



Winter Birds in Two Portland Neighborhoods: A Geographic Assessment of Human and Vegetation Factors

GIS II

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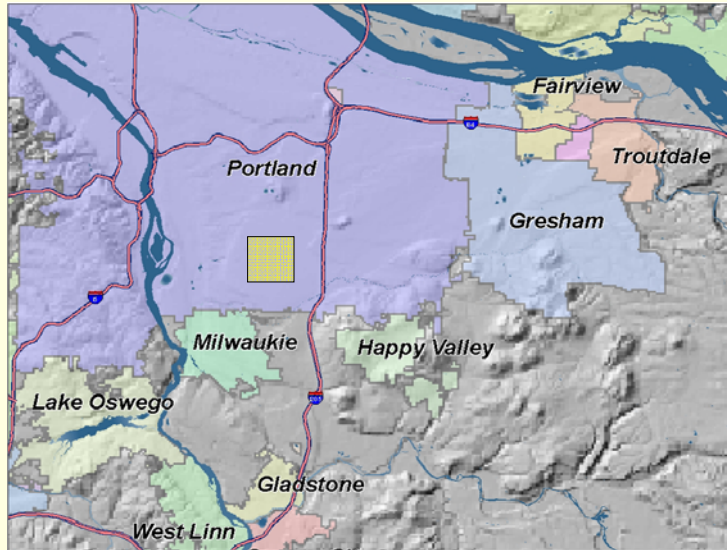


Objective (GIS II – project)

- What are the factors effecting spatial distribution of birds in Winter?
 - Explore Data: How does diversity vary along blocks?
 - Are there clusters or 'hot-spots' along blocks
 - Can canopy cover density explain abundance, richness or diversity (Shannon Index)?



Study Area



(3) Transect Areas





Methods - Bird Survey

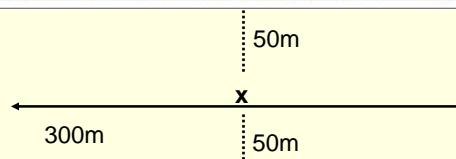
- Winter Census (Jan. – March 2005)
- 300m Transects
- ID species seen or vocalizing
- Analysis:
 - Richness (# of species)
 - Shannon Diversity Index: $H = -\sum p_i \ln(p_i)$
 - 1 spp, $H = 0$



www.uvinc.net/catalog/marceau



Transect Area: Bird Survey





Canopy Cover Assessment



Taxlot: Polygon (Feature) to Centroid (Point)



Canopy Cover Assessment



Buffer: Taxlot Centroids (25m)



Canopy Cover: Digitize-Clip-Identity

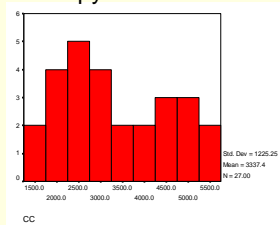


Total Area of Canopy Cover within 25m of Taxlot address

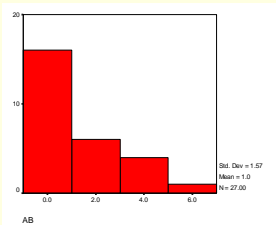
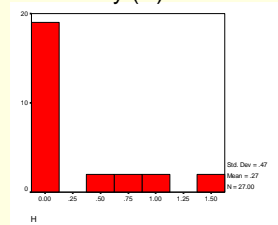


Results: Histograms - 54th transect

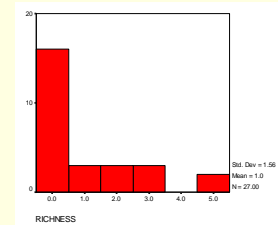
Canopy Cover



Diversity (H)



