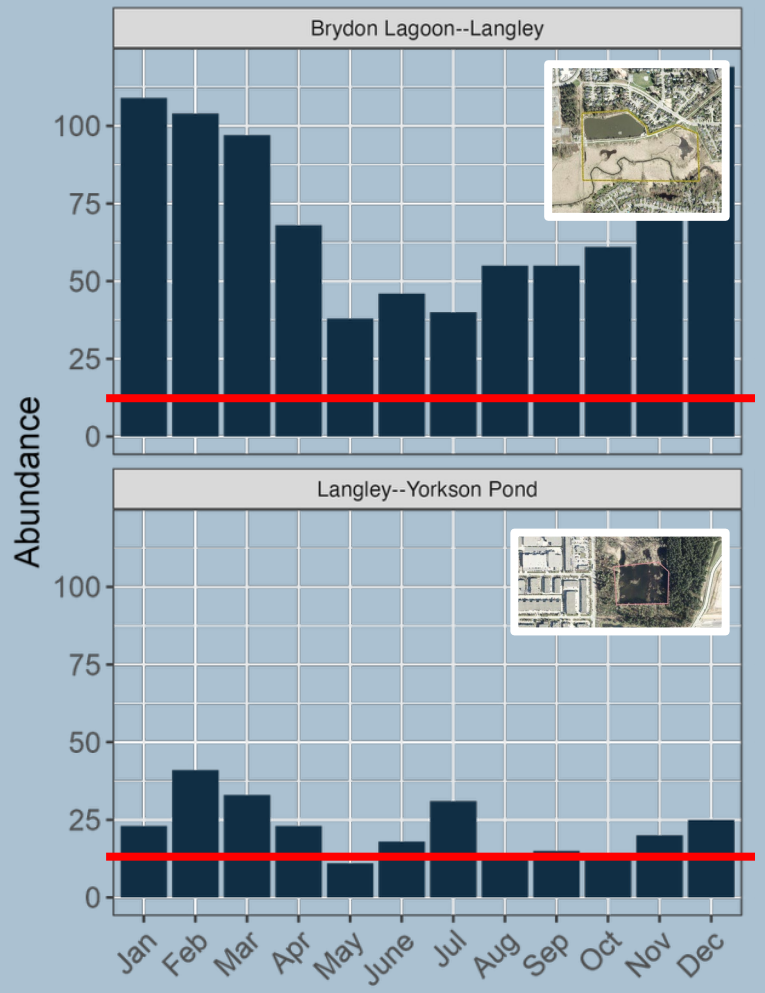


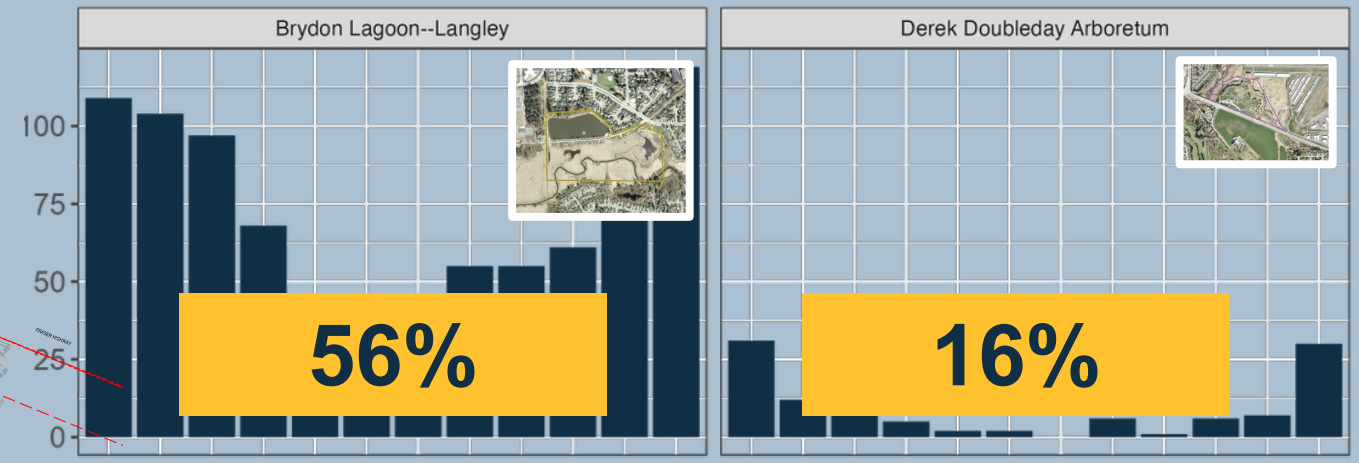
56%

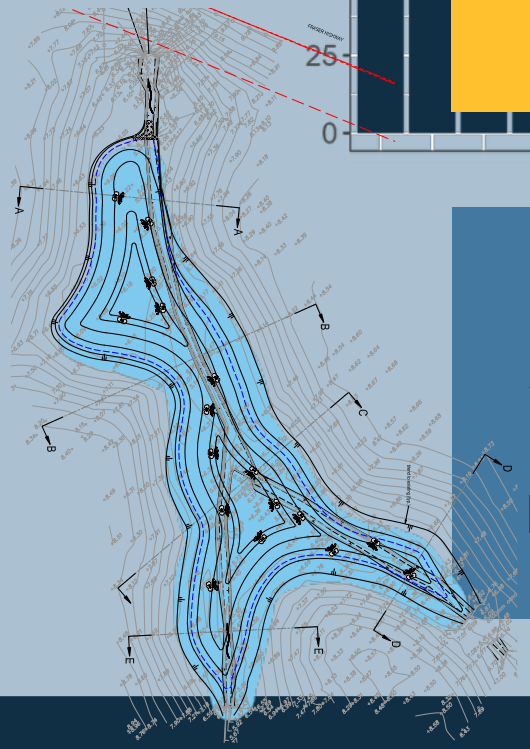
ANNUAL OCCURRENCE FREQUENCY
above threshold

