

Detecting small mammals in fragmented landscapes

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Introduction

- Fragmented landscapes: areas where a natural or unnatural disturbance creates two separate habitats
 - Native habitat (upland forests)
 - Edge habitat (powerline ROWs)
- Edge habitats often have negative the adjacent natural habitat
- ROWs create edge habitats
- Right-of-Ways (ROWs) are created to build and maintain powerlines



<http://powerlines.seattle.gov/2010/08/24/new-rules-for-transmission-lines-drive-enhanced-vegetation-management/>

Introduction (cont'd)

- Small mammals at Teatown: Mice, shrews, voles, etc.
- Important as the second tier who can feed on the lowest level of plants
- Small mammals will live burrows
- Many small mammals, especially mice, will eat around 15-20 times per day
 - Need to live near plentiful food source



http://cityroom.blogs.nytimes.com/2014/12/12/winter-camp-for-the-white-footed-mouse/?_r=0



<http://animalia-life.com/shrew.html>



<http://sierrapestcontrolreno.com/2016/02/08/voles-aka-field-mice/>

Objectives

- There has been very little research regarding how small mammals react to ROWs
- Purpose was to see whether small mammals prefer ROW edge habitats or native upland forests
- Hypothesis: Small mammals will prefer ROW edge habitats to native upland forests
 - Small mammals will prefer thick vegetation
 - Small mammals will prefer less canopy cover

Materials

- Quadrat
- Densiometer
- Cardboard
- Acetate Sheets
- Ethanol
- Mineral Oil
- Graphite Powder
- Paper Clips
- Flags
- Sunflower Seeds

