

Yellow Bellied Sapsucker

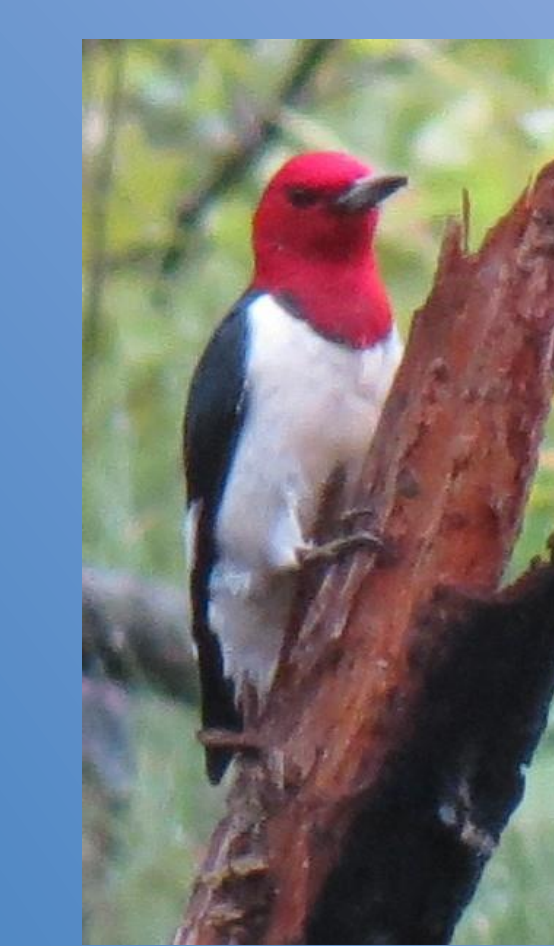


Woodpecker Species as Bioindicators in Agricultural Landscapes

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Norther Flicker



Red-Headed Woodpecker

Introduction

- As humans eliminate forests in order to build urban areas, many bird species, including woodpeckers are losing their habitats.
- Woodpeckers rely on forested areas with plenty of tree coverage and snags that they use as nesting and roosting sites.
- Woodpeckers are indicators of habitats high in biodiversity which indicates if the surrounding habitat is healthy (Virkkala, 2006).
- RQ1: Does the presence or absence of woodpeckers predict bird biodiversity on the UNCP campus?
- RQ2: What differences are there in developed land vs agricultural land in both woodpecker and bird community species richness / diversity?
- OVERALL GOAL: Our goal is to understand if Woodpeckers at UNCP indicate bird biodiversity on and around campus. We wanted to understand how woodpeckers are utilizing the campus habitat.

Methods

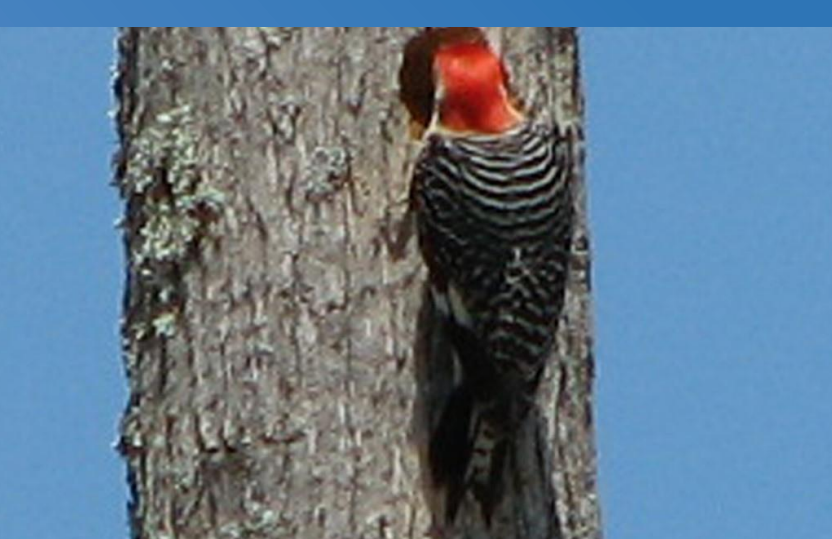
- Field surveys twice a week alternating between 2 sites (figure 2)
- 17 walking surveys in total, 10 on North site and 7 in South site
 - Identified all birds by sight and sound and recorded all birds in eBird app (Cornell lab of Ornithology)
 - Used Merlin smartphone app (Cornell lab of Ornithology) for ID
 - Territory mapping (Bibby et al 2000). We recorded
 - behaviors on physical maps
 - survey time, weather (temperature, wind Beaufort scale, humidity)
 - Map data from surveys and notes made were uploaded into ArcGIS online (by ESRI)
- Published breeding season territory area used to calculate territory number present each season per site for each woodpecker species
- Tree Diameter Breast Height was collected in 10x10m plots
 - All trees with a DBH bigger then 7cm were recorded
 - Average pine hardwood ratios were calculated per site



Pileated Woodpecker



Downy Woodpecker



Red-Bellied Woodpecker

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Results

Table 1: Site data, bird observations and territory numbers for UNCP campus.