65%

Comparison - SIMILAR SITES

Duck Occurrence





AFTER
Habitat similar to the projected pond

BEFORE
Similar to the actual habitat

Risk Assessment Steps

- **Comparison**
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  - Gather data
- **Risk assessment**
  - Determine current risks and type of habitat
  - Extrapolate birds’ occurrence
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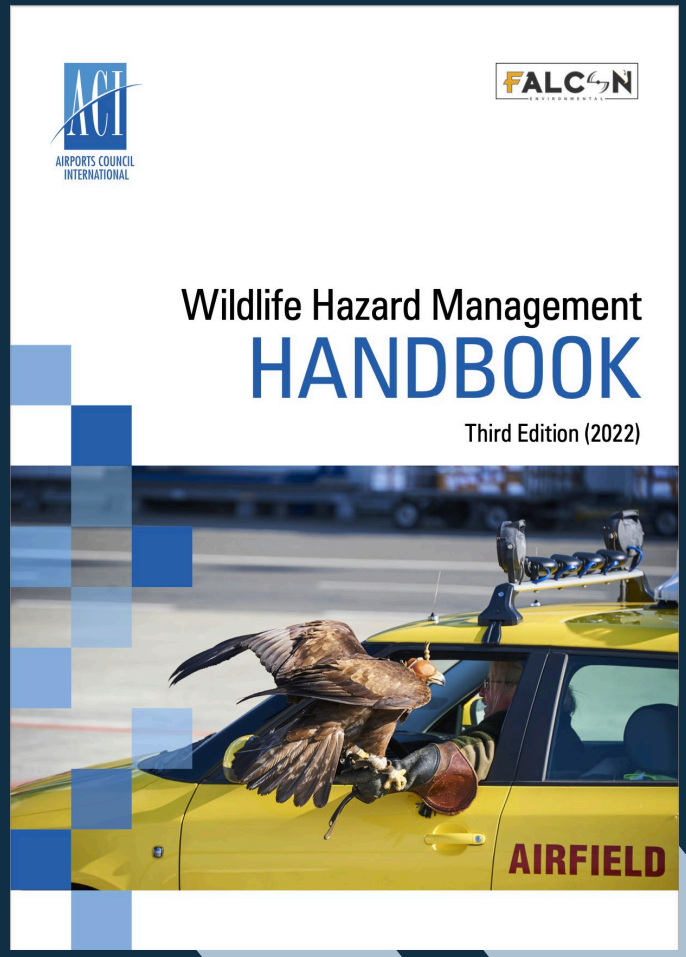
SMS-based Risk Assessment

- A DATA-DRIVEN, SIMPLE AND UNIVERSAL WILDLIFE RISK ASSESSMENT.
  North American Bird Strike Conference. September 2023.
- THE ABUNDANCE BASED SMS RISK ASSESSMENT: AN UPDATE.
  Canadian Bird Strike Association Workshop. October 2022.
- RISK ASSESSMENT: A DATA DRIVEN APPROACH.
  Canadian Bird Strike Association Workshop. October 2018.
- EVALUATION APPROACH FOR ASSESSING WILDLIFE MANAGEMENT PROGRAMS AT AIRPORTS.
  ICAO/ACI Wildlife Hazard Reduction Symposium. May 2017.
- CANADIAN BIRD STRIKE ASSOCIATION: LAST ACHIEVEMENTS.
  North American Bird Strike Conference. July 2017.
- RISK ANALYSIS AND ASSESSMENT METHODOLOGY.
  Canadian Bird Strike Association Workshop. October 2016.
- 3D RISK: A GIS TOOL TO ASSESS WILDLIFE RISK BASED ON LAND USES.
  North American Bird Strike Conference. August 2013.
- CANADIAN MILITARY AIRPORT: NEW RISK ASSESSMENT PROCEDURE.
  North American Bird Strike Conference. September 2011.



WRAP

WILDLIFE RISK ANALYSIS PROGRAM

Free online

https://www.falconenvironmental.com/software-solutions/#wrap

Source: FAA Strike Database, extracted in May 2023

Risk Assessment - WRAP

HAZARD IDENTIFICATION

Probability (Likelihood)

(1-5)

X

FAA Severity

(1-5)

=

RISK ASSESSMENT

Risk Assessment - WRAP

Frequency of Occurrence

Mvts Areas Crossing Behaviour

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RISK ASSESSMENT

Number of Movements

Variable - WILDLIFE OCCURENCE

Frequency of Occurrence

Probability

CURRENT SITUATION

Score	Wildlife Group Observation Frequency	Examples	Observation Probability During a Patrol
1	< 1 %	< 4 days/yr	Extremely Improbable/Exceptional
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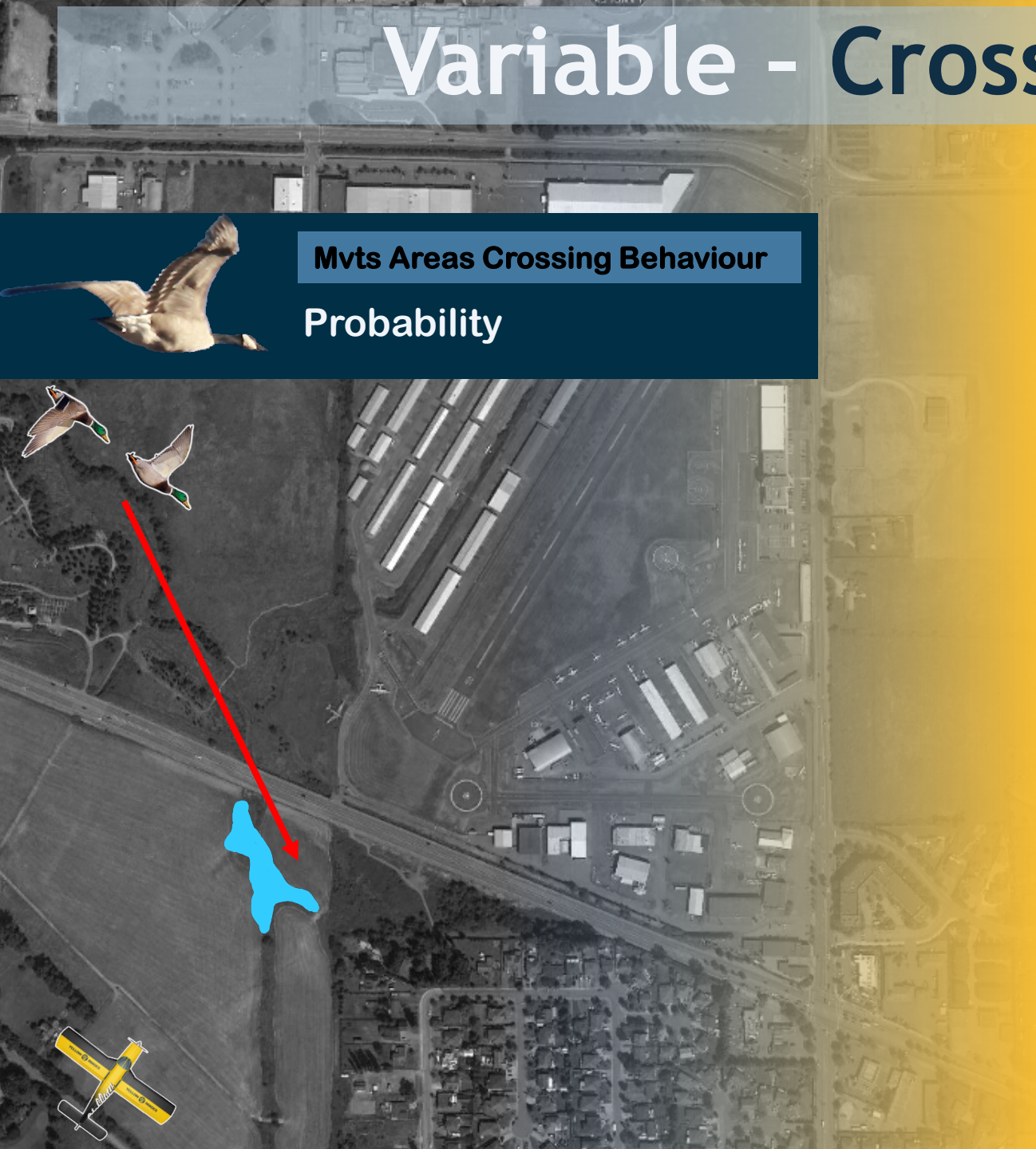
RISK ASSESSMENT