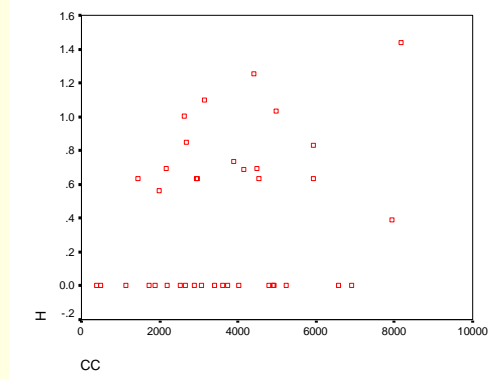
Abundance



Richness



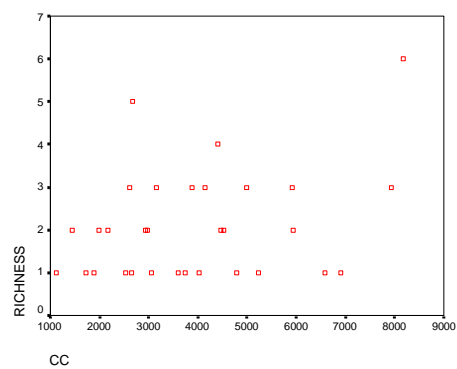
Correlation (H): Knight Transect



Correlations				
Spearman's rho	CC	Correlation Coefficient	1.000	.212
		Sig. (1-tailed)	.	.100
		N	38	38
H	Correlation Coefficient		.212	1.000
		Sig. (1-tailed)	.100	.
		N	38	38



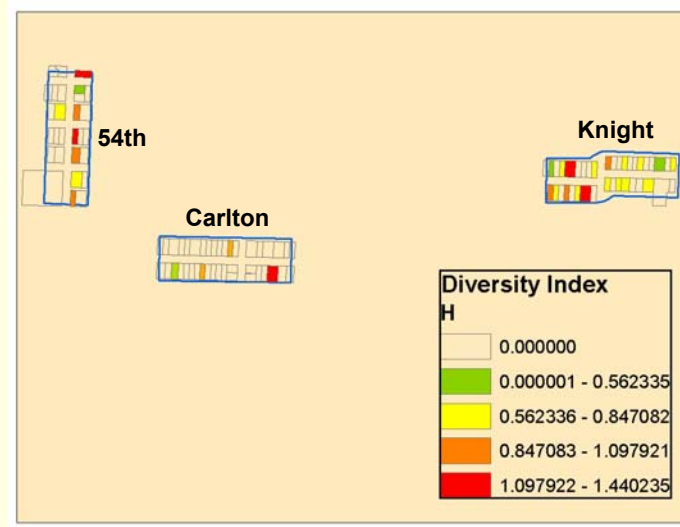
Correlation -Richness: Knight Transect



Correlations				
Spearman's rho	CC	Correlation Coefficient	1.000	.233
		Sig. (1-tailed)	.	.104
		N	38	31
RICHNESS	Correlation Coefficient		.233	1.000
		Sig. (1-tailed)	.104	.
		N	31	31



Spatial Variation of Diversity (H)



Clustering of (H) or Richness?

