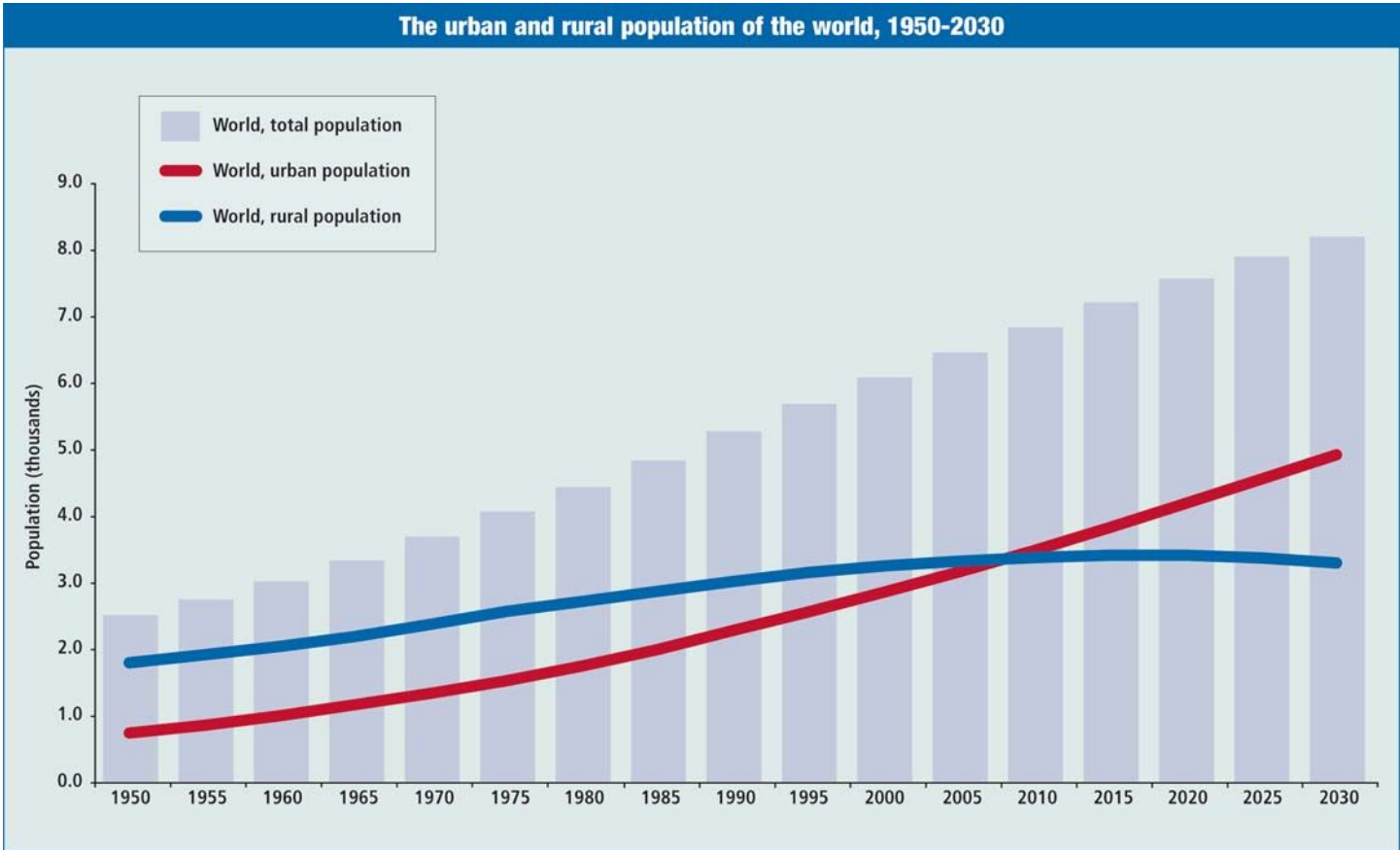


The Effect of Human Activity on Avian Species Richness and Diversity

Angela Cheng, Jasmine Lai, Joyce Chan, Linda Au



Urbanization: a global trend



Urbanization: ecological impacts



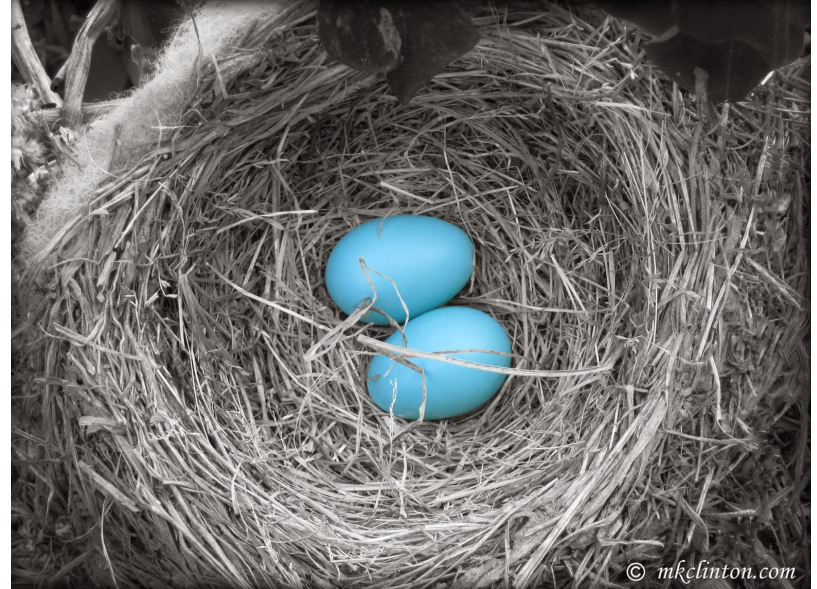
Urbanization: ecological impacts

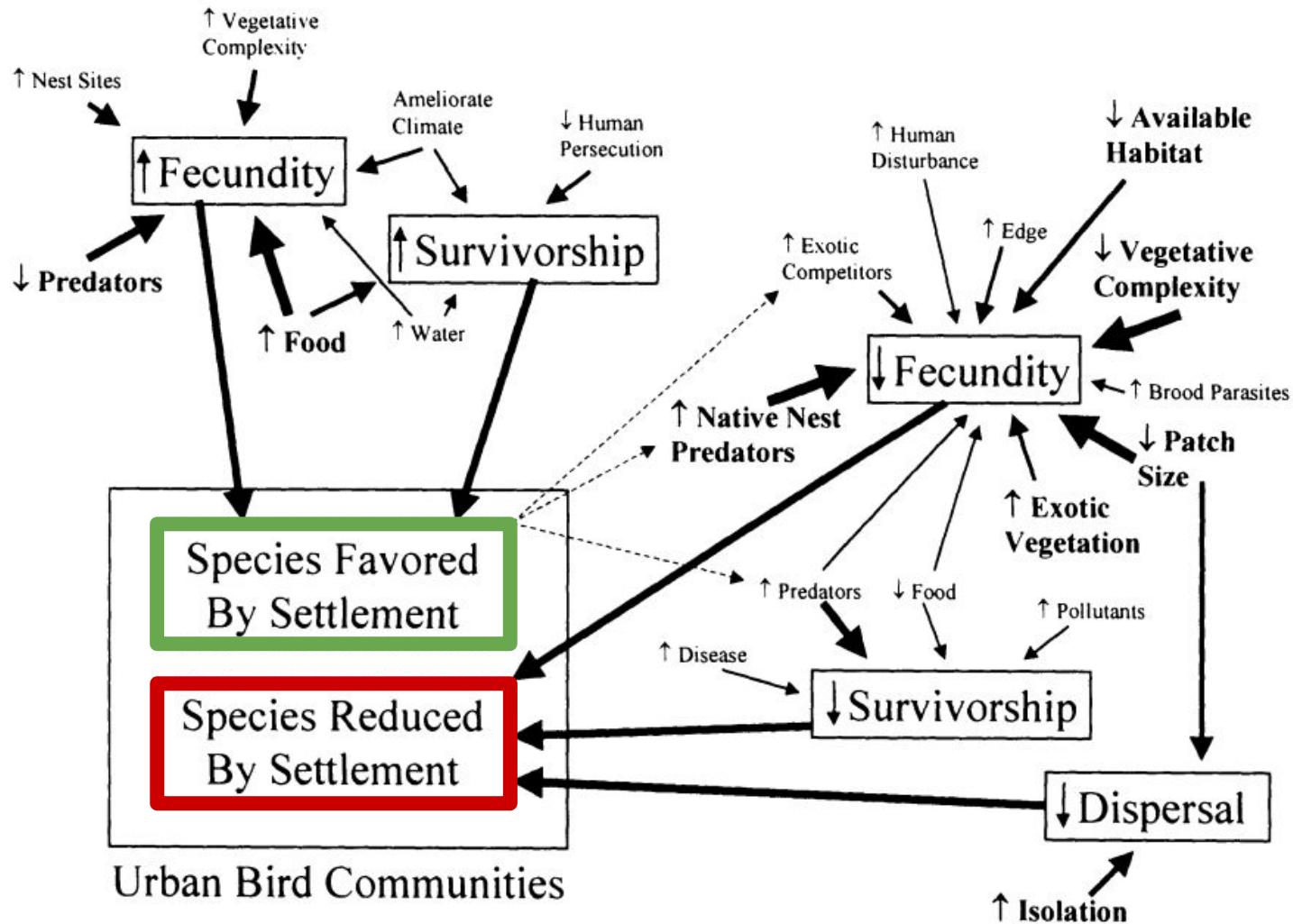


Urbanization: ecological impacts



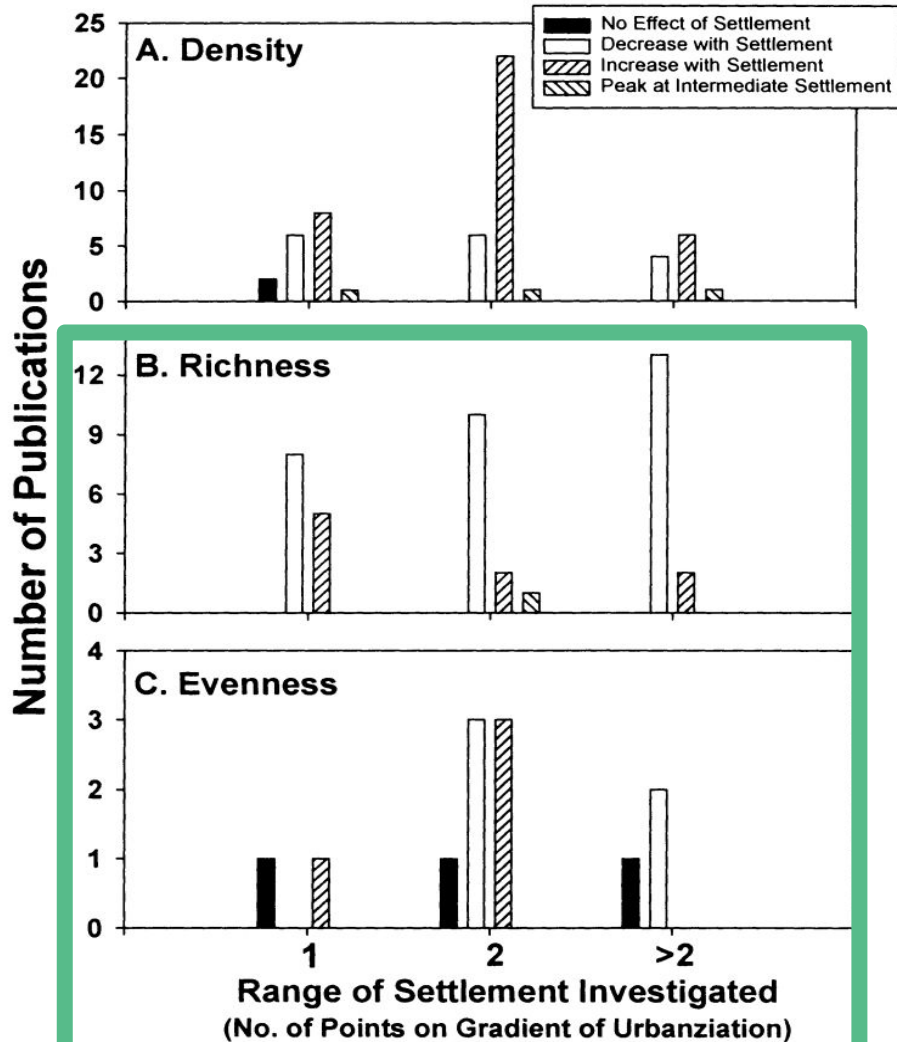
Urbanization: ecological impacts





Research focus

Does human activity affect avian communities?



As urbanization increases:

- Density increases
- Richness decreases?
- Evenness...???

Research focus

~~Does human activity affect avian communities?~~

Does human activity affect avian species diversity?

- Species richness
- Simpson's Diversity Index (richness + evenness)

Hypothesis

Within a given habitat type, as human activity increases, species diversity (both richness and evenness) will decrease.

Rationale:

- As urbanization increases, species richness decreases (Marzluff 1977)
- Recreation typically causes declines in density, richness, and diversity (Hammitt and Cole 1987)

Methods - Across Sites

2 areas

- Same team each week
- Different methodology

6 surveys / site

- 9:00AM and 11:00AM DST
- Alternated start time



Methods - Forest Routes





Powerline Trail - High human use



Heron Trail - Low human use

Methods - Forest Sites

- ~1 hr walking transect surveys

Birds: visible & audible

Human disturbance:

- # of people seen during the survey



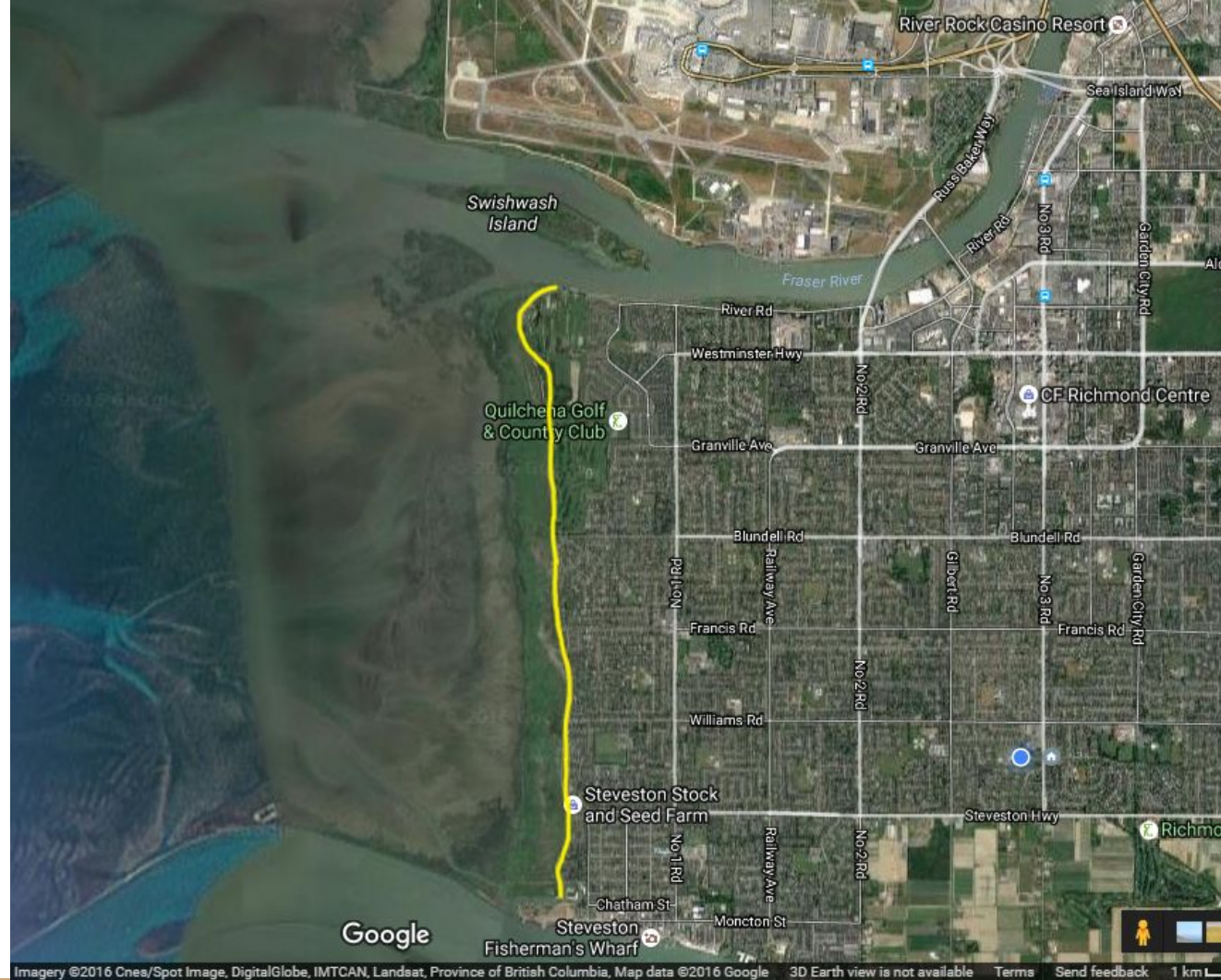
Powerline Trail



Heron Trail

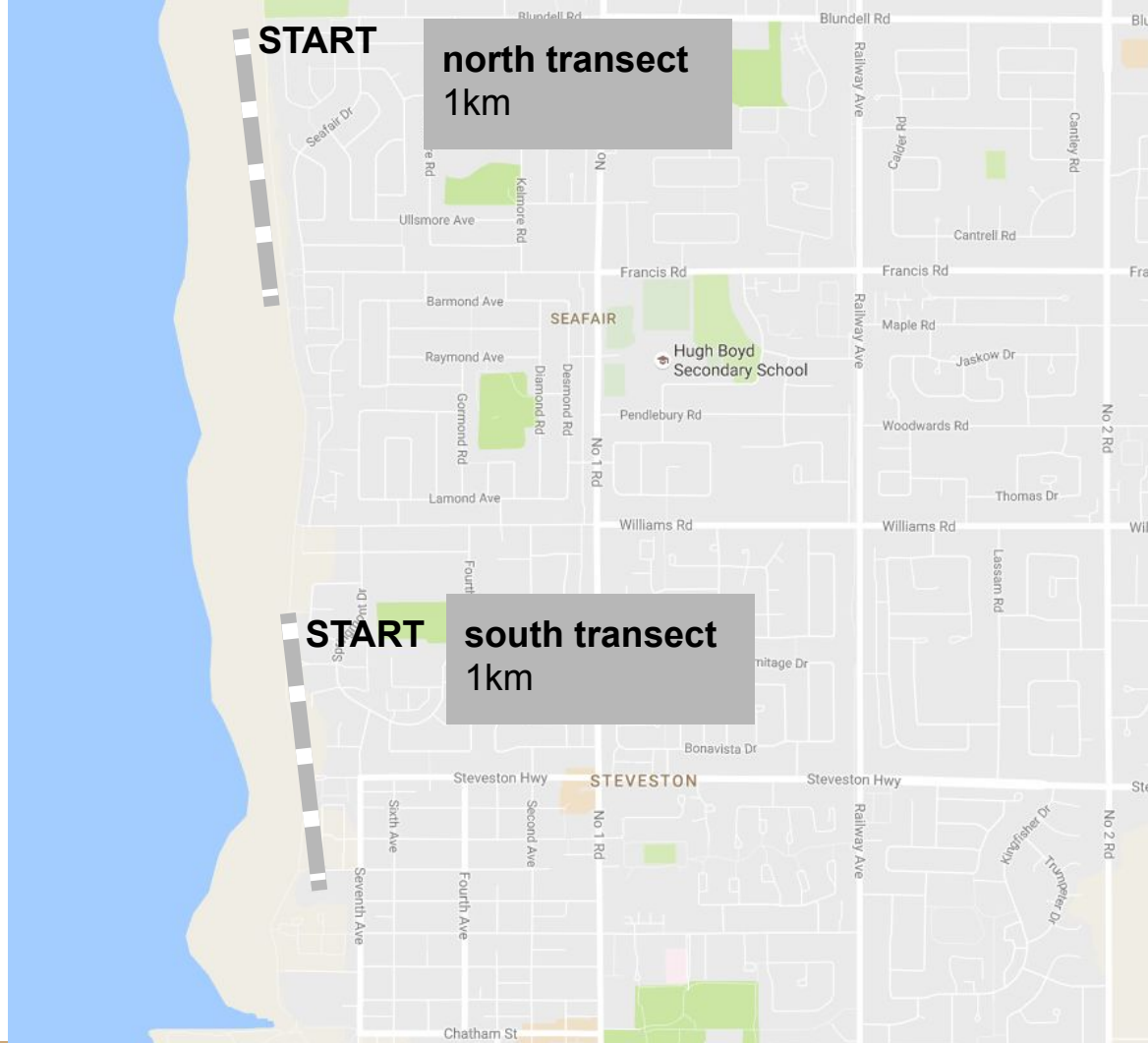
Methods

- Dyke Routes