Number of Movements

Variable - Crossing Behaviour



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Variable - Crossing Behaviour

Mvts Areas Crossing Behaviour

Probability

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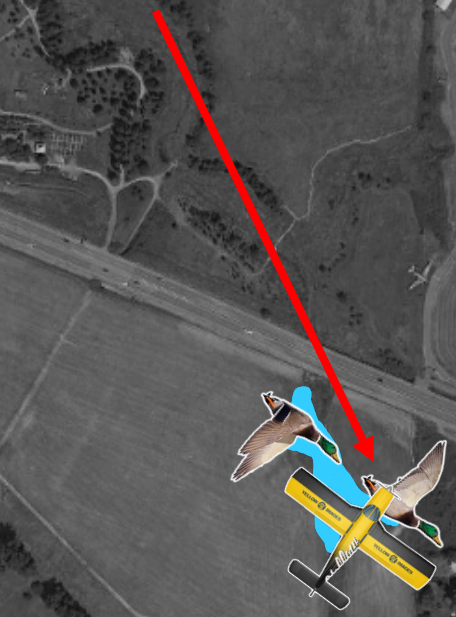

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Variable - Crossing Behaviour

Mvts Areas Crossing Behaviour

Probability

Expected with the pond

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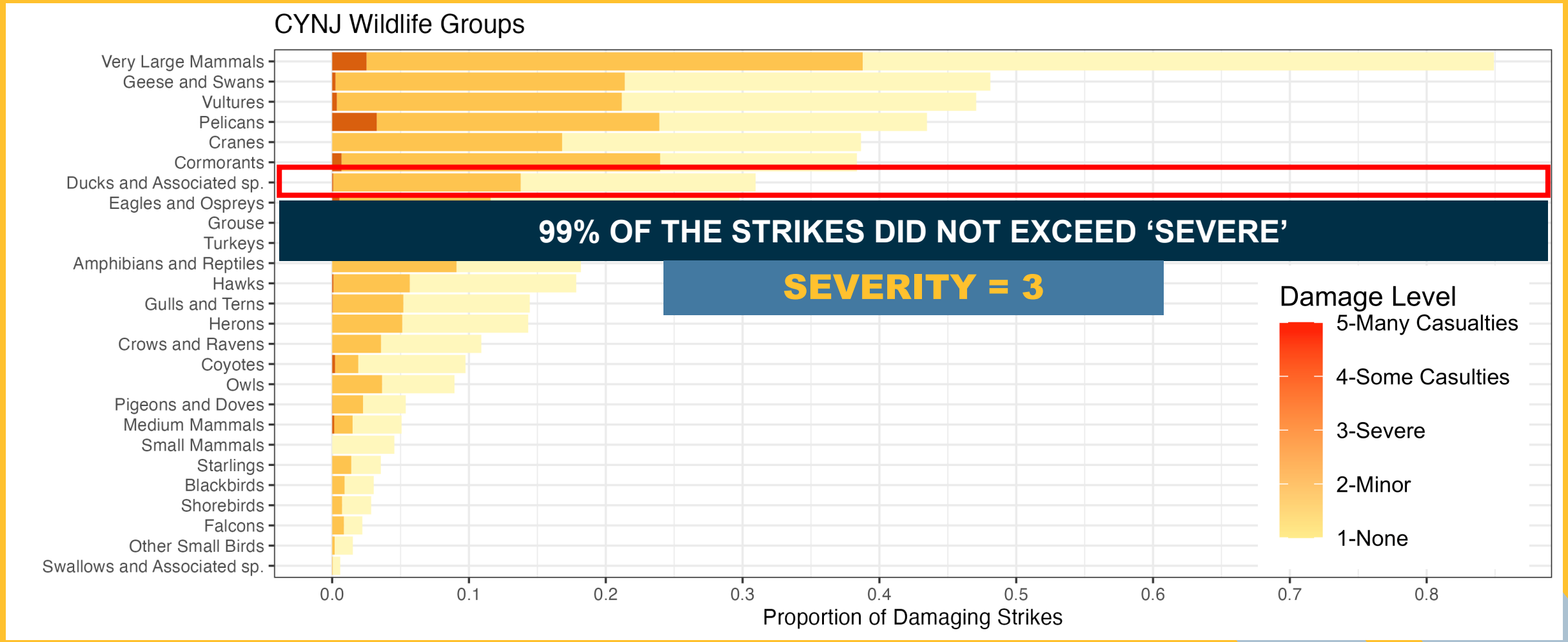
RISK ASSESSMENT

Number of Movements

Variable - Severity



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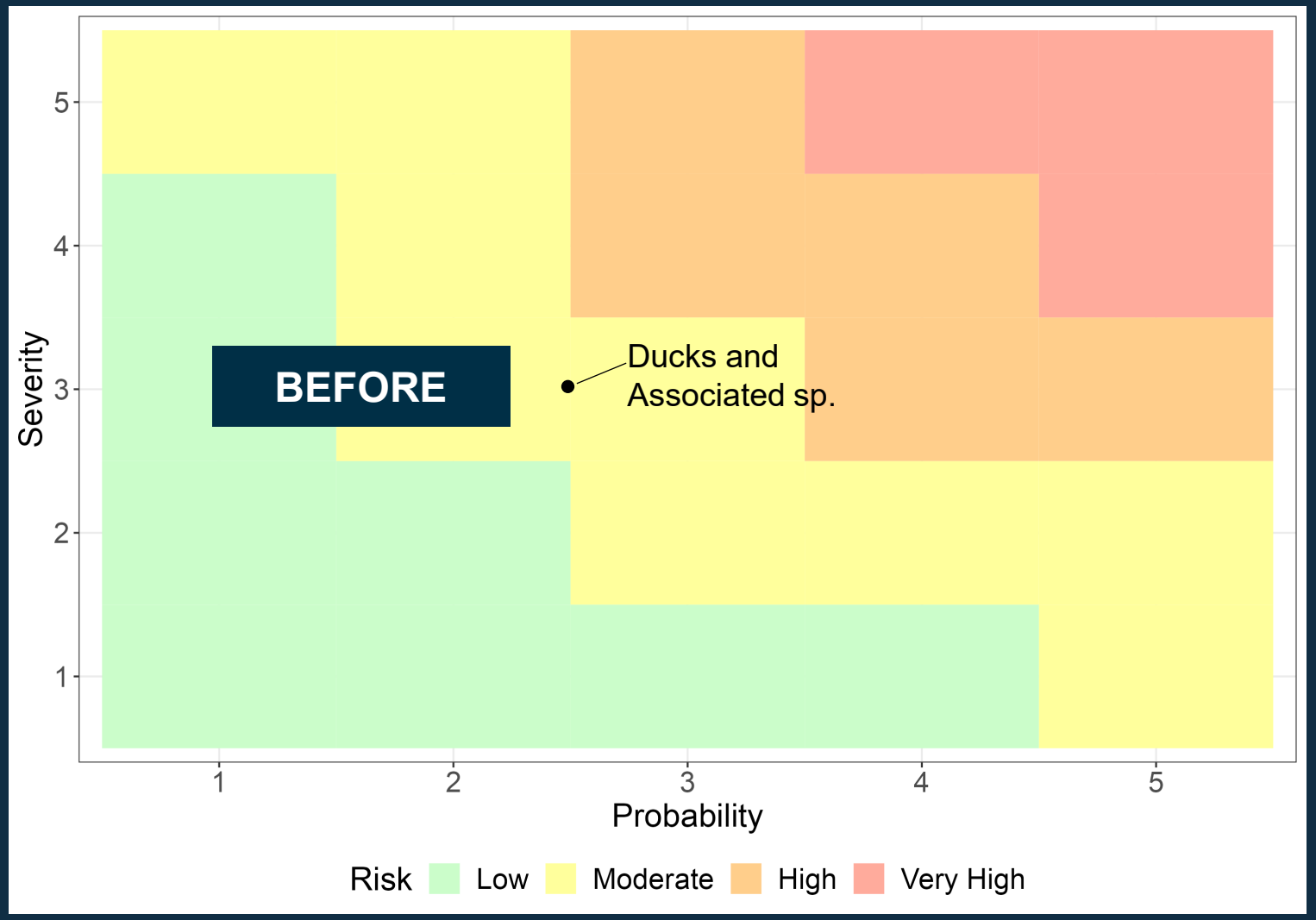
RISK ASSESSMENT

