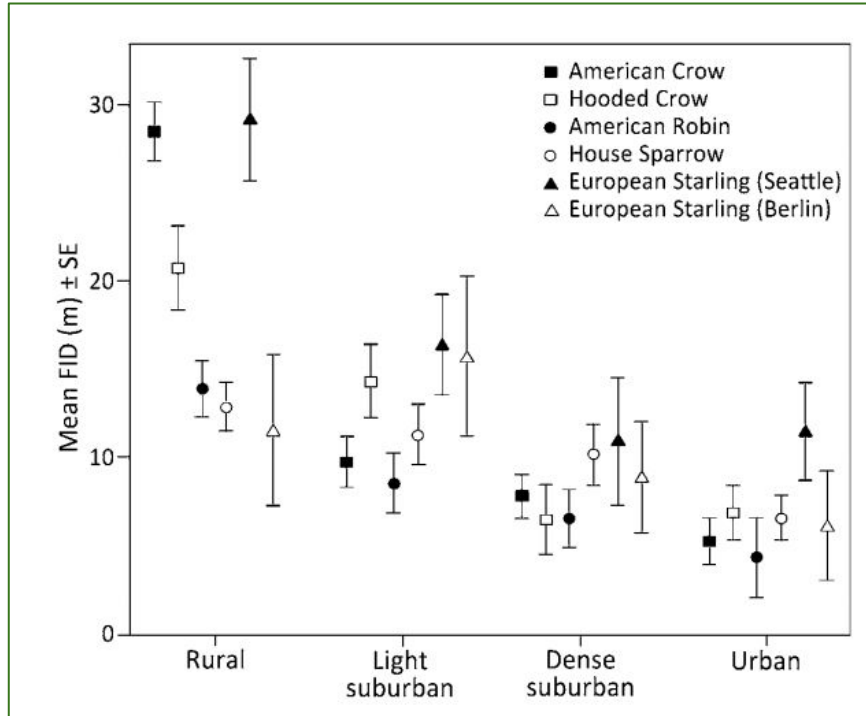


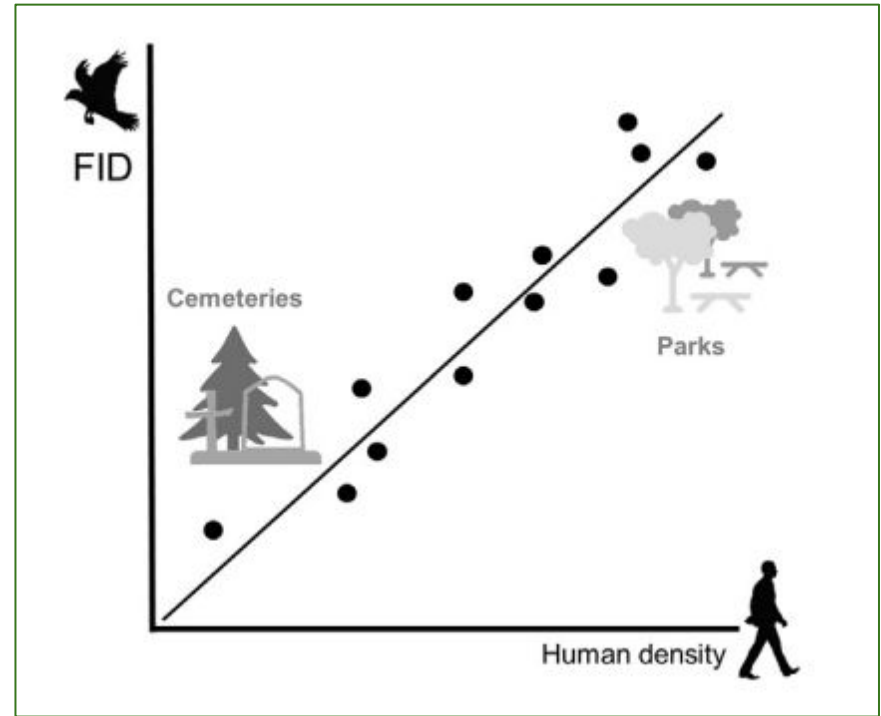
The Impact of Human
Disturbance on the
Foraging Behavior of
Cardinalis cardinalis



Urbanization and Human Disturbances Influences Bird Behavior



Clucas & Marzluff (2011)



Morelli et al (2018)

Q: Does foraging behavior differ between areas of high human disturbance and areas of low human disturbance?