Methods

- Dyke Routes





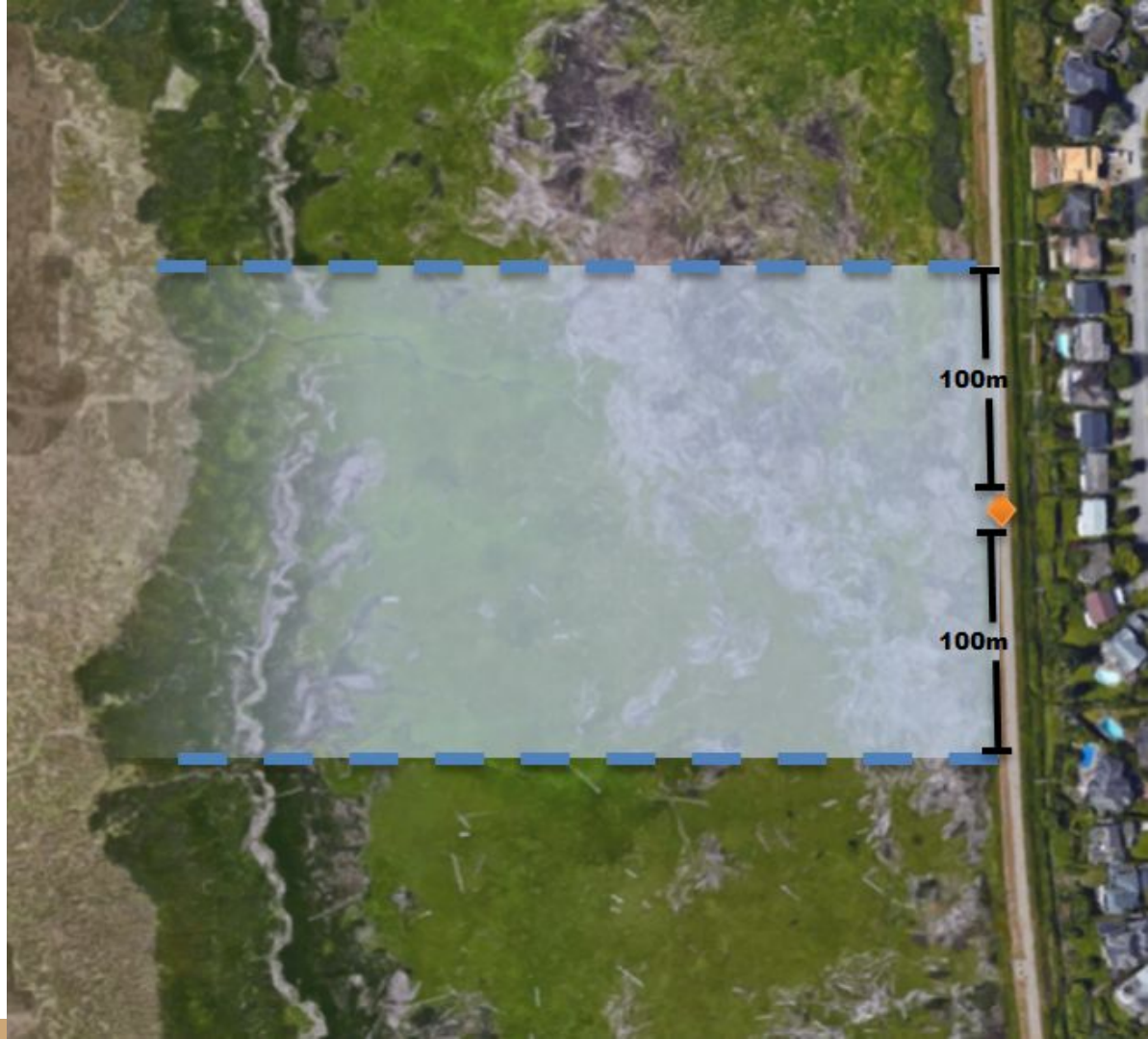
North transect - low human use*



South transect - high human use*

Methods - Dyke