Number of Movements

Risk Assessment - Results



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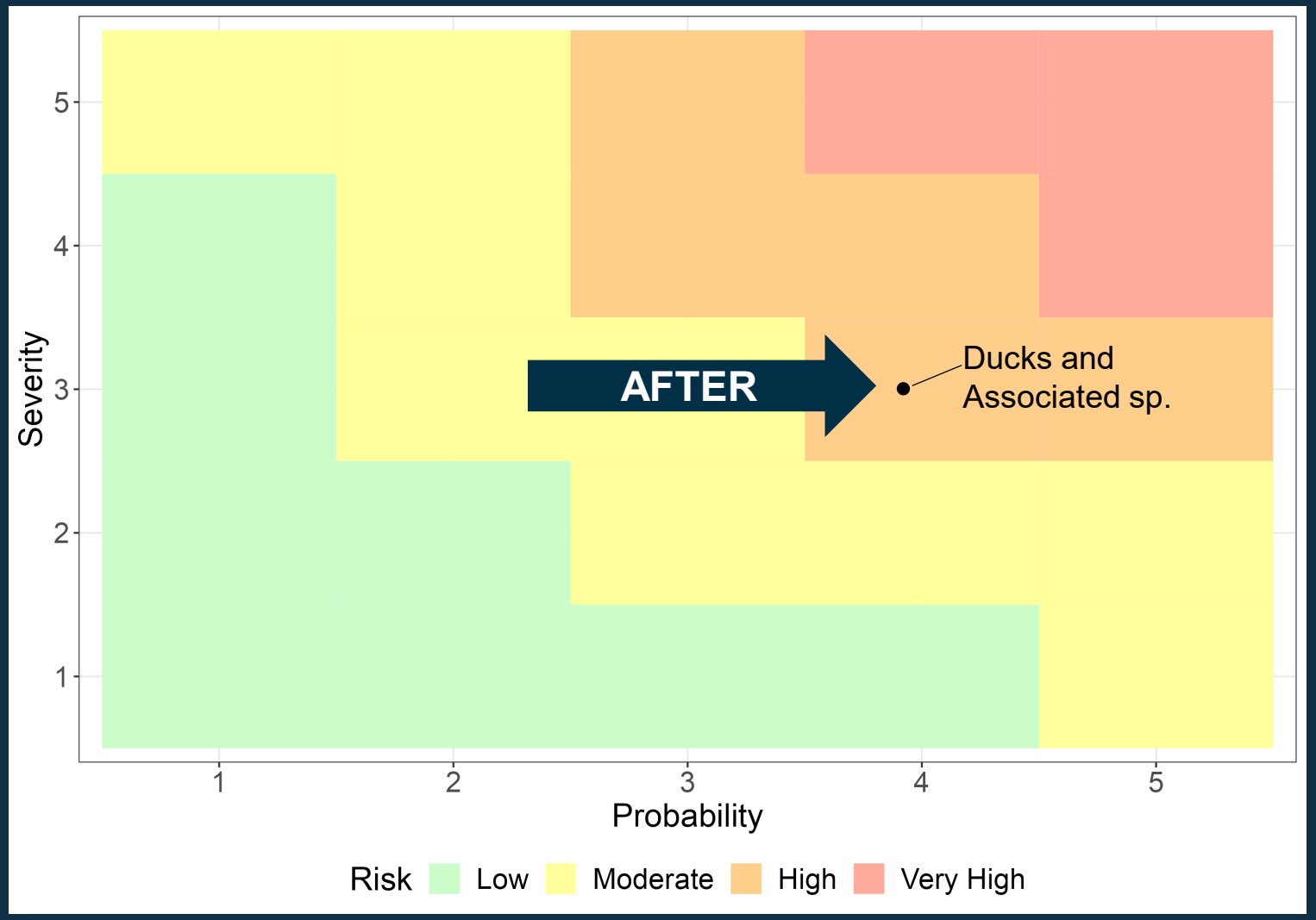

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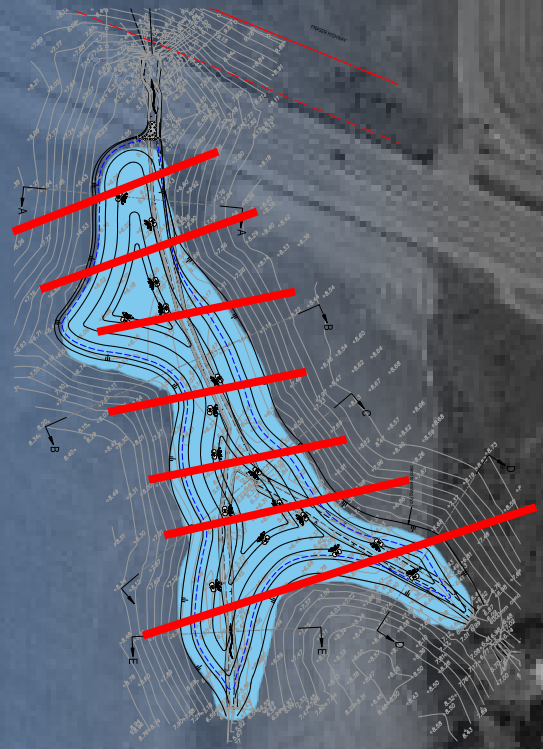