Knight



Carlton

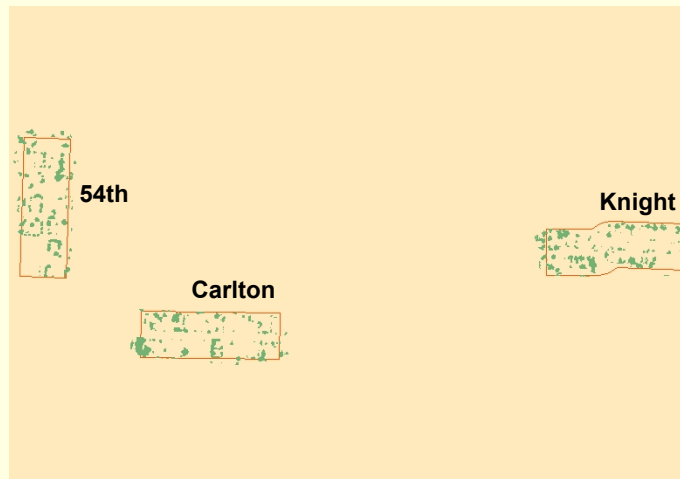


54th





Canopy Cover Distribution

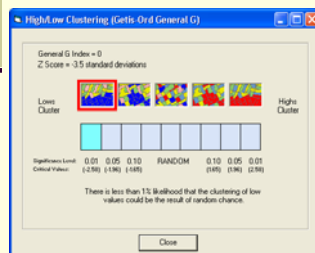
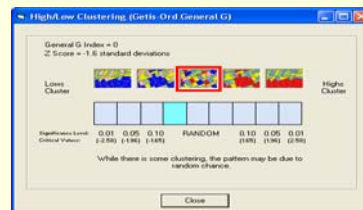


Clustering of Canopy Cover?

Knight



Carlton

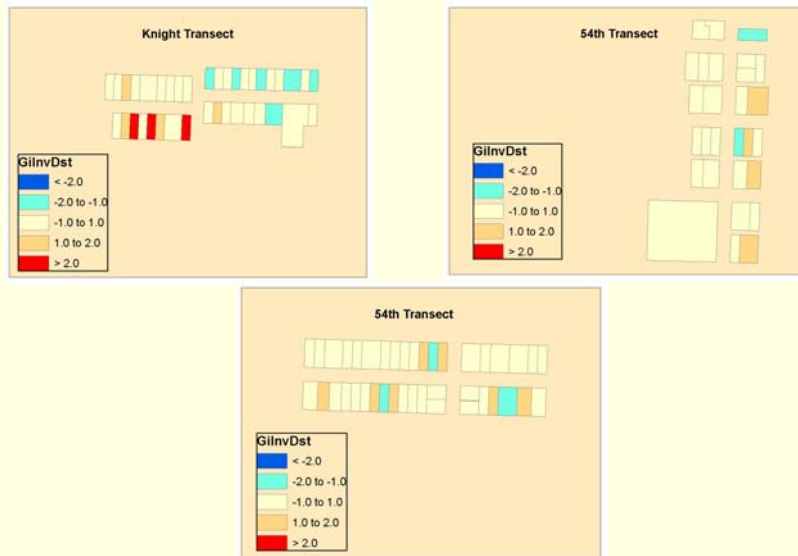


Low I – dissimilar area values

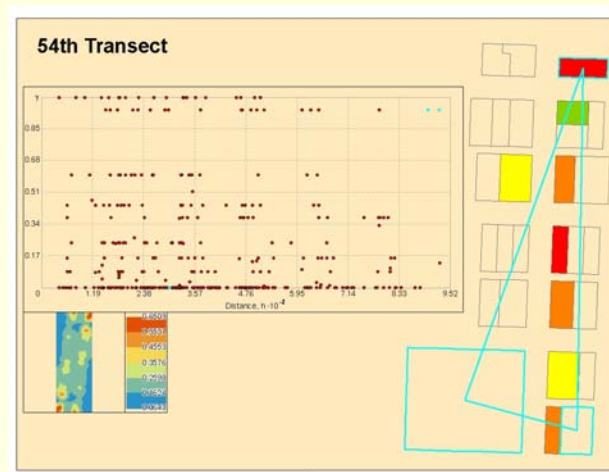
54th



Test for Hot-Spots (Getis-Ord) of (H):



Semivariogram of (H): Outliers





Conclusions

- No relationship with Canopy Cover at this scale.
- No clustering of H
- (1) transect has significant hot-spots
- Aggregate - Diversity index to smaller scale.
- Include Other Data:
 - Bird Feeder locations (Hot-Spots/outliers)
 - Other Vegetation Data: (heights, layering, type, shrub presence)
- Remaining transects



Thank You!

Questions/Comments



Source: www.mrcoper.ca/var/plain/storage/images-versioned/525/3-eng-CA