

Frequency of coyotes on wildlife cameras in San Diego natural preserves

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Background

- Effective management of protected areas requires understanding how species use habitat, particularly omnivorous species that exert cascading effects up and down the food chain¹.
- Coyotes (*Canis latrans*) are widespread mesocarnivores² that play an important role in moderating prey populations across North America³, but we do not know what environmental variables can be used to predict coyote frequency in Southern California natural preserves.

Research Objective

- Can we predict coyote frequency based on
- invasive weed control
 - drought
 - frequencies of predators, prey, and competitors
 - habitat availability?

Invasive weed control has no relationship with coyote frequency.

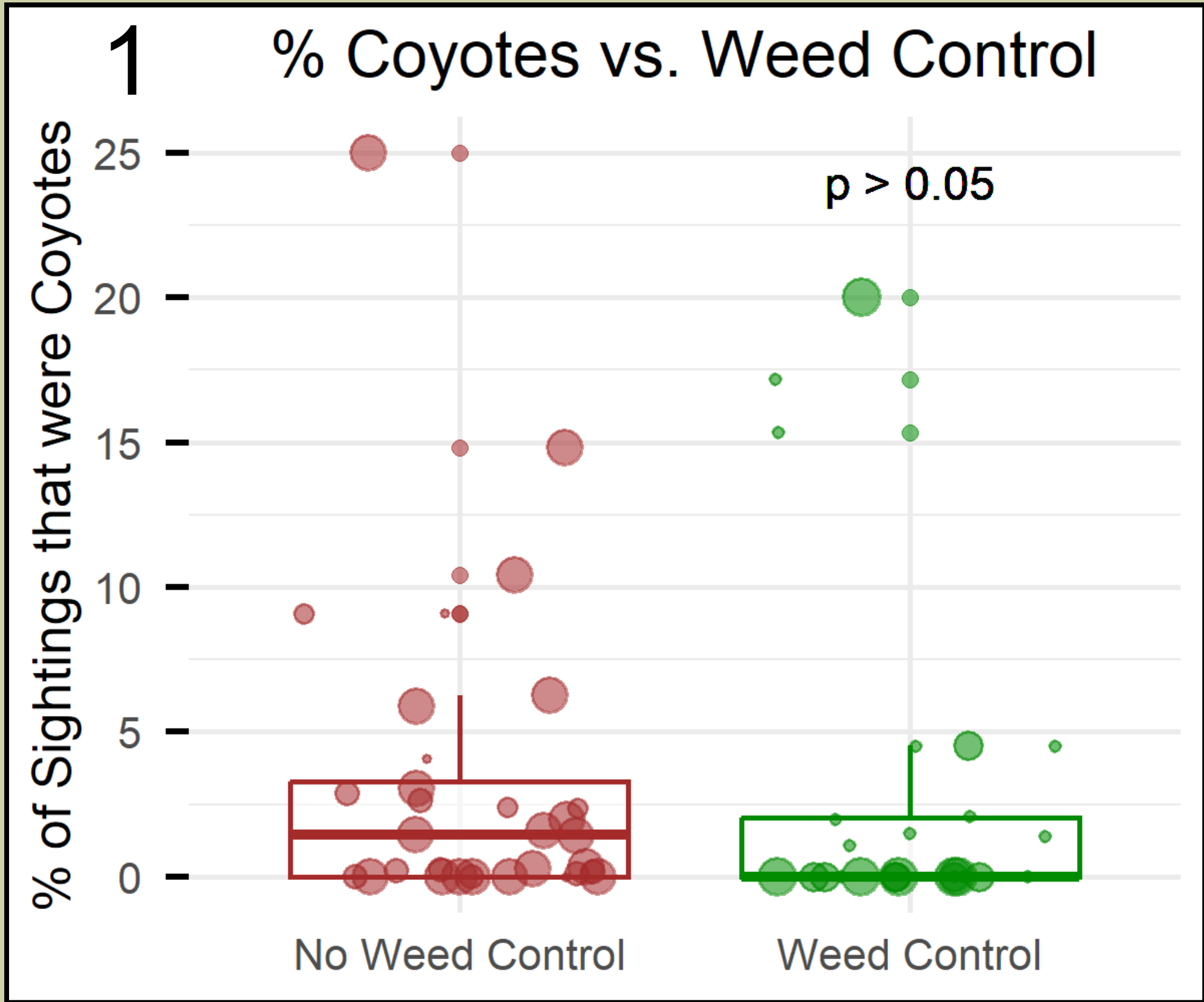


Figure 1. Boxplot of the per-year, per-preserve percentages of sightings that were coyotes in preserves with weed control versus those without.