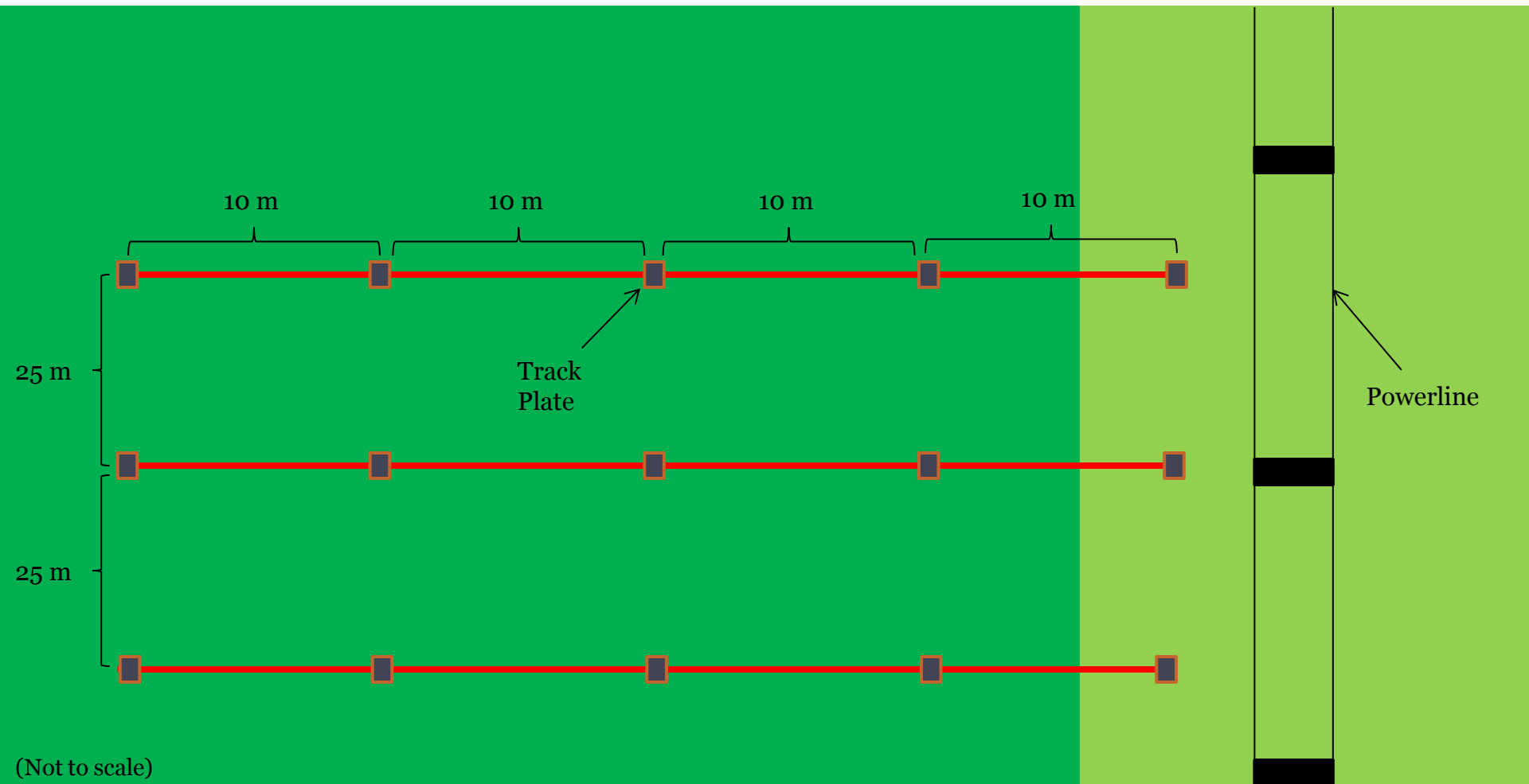


Study Sites

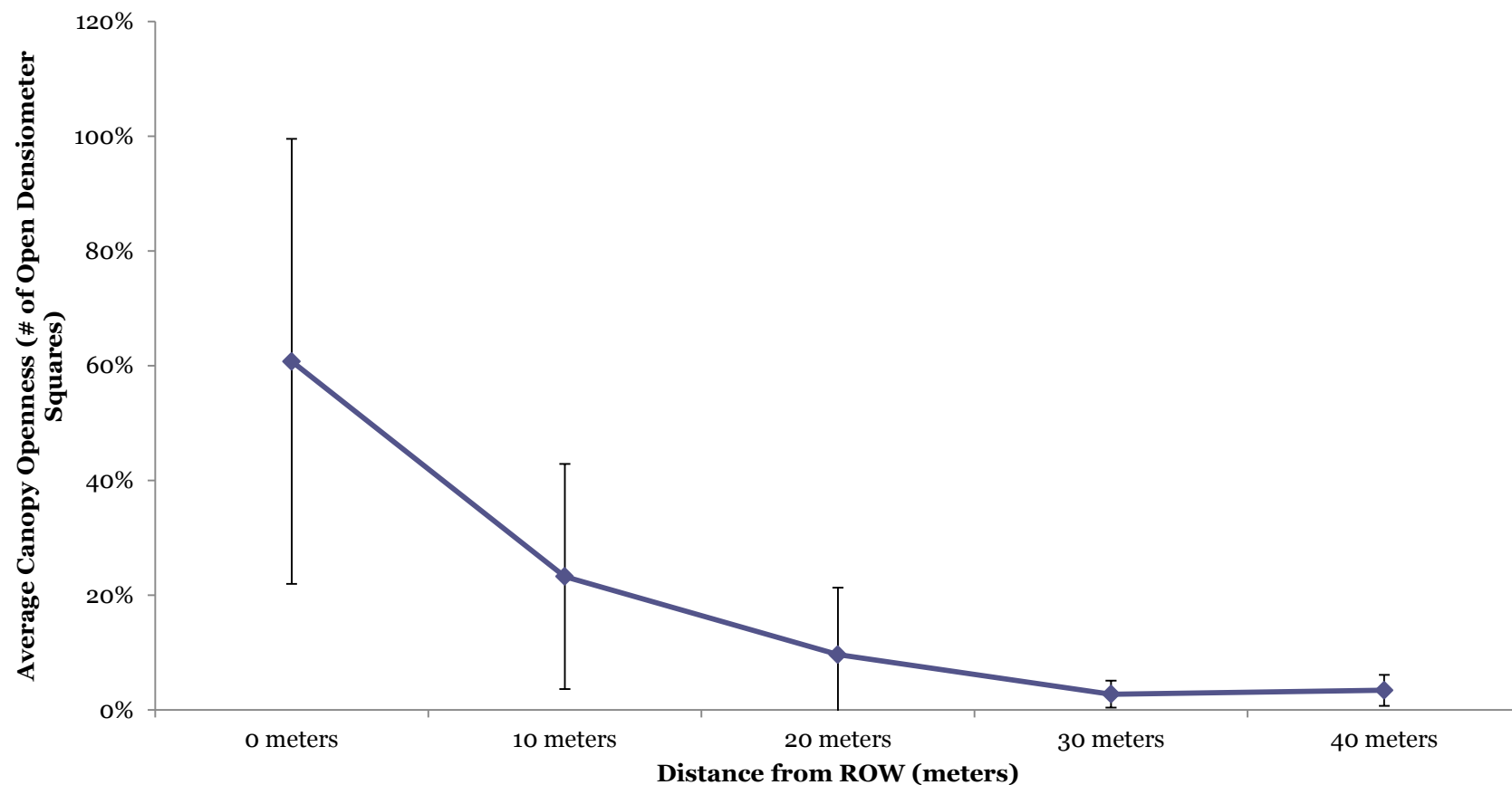
- ROW by Back 40 Trail
 - Lots of grasses and dense ROW vegetation
 - The highest point in Teatown
 - Clearly defined ROW
- ROW on the West side of Teatown Lake
 - Little ground vegetation outside of ROW
 - Same powerline as B40 site
 - Lower altitude than B40 site