Grid Cables

Mitigation effects

Mvts Areas Crossing Behaviour

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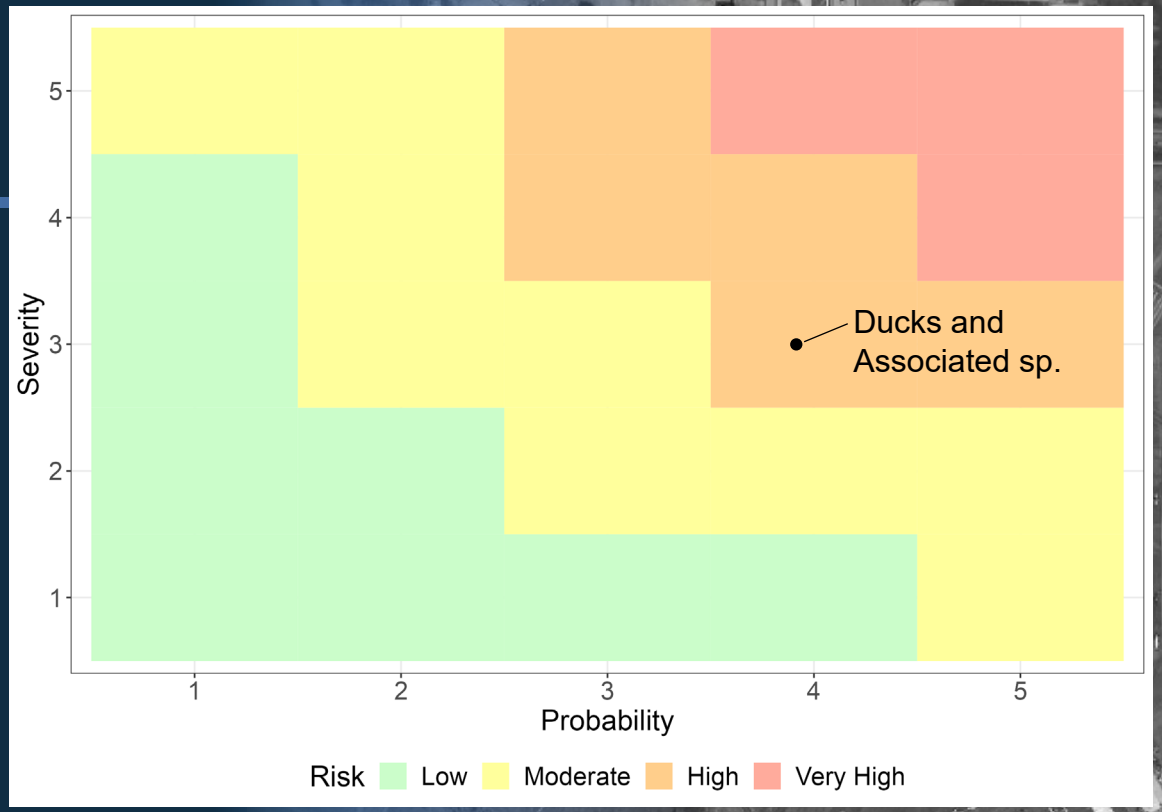

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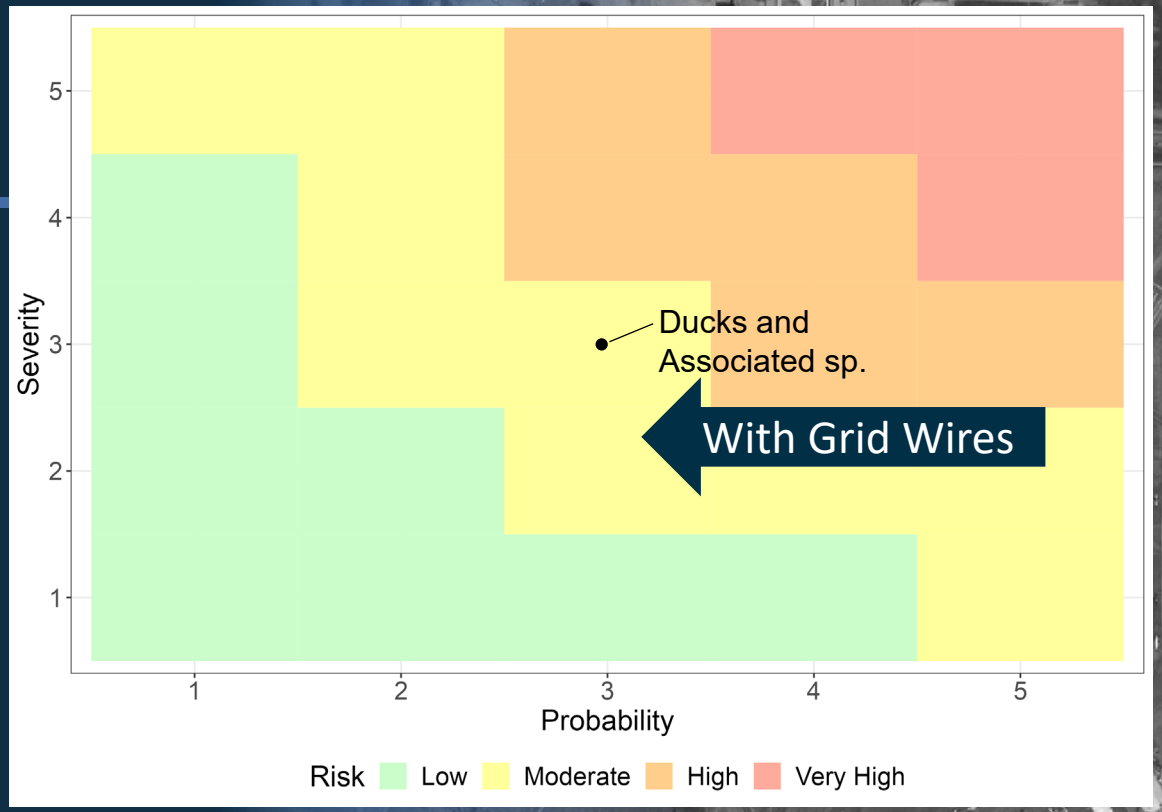
With Grid Wires



