

Raptors in the City: How urbanization impacts raptor abundance

Amy Lindteigen (ABS 473 Applied Ornithology)

College of Integrative Sciences and Arts, Arizona State University, Polytechnic

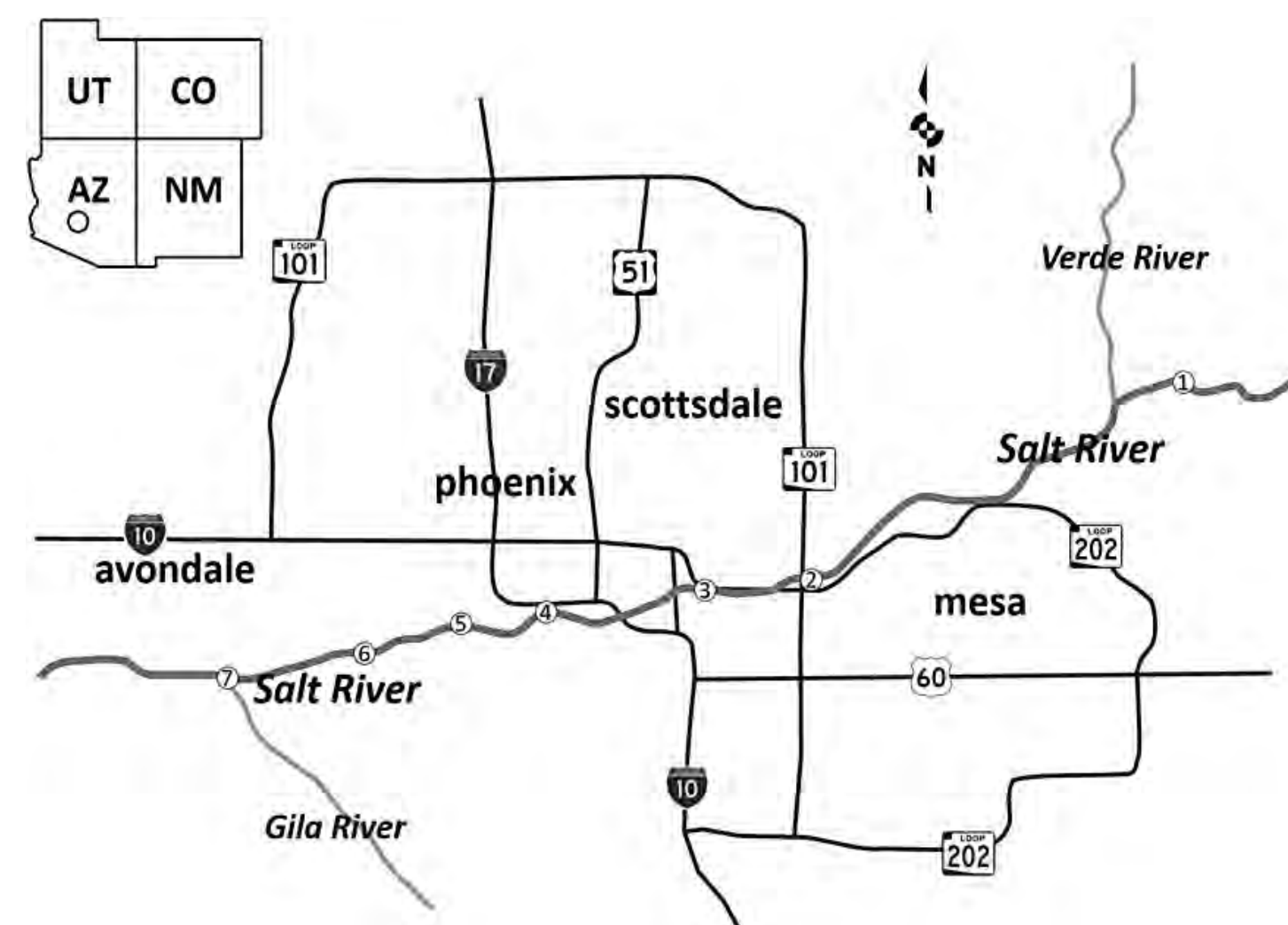
Introduction and Objectives

Raptor species are:

- Increasingly abundant in cities, sometimes being the most common species outside of the city and sometimes being a generalist, but always present if their prey is in abundance [1,2,3]
 - Tend to be year-round residents in the cities they inhabit, with migratory raptors avoiding cities [4]
 - The most common type of bird struck by aircraft [5]
- I am curious about how raptor presence in the city may be affected by urbanization as measured by impervious surfaces. I believe that abundance will be highest in areas of low urbanization.