	North		South	
Size	17 Ha		18 Ha	
% Forest	64.7%		8.9%	
Avg. Pine: Hardwood Ratio per 100m ²	2.5:7.25		3.5:4.25	
Species Richness (Fall / spring)	46/52		26/39	
Territory Numbers	Fall	Spring	Fall	Spring
RBWO (red-bellied woodpecker)	4	3	1	2
DOWO (downy woodpecker)	1	0	1	0
NOFL (northern flicker)	0	0	1	0

Initial Conclusions

- The number of woodpecker territories established have decreased from fall to spring, but data are still being collected.
- The spring bird species richness increased in both site compared to the Fall species richness.

Discussion

- Woodpecker Territories**
 - The decrease of territories may be due to increased competition within species or with other cavity nesting species with species such as the European starling.
 - Increased construction around campus has altered habitats and woodpeckers may move or adapt to these changes.
 - RBWO's and DOWO's have established territories in both sites, but only the RBWO was able to establish a territory in both the fall and spring semester.
- Biodiversity**
 - Both sites support a diverse population of woodpecker species and it is possible for woodpeckers to indicate bird biodiversity within and around the university.
 - The increase of species richness is possibly due to migrant species coming into this area to get ready for the upcoming breeding season.
 - There are more woodpecker species sightings within the N site than the S site, this is likely due to the N site having more tree coverage than the S site.
- Moving forward:**
 - A Shannon's Index will be used to analyze the tree and bird biodiversity of both sites.
 - We hope to understand possible interactions between woodpecker diversity and bird community diversity and the implications for campus habitat management.
 - We also hope to elucidate how campus developed areas and manicured landscapes impact bird biodiversity and how universities can become places in which bird conservation and biodiversity are a priority.