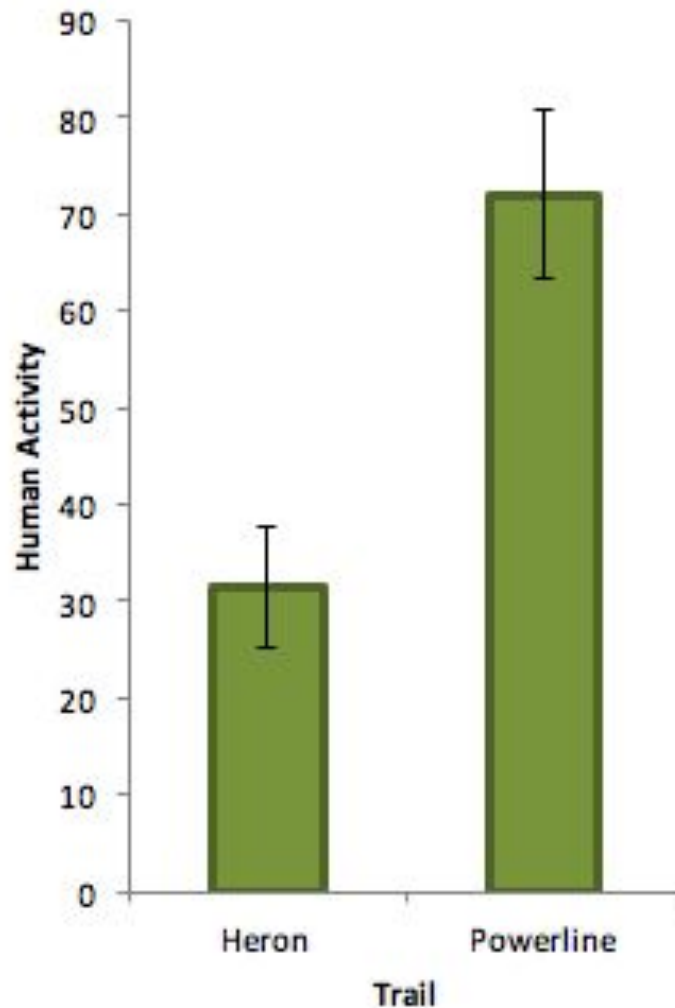
- 5 points per transect
- 200m apart
- 10-minute point counts:
 - All audible birds
 - All visible birds within 100m
 - All people who passed by