Methods

I compared 9 years of data from 7 sites along the salt river: (1) Tonto, (2) Price, (3) Priest, (4) Rio, (5) Ave35, (6) Ave67, and (7) BM, courtesy of CAP LTER - iTree used to estimate ground cover at each site



- Raptor = Accipitriformes, Cathartidae, Falconiformes, and Strigiformes [6]
- n = 63

Fig 1. Map of all the SRP sites as numbered above [7]

Results

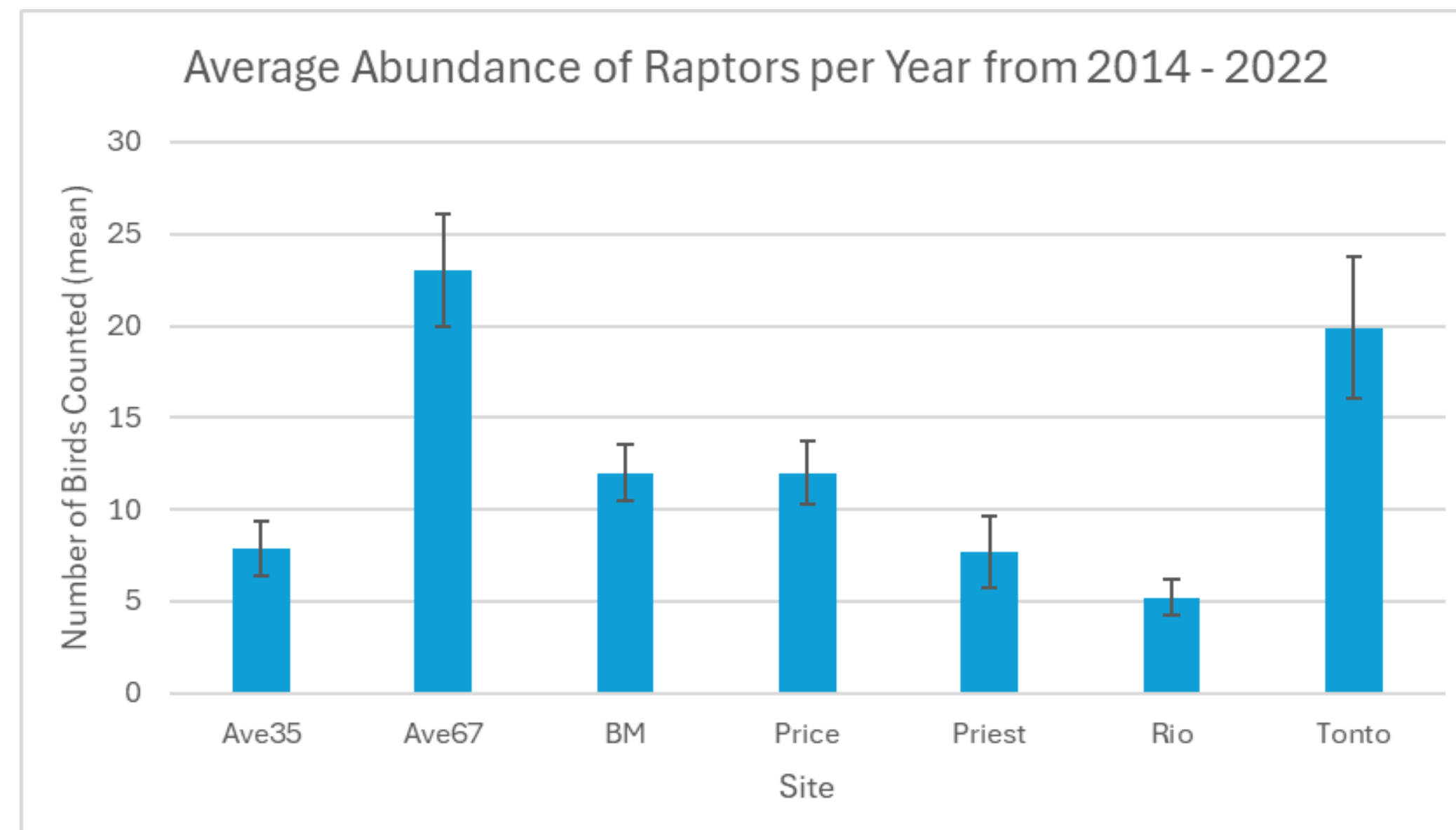


Fig 2. Average abundance of raptors per year from 2014 - 2022 at each SRBP site. Tonto and Ave67 are significantly higher in raptor counts than the rest of the sites.