Figure 1. RBWO territories in south site
A Fall B spring

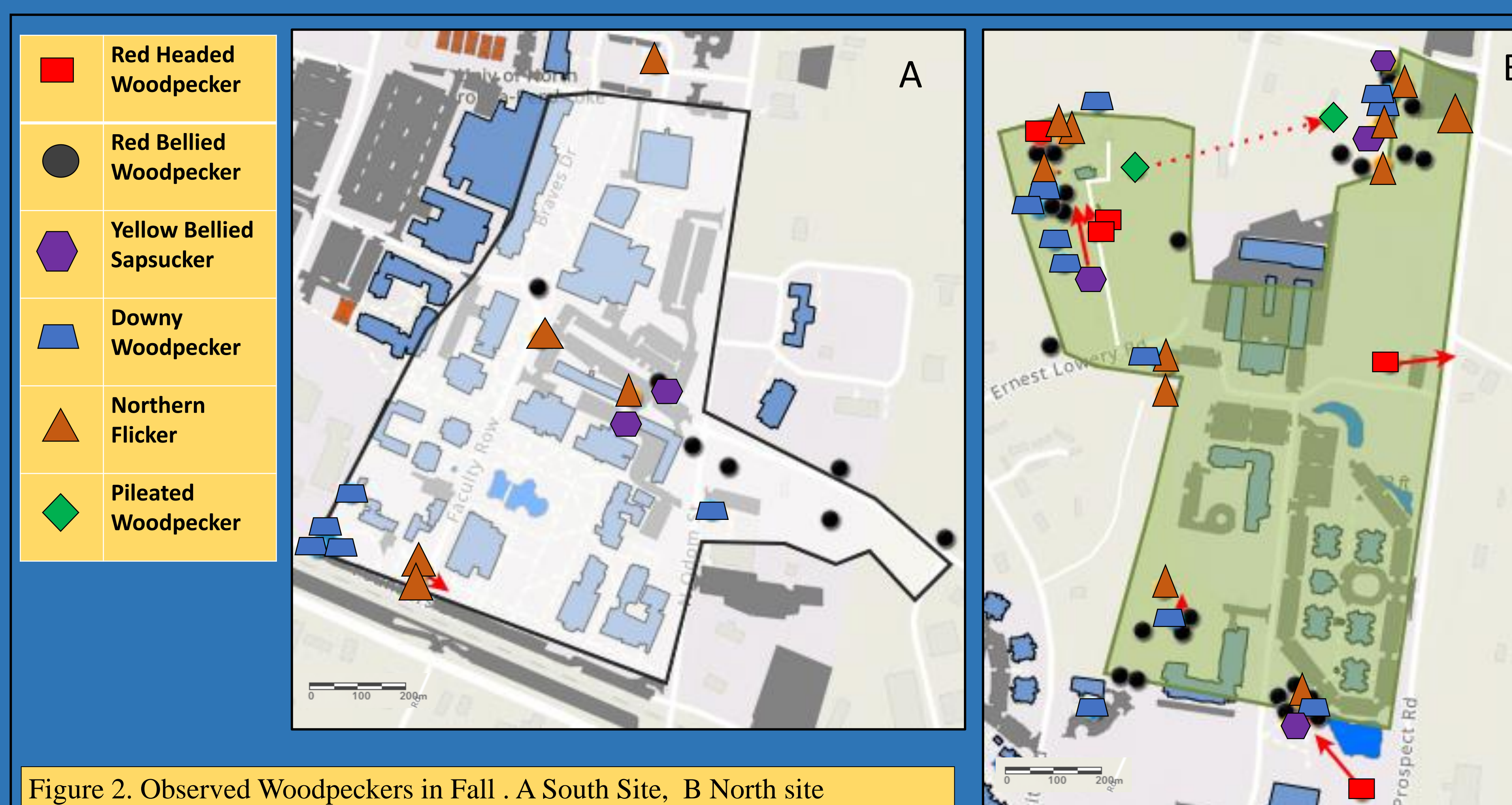
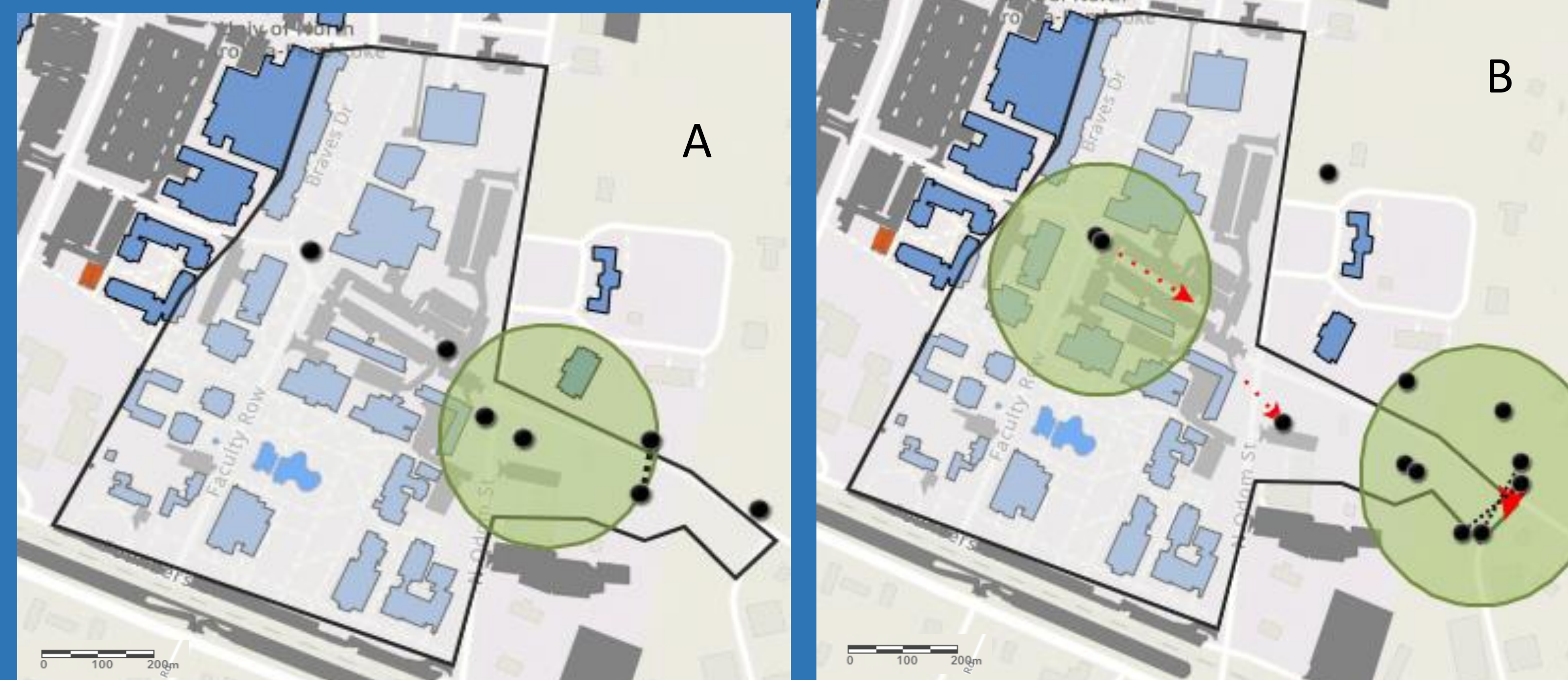


Figure 2. Observed Woodpeckers in Fall . A South Site, B North site

Acknowledgements

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Literature Cited:
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