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H: Cardinals in Brackenridge Park will modify their foraging behavior in response to frequent human disturbance.



Independent variable:
Human disturbance

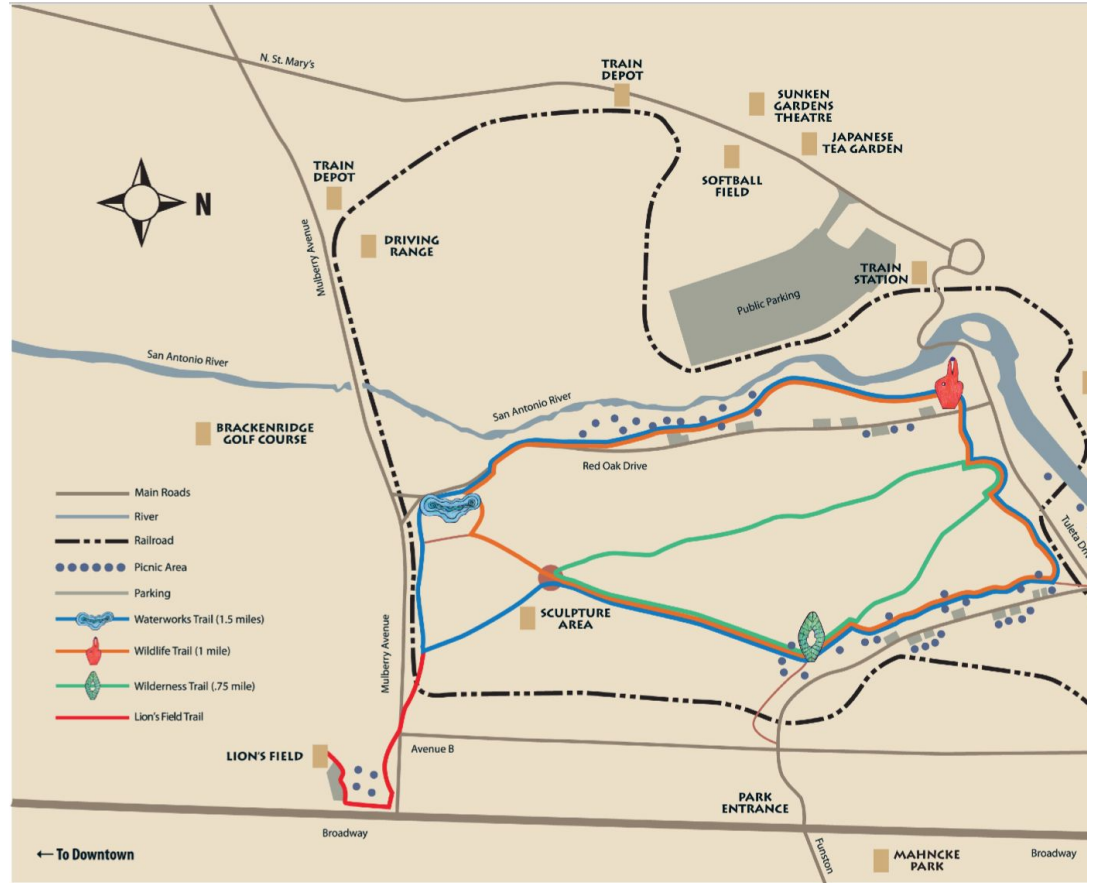


Dependent variable:
Time cardinals spend on
the ground foraging & their
distance from the trail



Prediction 1

Cardinals in more disturbed areas forage closer to the trails.



Prediction 2

Cardinals in disturbed areas will spend more time foraging on the ground than in the trees compared to cardinals in undisturbed areas.