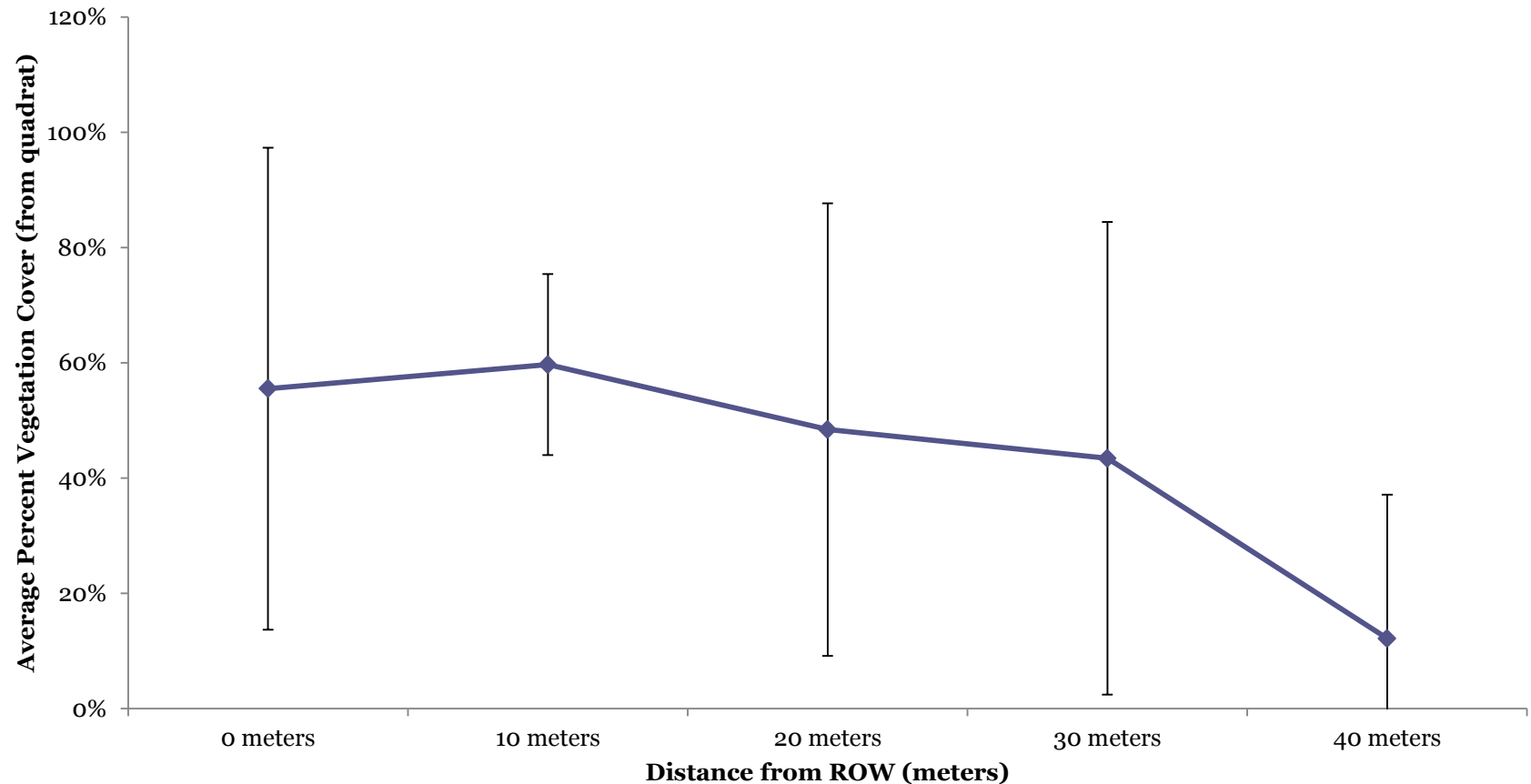
Procedure



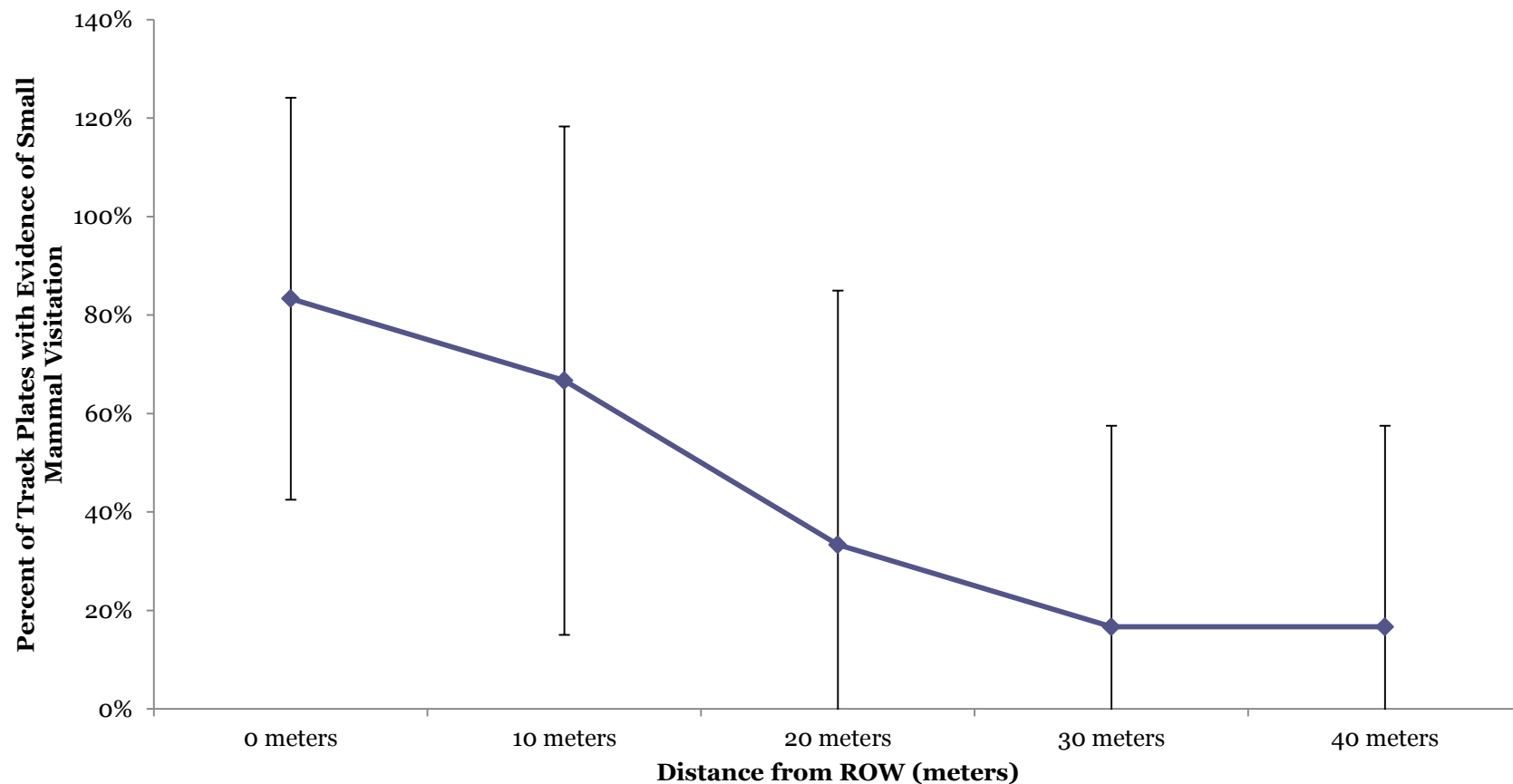
Relationship between Distance from ROW and Average Canopy Openness