Future Directions

Future studies should develop local, seasonal models that can predict coyote frequency based on environmental variables (particularly the frequencies of their predators, prey, and competitors) based on finer resolution temporal data.

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Prey frequency affects resource partitioning and competition between carnivorous mammals.

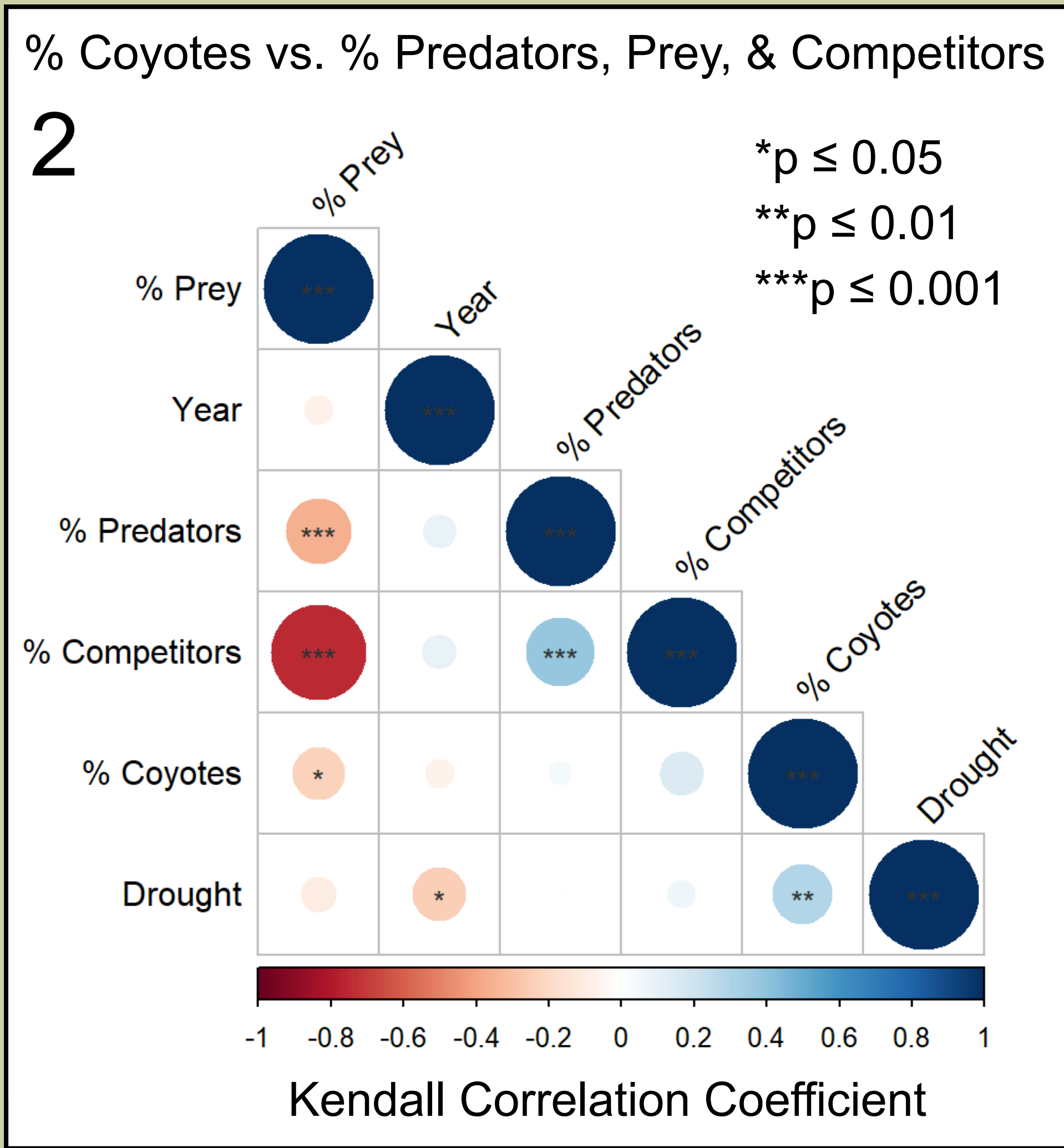


Figure 2. Correlation matrix comparing Drought Severity and Coverage Index, coyote frequency, and predator-prey frequencies using Kendall rank correlation coefficients (τ). The color bar represents the direction of τ while the size of each circle corresponds to its magnitude. Asterisks indicate significant results.