Methods

1. Observe each cardinal at a given site from a distance 30m until it leaves
 - a. Record proportion of time spent on the ground during the observation
2. Record amount of human disturbance within a 30m radius of the bird
3. Record each bird's distance from the trail after it leaves
4. Record each bird's GPS location using a Trimble



Timeline

Collect Data:

Week of

Mar 25th

M/W/F/S

Apr 1st

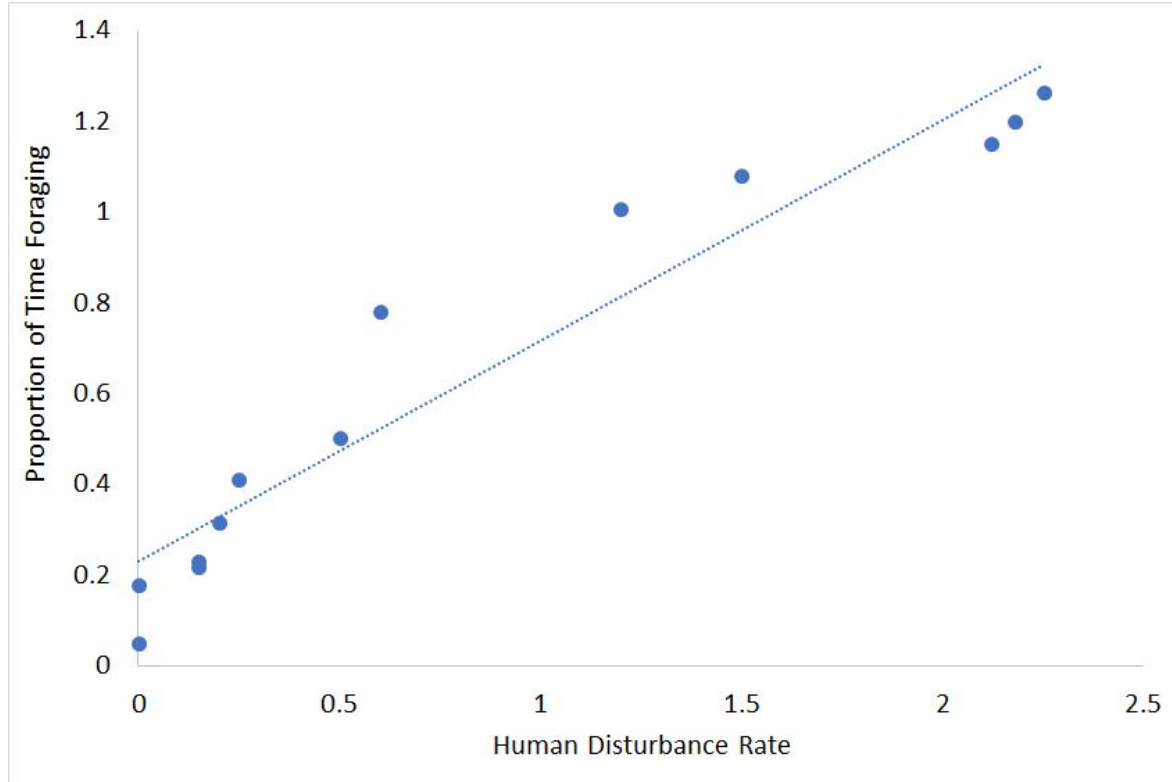
M/W/F/S

Apr 8th

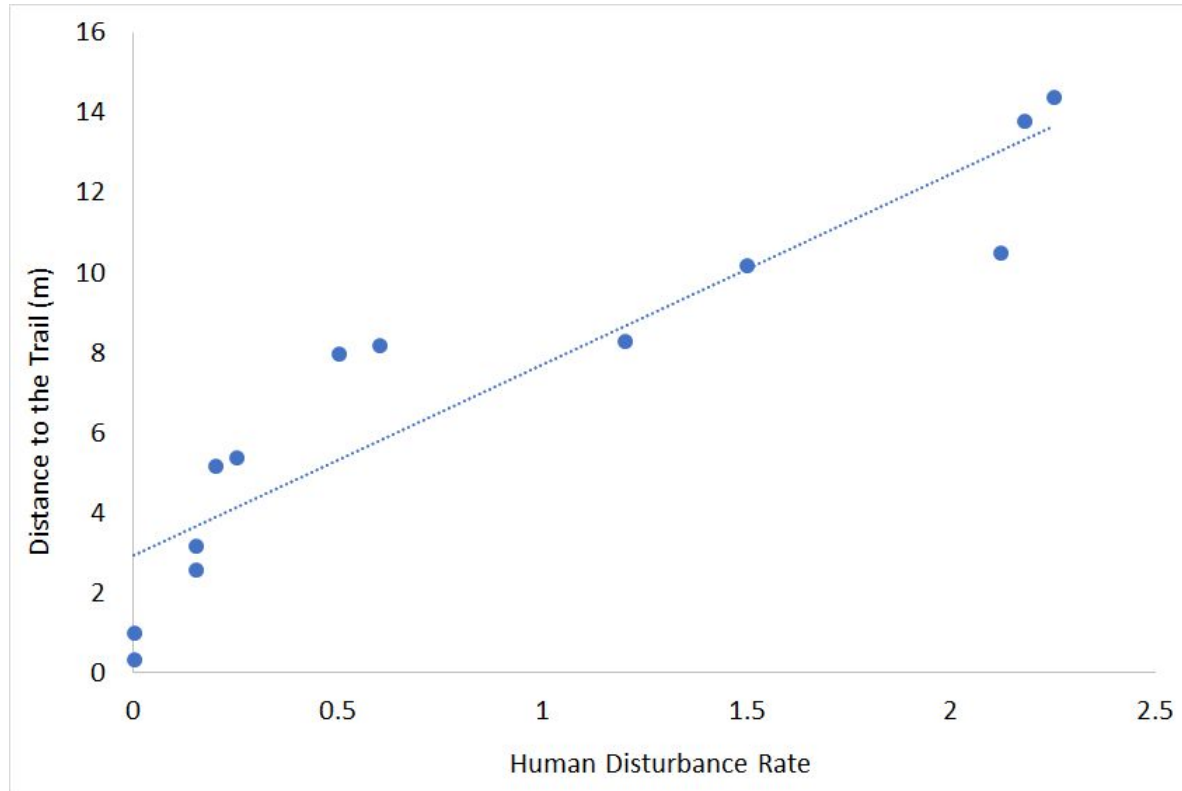
M/W/F/S



Time Spent Foraging Increases as Human Disturbance Rate Increases



Birds Forage Closer to the Trail in Areas of High Disturbance



There is a Positive Correlation Between Human Activity and Time Spent Foraging

X = Short Time

X = Long Time



References

- Blumstein, D. T.** 2015. Habituation and sensitization: new thoughts about old ideas. *Animal Behaviour*, **120**, 255-262. doi: <https://doi.org/10.1016/j.anbehav.2016.05.012>.
- Clucas, B. & Marzluff, J. M.** 2011. Attitudes and actions towards birds in urban areas: Human cultural differences influence bird behavior. *The Auk*, **129**, 1-9. doi: 10.1525/auk.2011.11121.
- Leston, L. F. V. & Rodewald, A. D.** 2006. Are urban forests ecological traps for understory birds? An examination using Northern cardinals. *Biological Conservation*, **131**, 566-574. doi: doi:10.1016/j.biocon.2006.03.003.