There is a strong negative correlation between impervious surface & raptor abundance, with a p-value = 0.02.

Conclusions

- Statistically significant correlation supports the hypothesis that raptor abundance is highest in areas of low urbanization
- Some sites with low impervious surface and thus considered low urban areas were actually surrounded by high urban areas, indicating that mitigating urbanization factors in patches may help to promote raptor abundance

Fig 3. Osprey, the most frequently counted bird across all sites (214 out of 716 total counts were osprey)

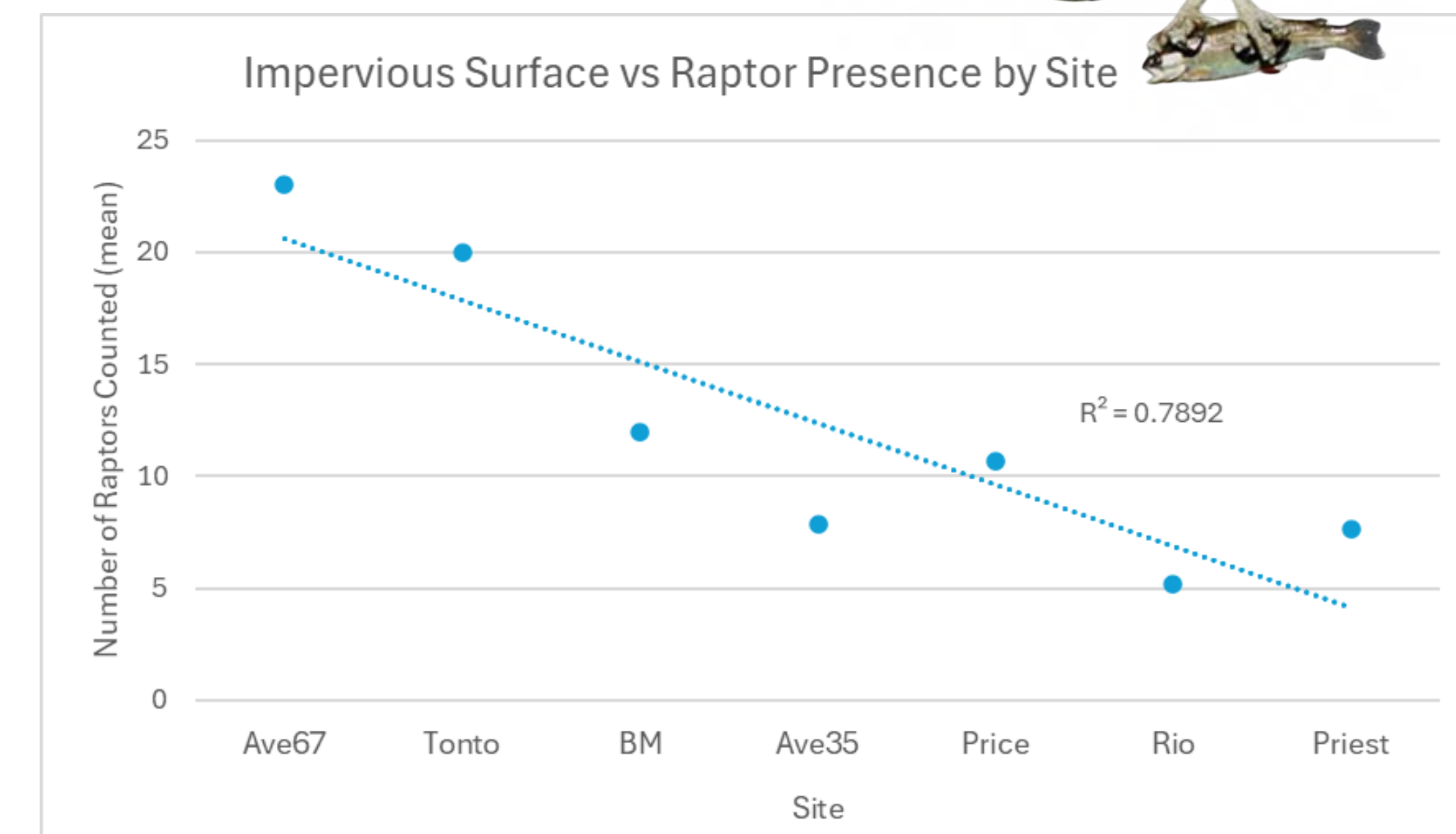
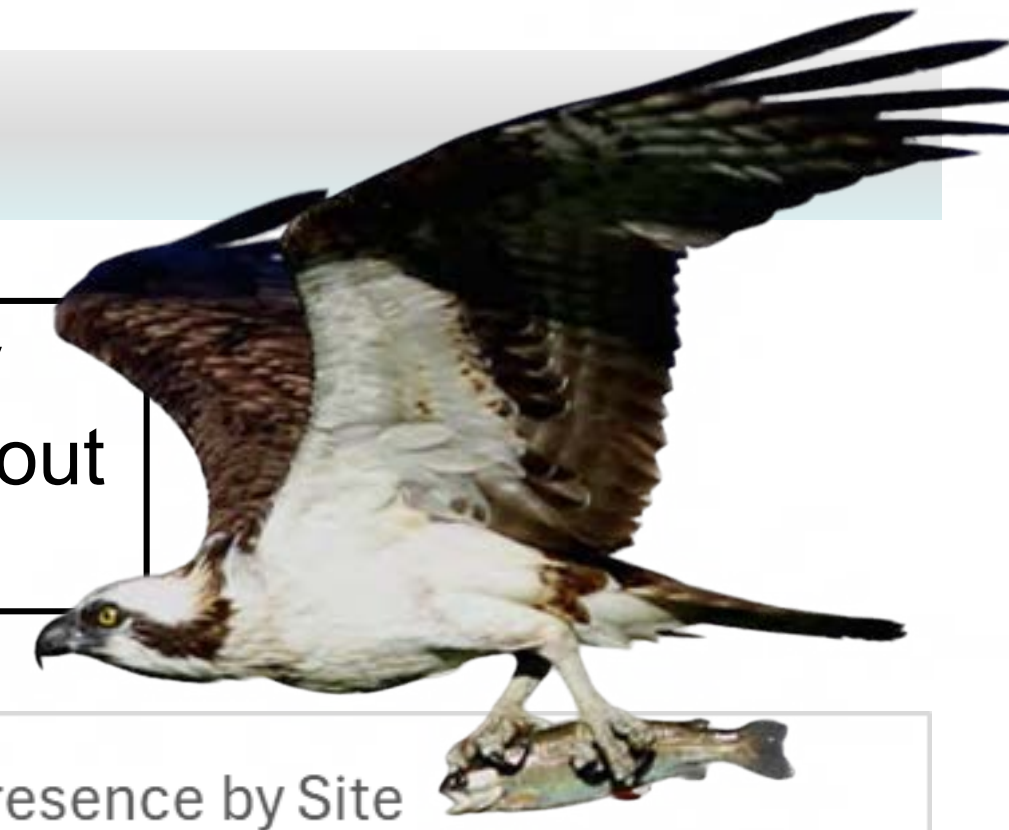


Fig 4. Correlation between impervious surface and Raptor Abundance at each site, where sites are organized from low to high impervious surface. P-value = 0.02

Literature Cited & Acknowledgements

1. White et al. 2020. RTHA Reproductive Success. Journal of Urban Ecology. 6(1).
3. Kettel et al. 2018. Breeding Performance Raptor Urban. Journal Ornithology 159(1).
4. Leveau et al. 2022. What makes Urban Raptor? Ibis. 164(1).
5. San Martin-Cruz et al. 2024. Raptors Neotropical City. Urban Ecosyst. 1(1).
6. McClure et al. 2019. Defining Raptors. Journal Raptor Research. 53(4)
7. Bateman et al. 2015. Novel Water Resources restore communities Ecohydrology. 8(5)..

Osprey photo courtesy of Jerry Ligouri

I would like to thank Dr. Heather Bateman for helping me narrow down my topic and Shane Henderson for taking me to the Tonto SRBP site and teaching me point count protocol.