Habitat type is not correlated with coyote frequency.

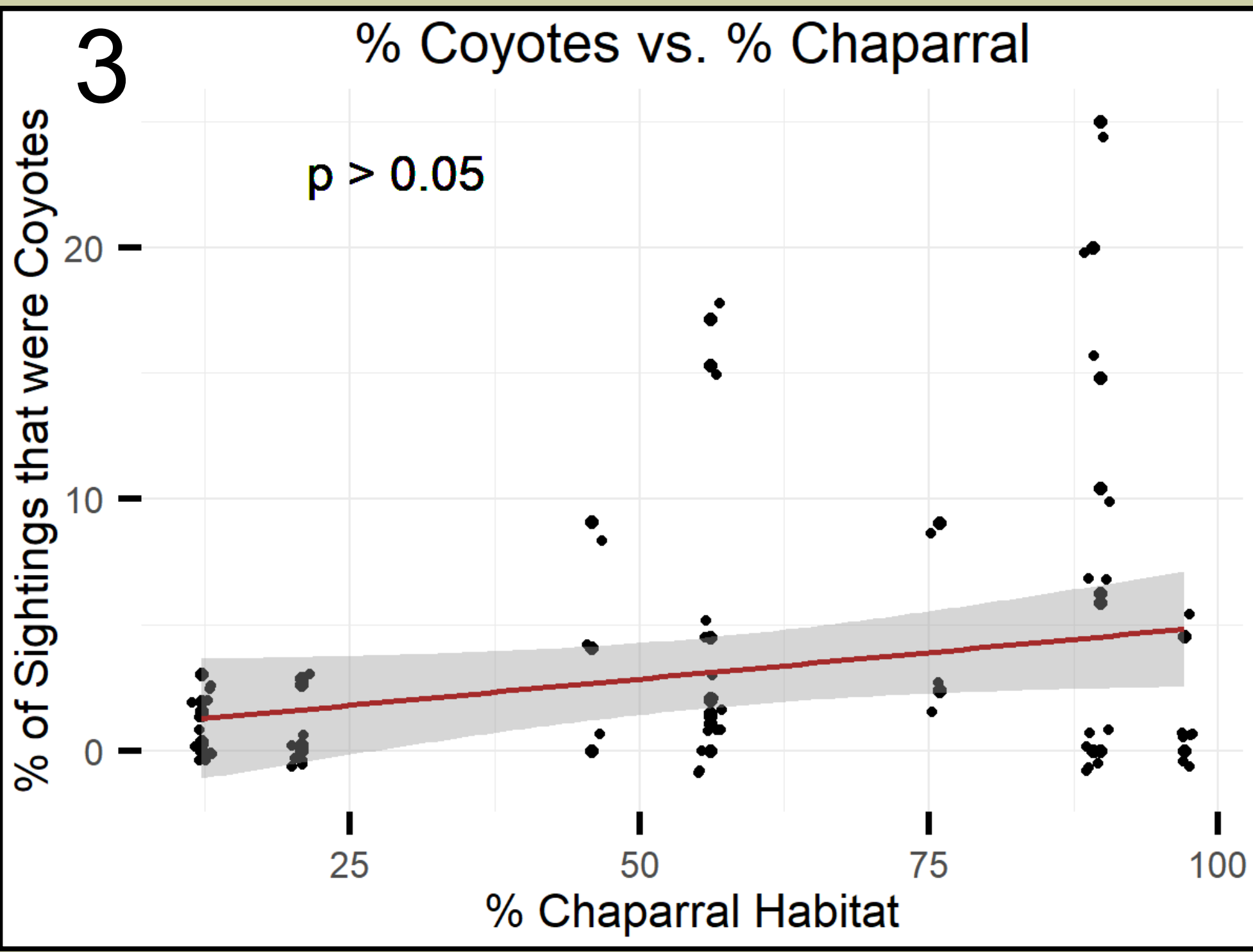
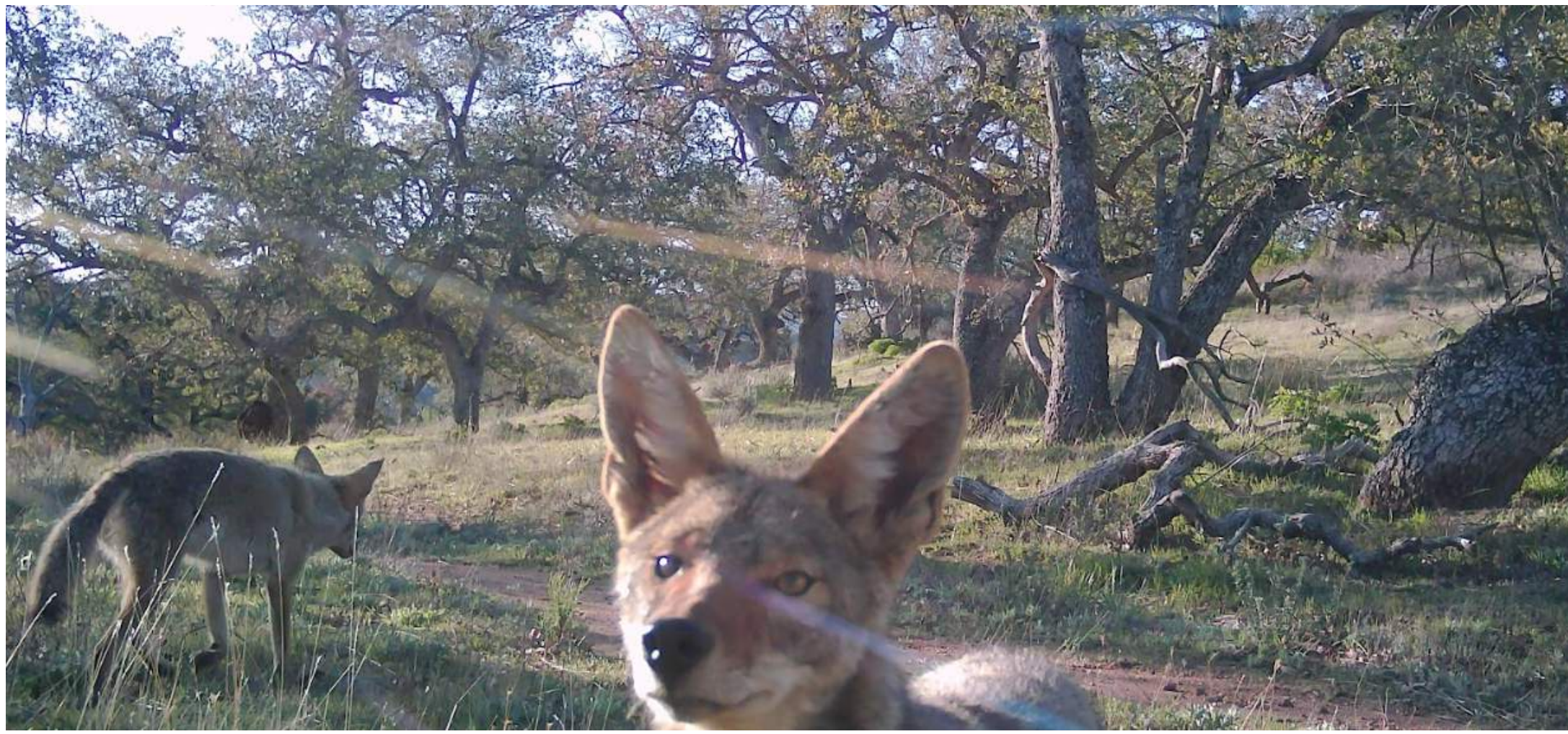


Figure 3. Scatterplot of per-year, per-preserve percentages of sightings that were coyotes versus per-preserve percentages of chaparral. Red lines are the best fit linear model; shaded gray regions are the 95% confidence interval.