- Li, C., Monclus, R., Maul, T. L., Jiang, Z. & Blumstein, D. T.** 2011. Quantifying human disturbance on antipredator behavior and flush initiation distance in yellow-bellied marmots. *Applied Animal Behaviour Science*, **129**, 146-152. doi: <https://doi.org/10.1016/j.applanim.2010.11.013>.
- Morelli, F., Mikula, P., Benedetti, Y., Bussiere, R., Jerzak, L. & Tryjanowski, P.** 2018. Escape behaviour of birds in urban parks and cemeteries across Europe: Evidence of behavioural adaptation to human activity. *Science of the Total Environment*, **631-632**, 803-810. doi: <https://doi.org/10.1016/j.scitotenv.2018.03.118>.
- Smith-Castro, J. R. & Rodewald, A. D.** 2010. Behavioral responses of nesting birds to human disturbance along recreational trails. *Journal of Field Ornithology*, **81**, 130-138. doi: <https://doi.org/10.1111/j.1557-9263.2010.00270.x>.

Rubric

- ❑ Clarity of rationale
- ❑ Feasibility of aims
- ❑ Logical specific aims
- ❑ Methods and Timeline
- ❑ Expected results and pitfalls
- ❑ Question, hypothesis and predictions
- ❑ Research on what makes the question and hypothesis biologically relevant
- ❑ Research on what is known on this topic
- ❑ Include citations and references