Grid Wires Effects

Mitigation effects

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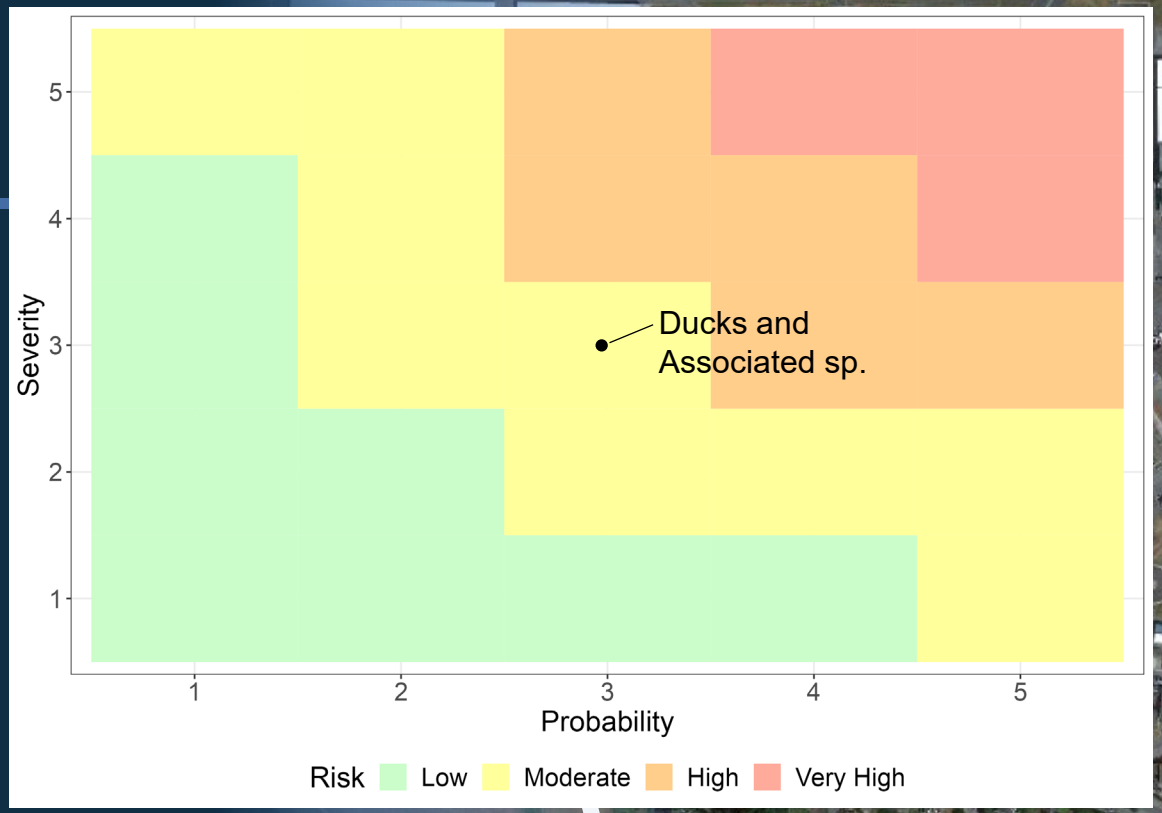

Relocate further away

Mitigation effects

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Relocation

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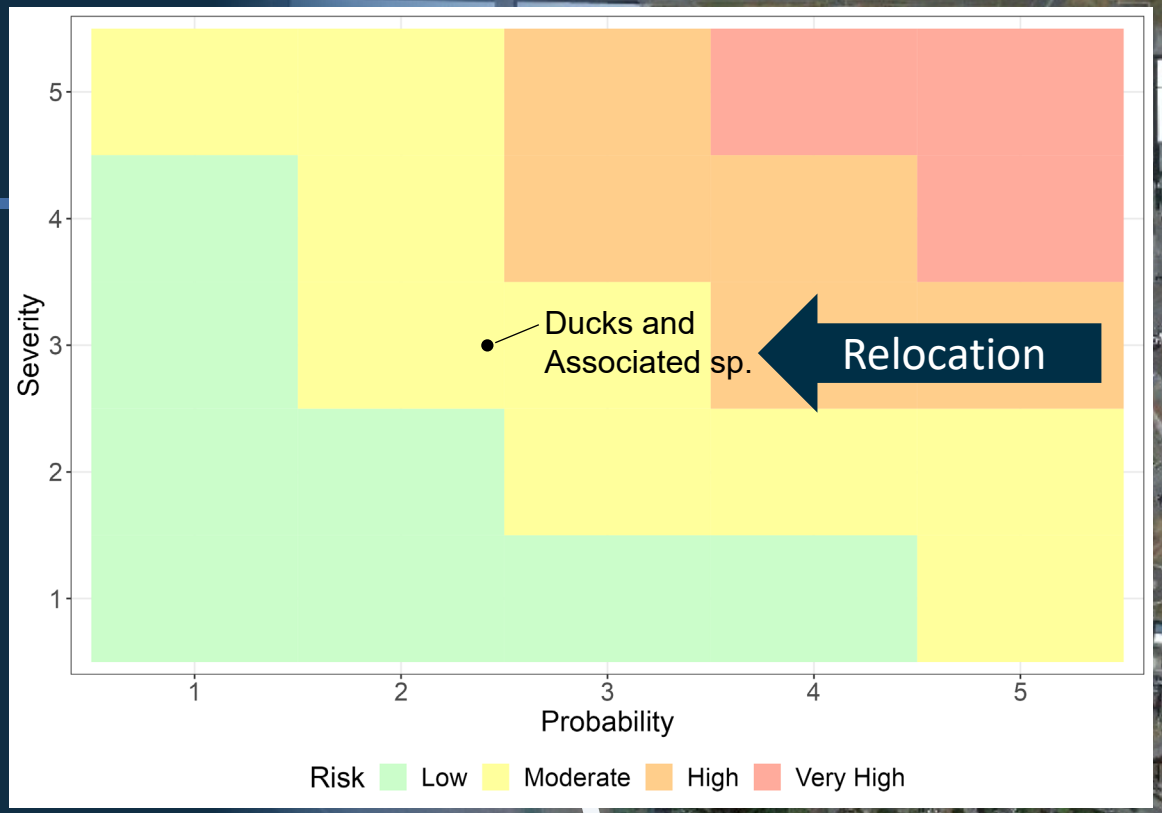

