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Influence of Human disturbance on the ranging patterns of wildlife on college campuses

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Introduction

- Urban sprawl has been increasing across the globe and leads to increased fragmentation of forest and natural areas
- Urban sprawl brings people and wildlife in close proximity, promotes conflicts, and subjects wildlife to human disturbance (Zothanpuii et al. 2020)
- College campuses create a unique opportunity to study how human activity affects the ranging patterns of wildlife (Bocsi et al. 2018)
- Hypothesis and prediction: human activity will have a strong effect on wildlife activity rates, with mammal activity lower in areas and at times of higher human activity

Study Area & Methods

- This study took place on the campuses of Cal Poly Humboldt and College of the Redwoods in Humboldt County, northern California
- Campuses have a mix of forest environments and manicured landscaping with a surplus of anthropogenic food sources
- Cameras were placed ~ 75 m apart across a gradient from the center of campus (Site 1) moving out to the edge of campus (Site 5), with 2 sites in the adjacent forest (Sites 6 & 7)
- Activity of mammals and people reported here as # independent (separated by 30 min) events per camera night
- Averaged activity of mammals and people during weeks 1 through 4 (13 Feb-12 Mar) and compared this to the activity during both campuses' spring break week 5 (13-19 Mar)

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Figures

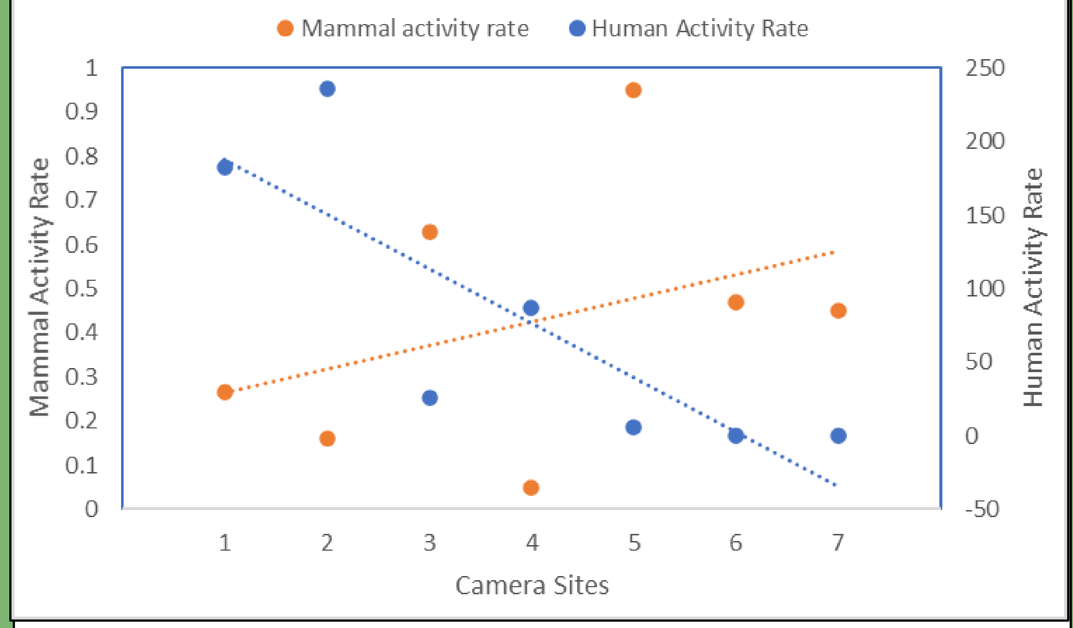


Figure 1. Human and mammal activity rates at camera sites 1-7 for both Cal Poly Humboldt and College of the Redwood averaged for weeks 1-4 of the study.