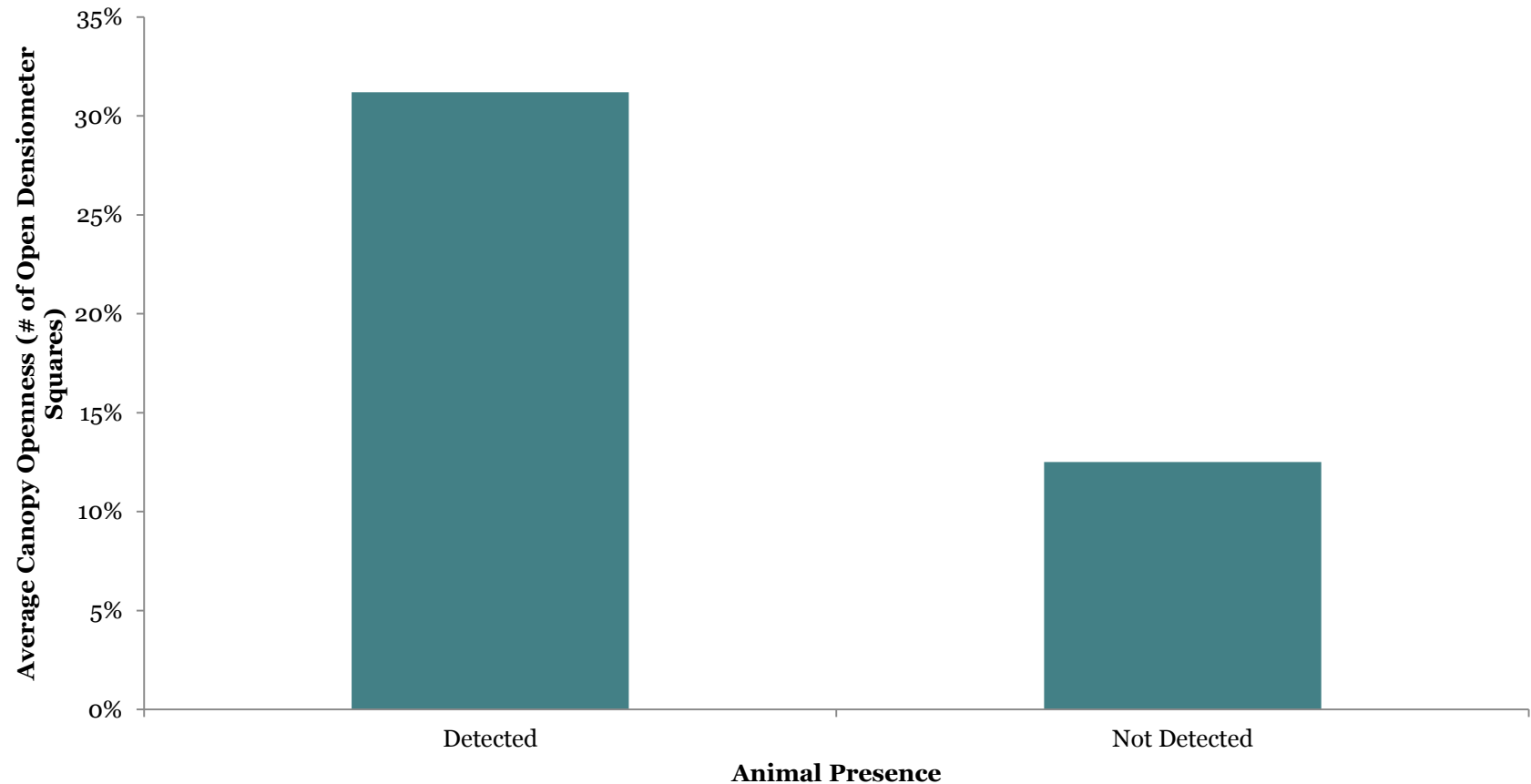
Relationship between Distance from ROW and Average Percent Vegetation Cover