Relocate further away

CASE STUDY #2

Gull Colonies

YUL - Montreal Airport

YUL - Montreal Airport

FREQUENCY OF OCCURRENCE

Mid-April to end of June

76 days per yr: 20%

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2,400 nests

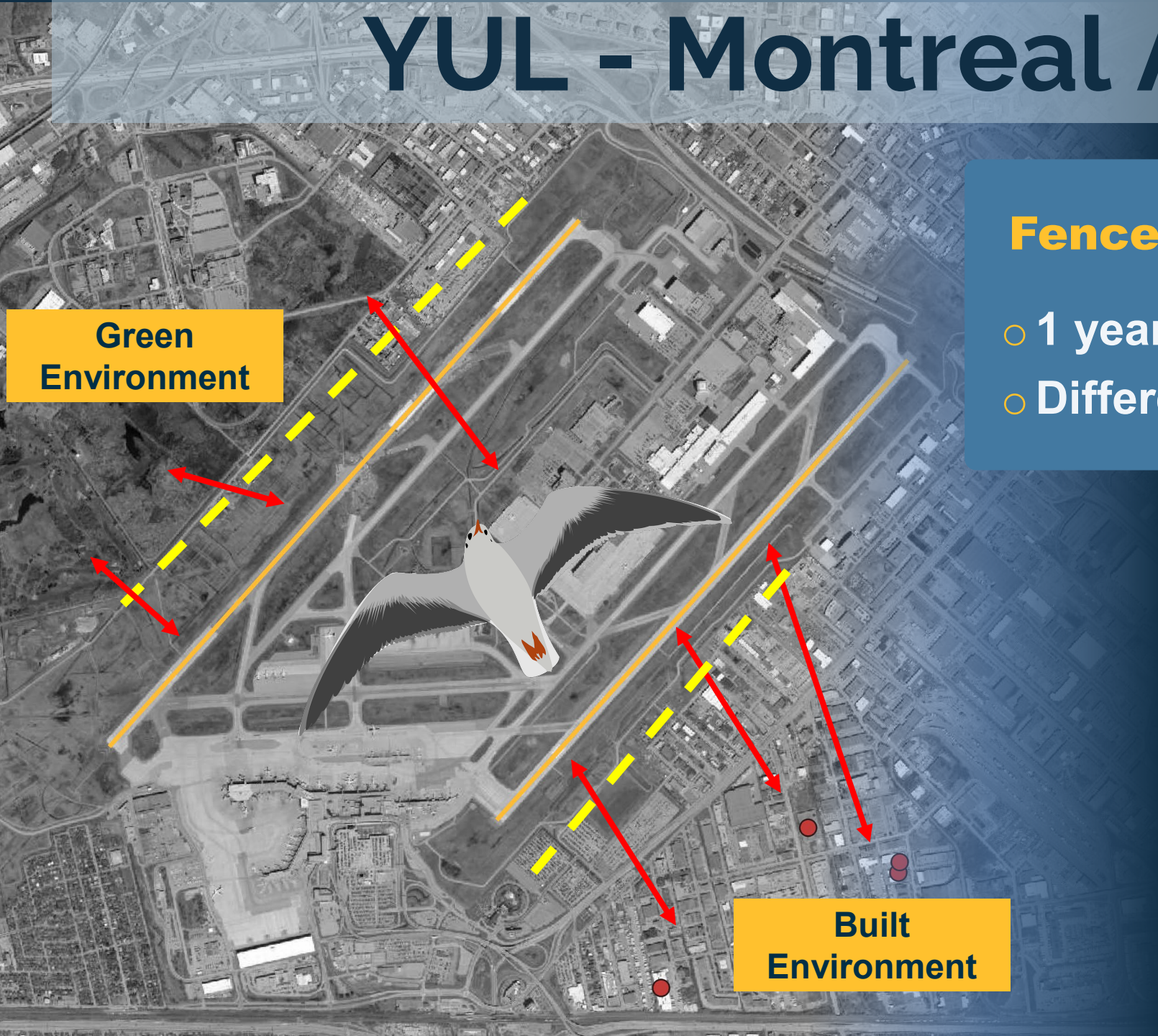
200 nests

150 nests

1,250 more nests

YUL - Montreal Airport

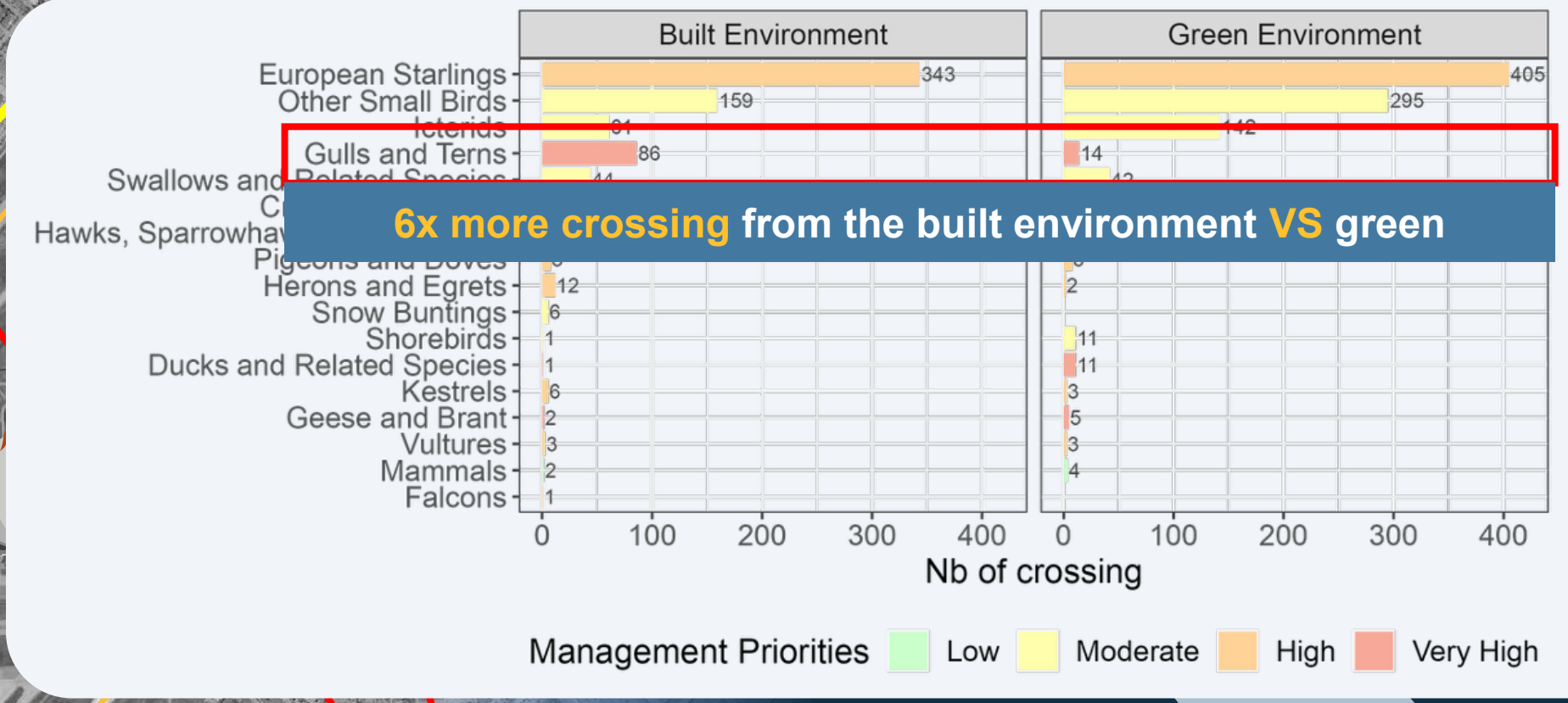
YUL - Montreal Airport



Fence Crossing Study

- 1 year long
- Different adjacent environment

YUL - Montreal Airport



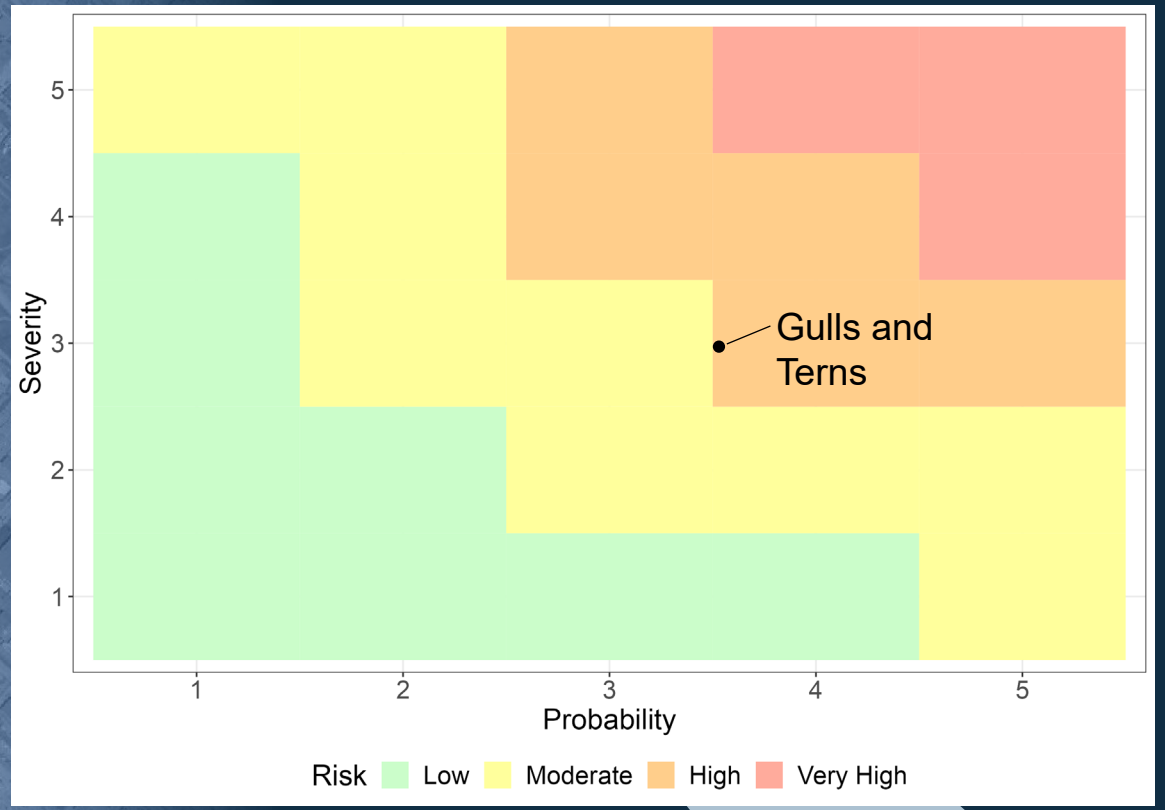
6x more crossing from the built environment VS green

YUL - Montreal Airport

MVTS AREAS CROSSING BEHAVIOUR

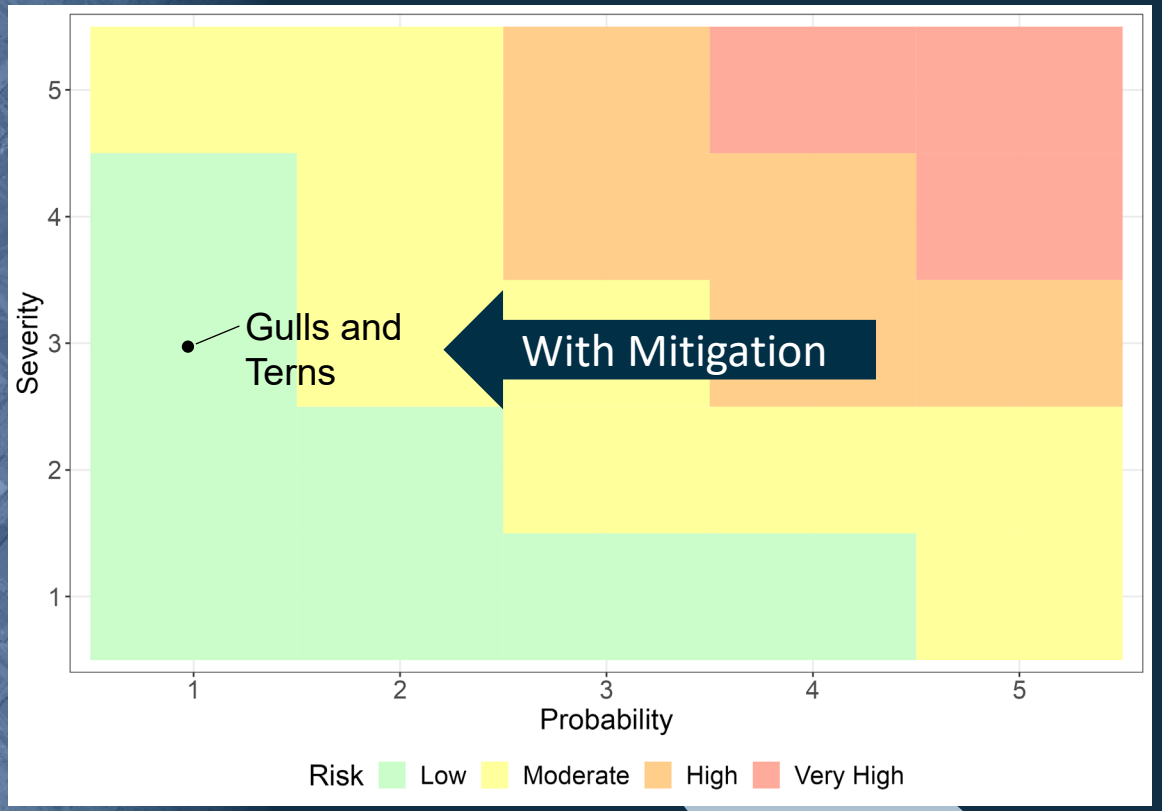
Score	
1	Generally stay away from movement areas **Never seen on the movement areas**
2	Sometimes crossing movement areas **<25% of the sightings near movement areas**
3	Regularly crossing movement areas when moving **>25% of the sightings near movements areas**
4	**Regularly crossing** them AND occasionally land on movement areas