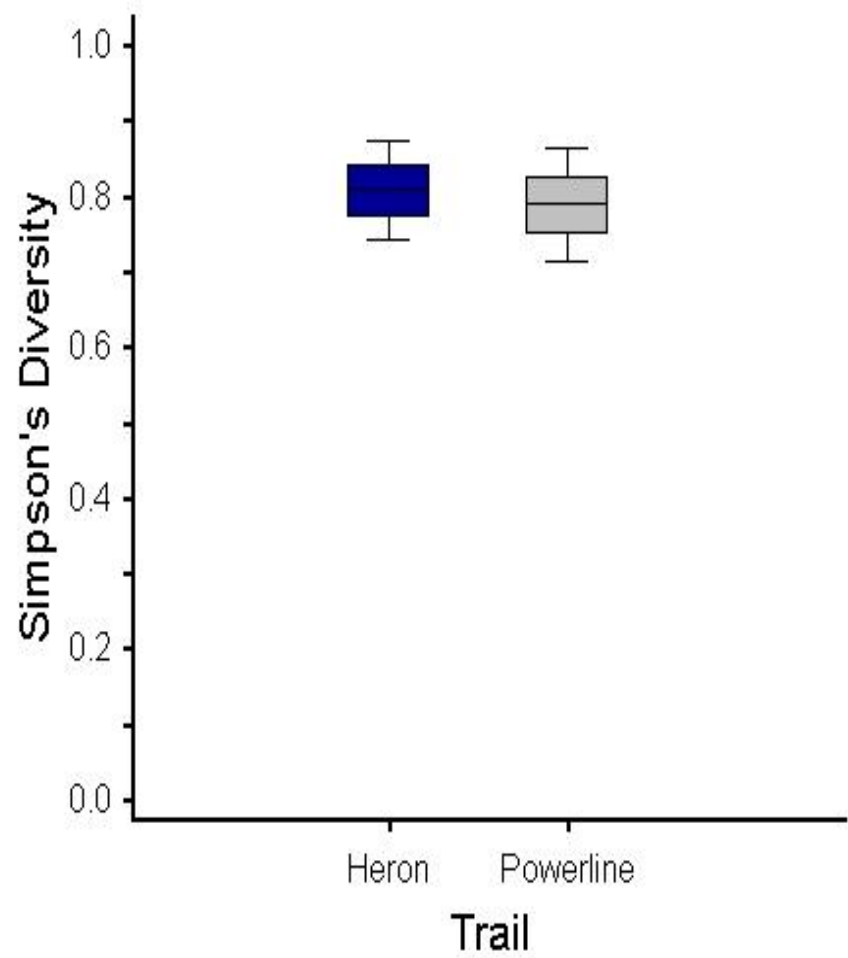
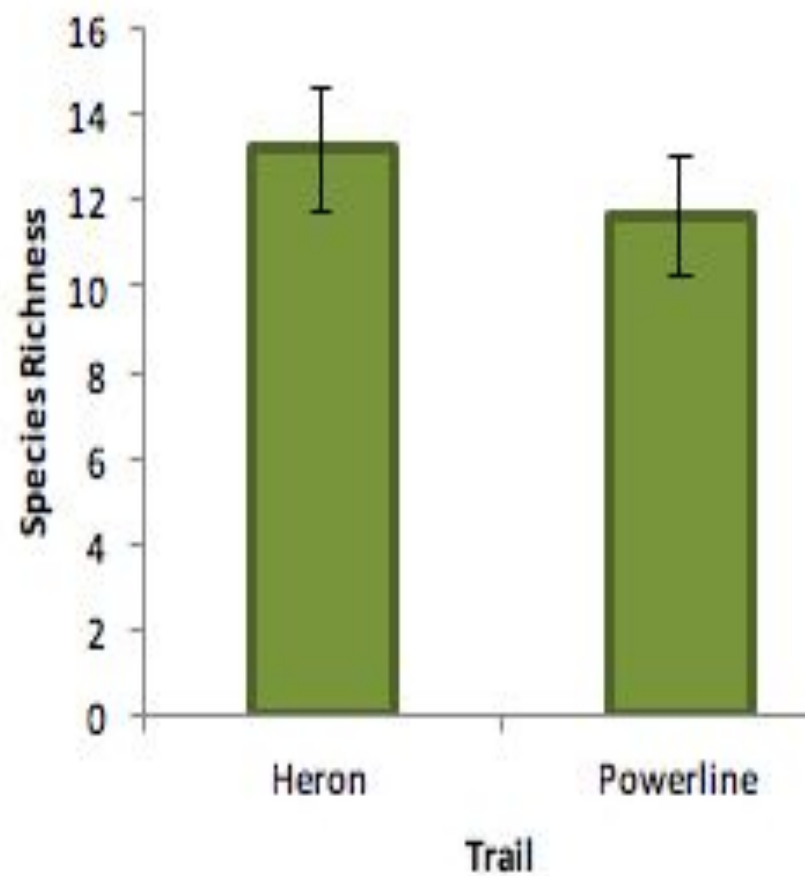


Results - Forest

T- test:

- $t = 3.8092$ $p = 0.0034$
- **Significant - $p < 0.05$**

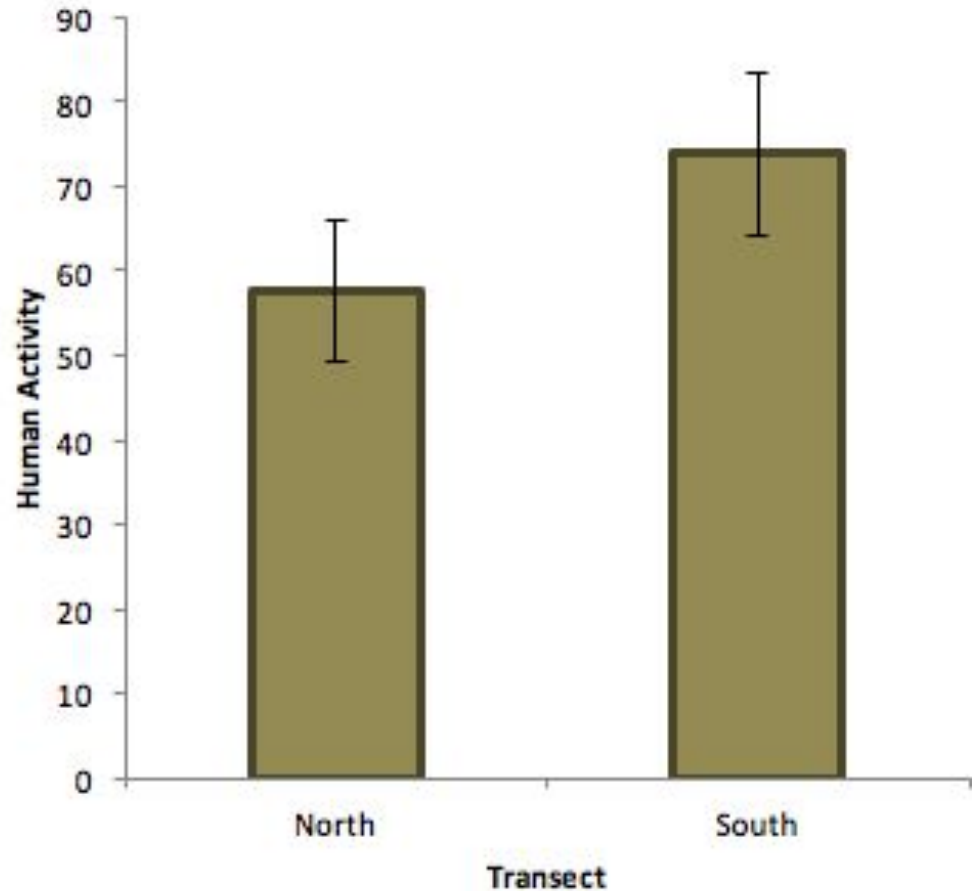


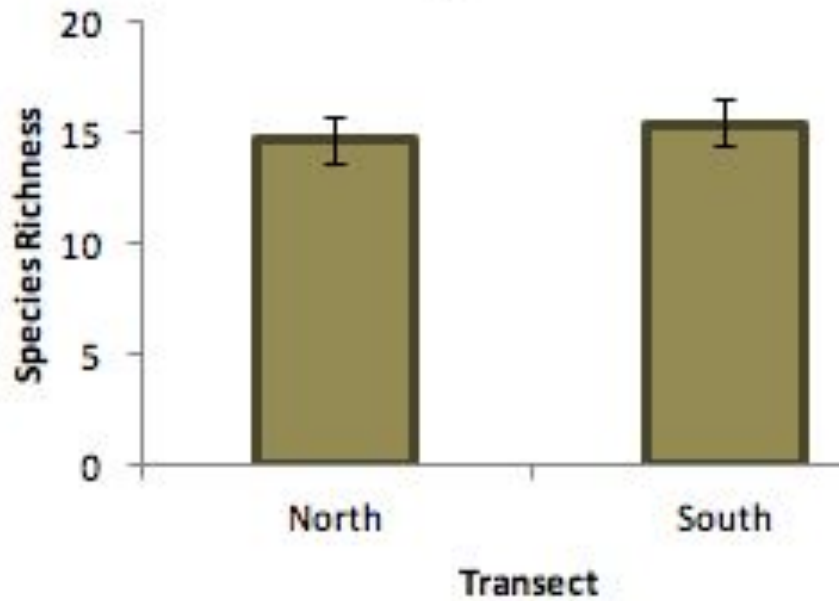


Methods - Dyke Sites

T- test:

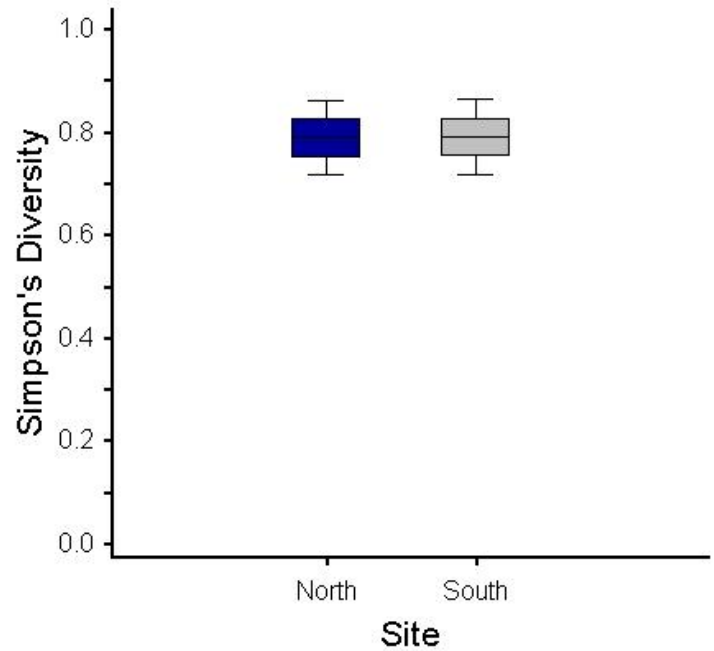
- t-test: $t=1.2762$, $p=0.2307$
- **Not Significant - $p > 0.05$**