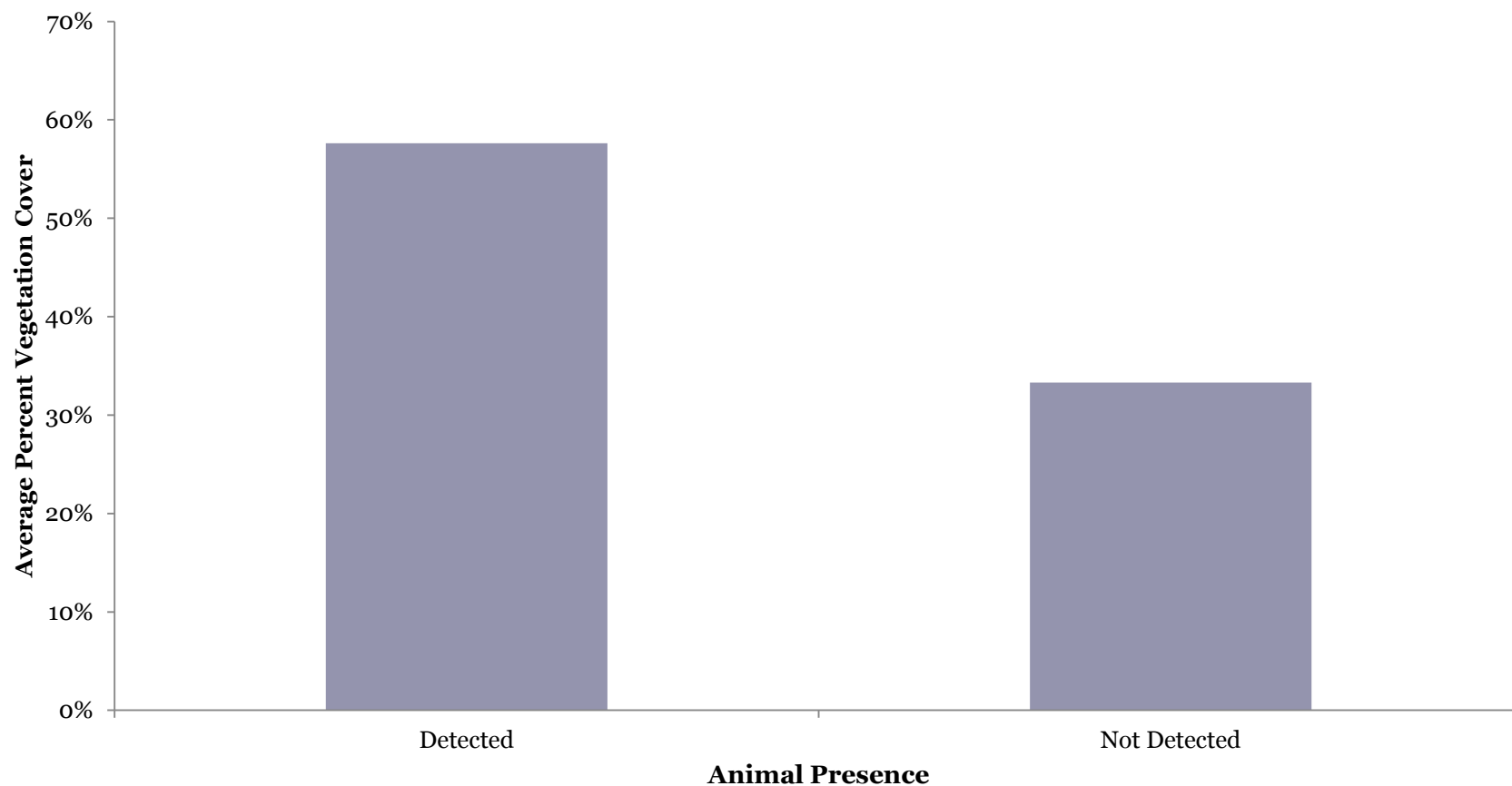
Relationship between the Distance from ROW and Small Mammal Presence



Relationship between Average Canopy Openness and Small Mammal Presence



Relationship Between Average Percent Vegetation Cover and Small Mammal Presence



Discussion

- Small mammals are more commonly found by ROWs than in native upland forests because:
 - ROWs have less canopy cover
 - ROWs denser ground vegetation
- People should continue to let ROWs develop rather than attempt to beautify them
- Problems:
 - Poorly-timed thunderstorms
 - The need to use bait
 - The tracking mixture did not paint easily

Conclusion



- Findings:
 - Small mammals prefer to inhabit powerline ROWs more than the native upland forest
 - In this case, the edge habitat created by human fragmentation is beneficial to these animals
- We need to continue to let ROW edge habitats develop on their own
- More research needs to be done, as mine was only a small sample size for a larger issue

Acknowledgements

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