5	Land (or stay above or rest or hunt) on movement areas for extended period of time

YUL - Montreal Airport



RISK OF A ROOF-TOP COLONY

YUL - Montreal Airport



RISK WITH MITIGATION

(Roof without colony)

Conclusion

- Data is not enough

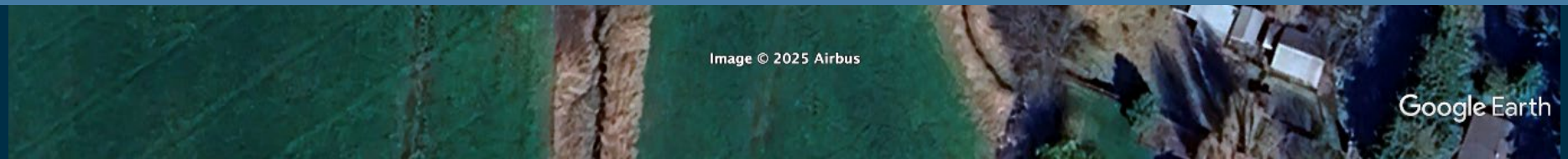
- Shall also include:
  - Wildlife behaviour
  - Land use / Habitat synergy
  - Mitigation strategy
  - Human behaviour (public perception, politics, etc.)

- Post implementation follow-up

Even with the best risk assessment, airports challenges are often misunderstood by authorities.

Langley 2025

Thank You



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WRAP

WILDLIFE RISK ANALYSIS PROGRAM

Free online

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Any Airports

Any Data

By zones

Any Timeframe (day-night / seasons)

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Thank to our collaborators

YNJ LANGLEY REGIONAL AIRPORT

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