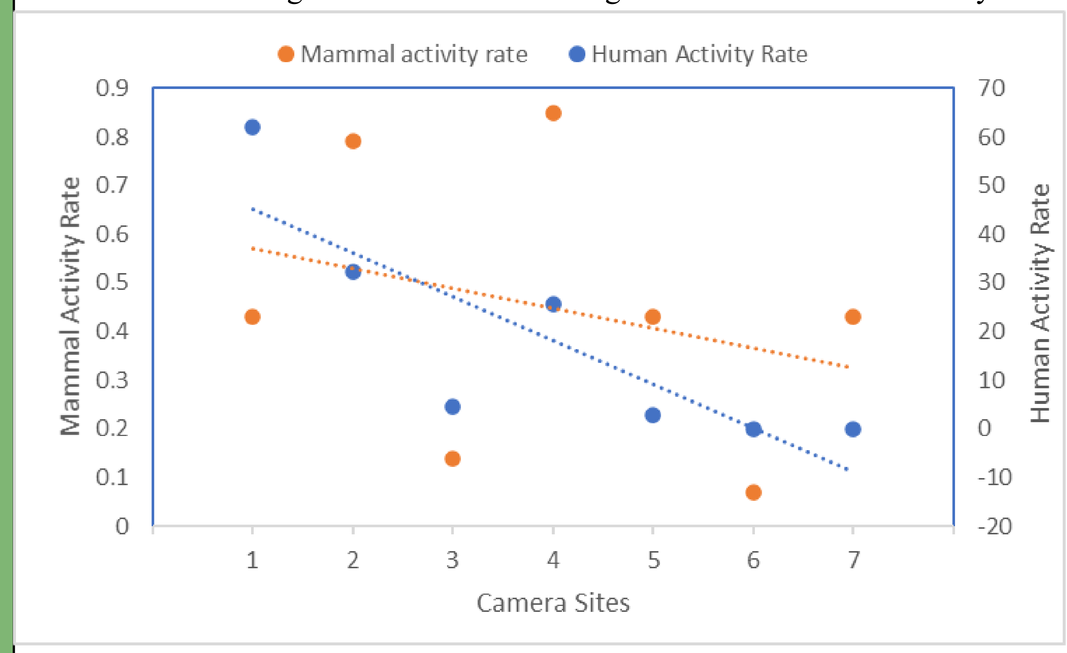
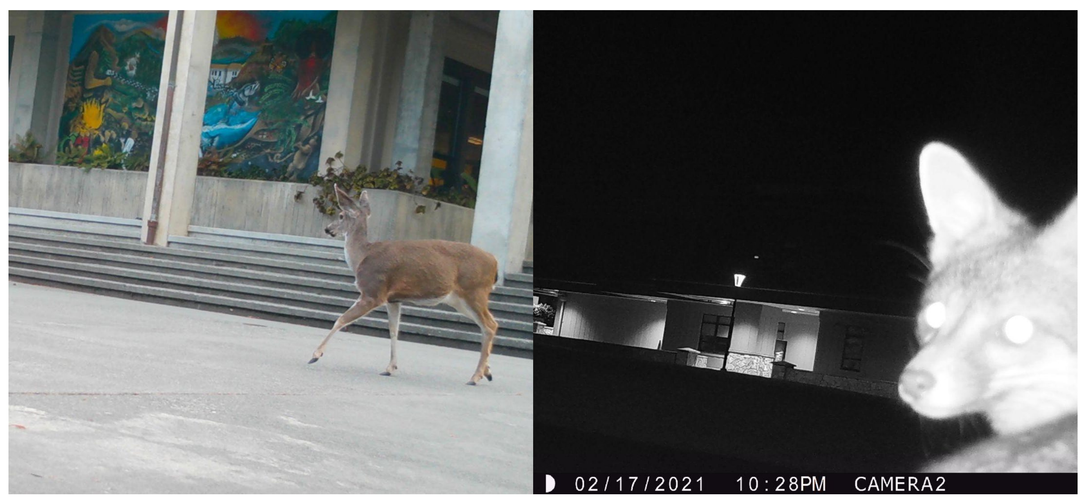


Figure 2. Human and mammal activity rates at camera sites 1-7 for both Cal Poly Humboldt and College of the Redwood averaged for the week of spring break.



Results

- 100,000 photos of 6 mammal species (and humans) were recorded including: raccoons, gray squirrels, gray foxes, black-tailed deer, domestic cats, and striped skunks (in decreasing order of events)
- Weeks 1-4: human activity was negatively correlated with distance to center of campus (r_s =- 0.83, p=0.02), while mammal activity had a positive correlation (r_s =0.38, p=0.4)
- During spring break (Week 5), both human and mammal activity were negatively correlated with distance from center of campus (human: r_s =-0.84, p=0.02; mammal: r_s=-0.3,p=0.51)
- Correlations between mammal and human activity were significantly different during weeks 1-4 (t=1.5, df=12, p=0.04) but similar during week of spring break (t=0.71, df=12, p=0.24)

Discussion

- The hypothesis that high human disturbance rates will affect wildlife ranging patterns on college campuses was supported
- These findings support recent research about the effects of urbanization, fragmentation, and human disturbances on wildlife (Srivastava et al. 2020)
- I recommend future research in this topic deploy cameras over longer school vacations to further explore the differences in animal behavior observed before compared to during periods of time with higher/lower human activity

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Lit Cited

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Zothanpuii, J. H., S. Gouda, A. Parida, and G. S. Solanki. 2020. A study on diversity of mammalian species using camera traps and associated vegetation in Mizoram University campus, Aizawl, Mizoram. Journal of Threatened Taxa 12:17330–17339.