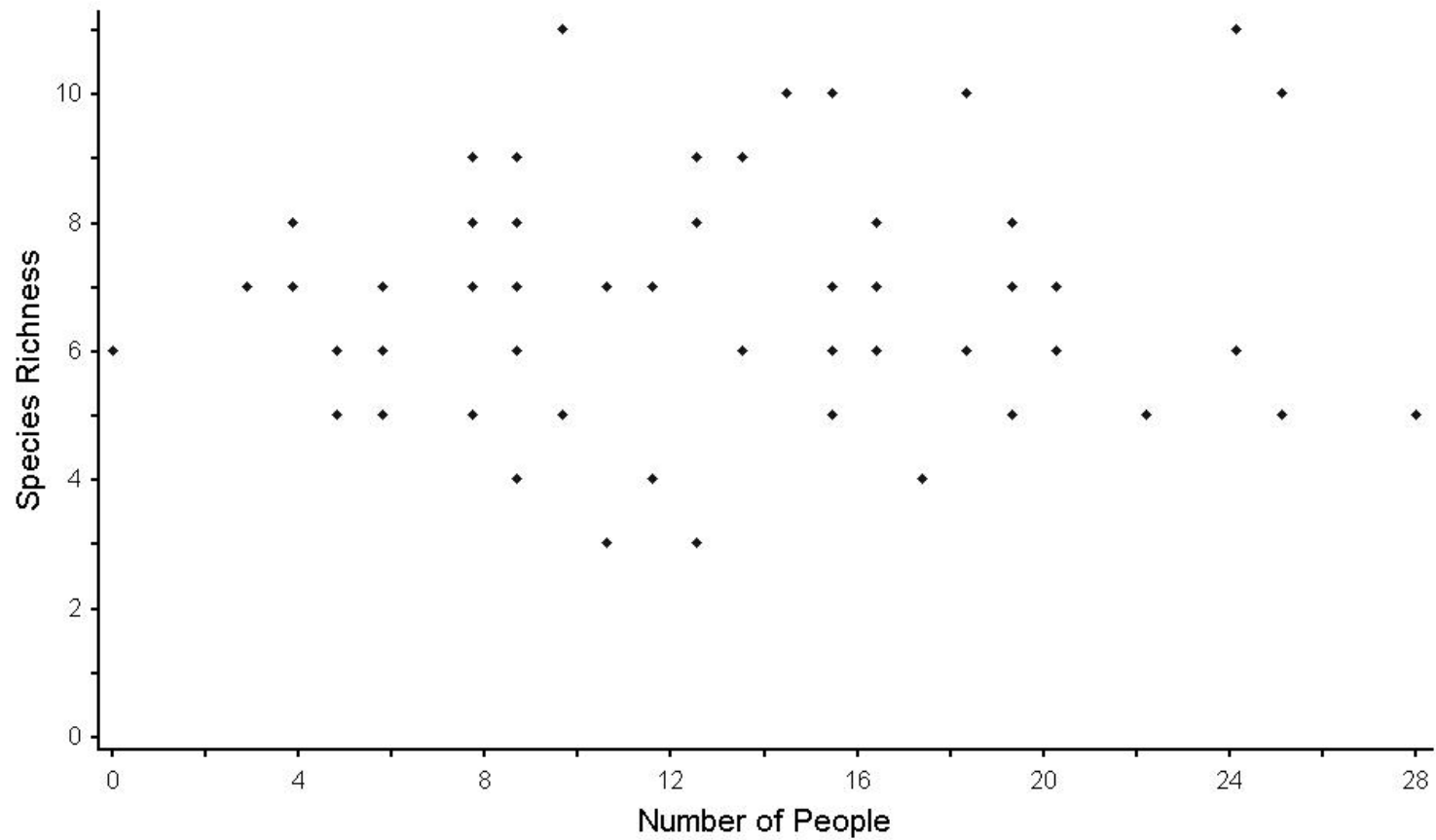
T- test:

- t-test: $t=1.2762$, $p=0.2307$
- **Not Significant - $p > 0.05$**



T- test:

- t-test: $t=1.2762$, $p=0.2307$
- **Not Significant - $p > 0.05$**



Well...that's different

Or is it?

Platt & Lill, 2006: human traffic had no effect on diversity

1. Species differ in sensitivity to humans
 - some thrive, some tolerant, some experience minor changes
2. Insufficient foot traffic
 - reported adverse effects at 1.4 human or dog per minute
 - PSP average: 0.9 human or dog per min

Other possible explanations

- Intermediate levels of disturbance: greater habitat diversity compensates for drop
 - *Pacific Spirit Park*: underbrush + mix forest
 - *dyke*: shore area + underbrush

Future Studies

1. Replicate in other sites?
2. Spring Breeding season - migrants return, nesting
3. Vegetation diversity vs bird diversity?
4. Changes in environment
 - a. Not people just being there but what they bring along with them
 - b. It's what we do not just us being there

Acknowledgements

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