Coyote frequency correlates with predator-prey habitat use, particularly the vulnerability of lagomorph prey.

Sampling Locations

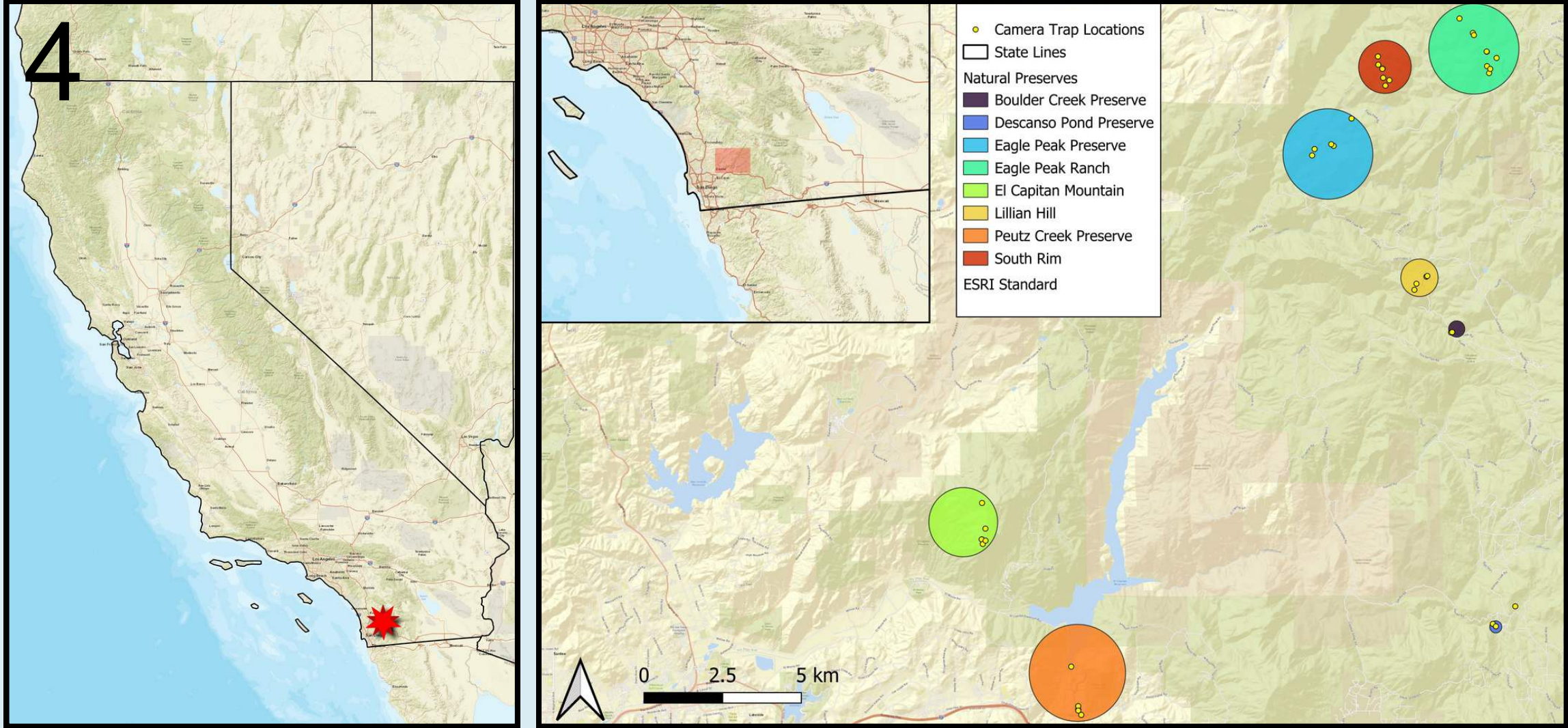


Figure 4 (Above). Map of camera trap locations in the San Diego River Park Foundation's natural preserves.

Photo Collection



Figure 5 (Left). Example camera trap. Passive infrared cameras were tied to trees or posts to detect passing animals.

Figure 6 (Below). Images from camera traps show a subset of animals sighted. Photos include (A) Coyote, (B) Bobcat, (C) Mule Deer, (D) Gray Fox, (E) Puma, and (F) Ringtail.

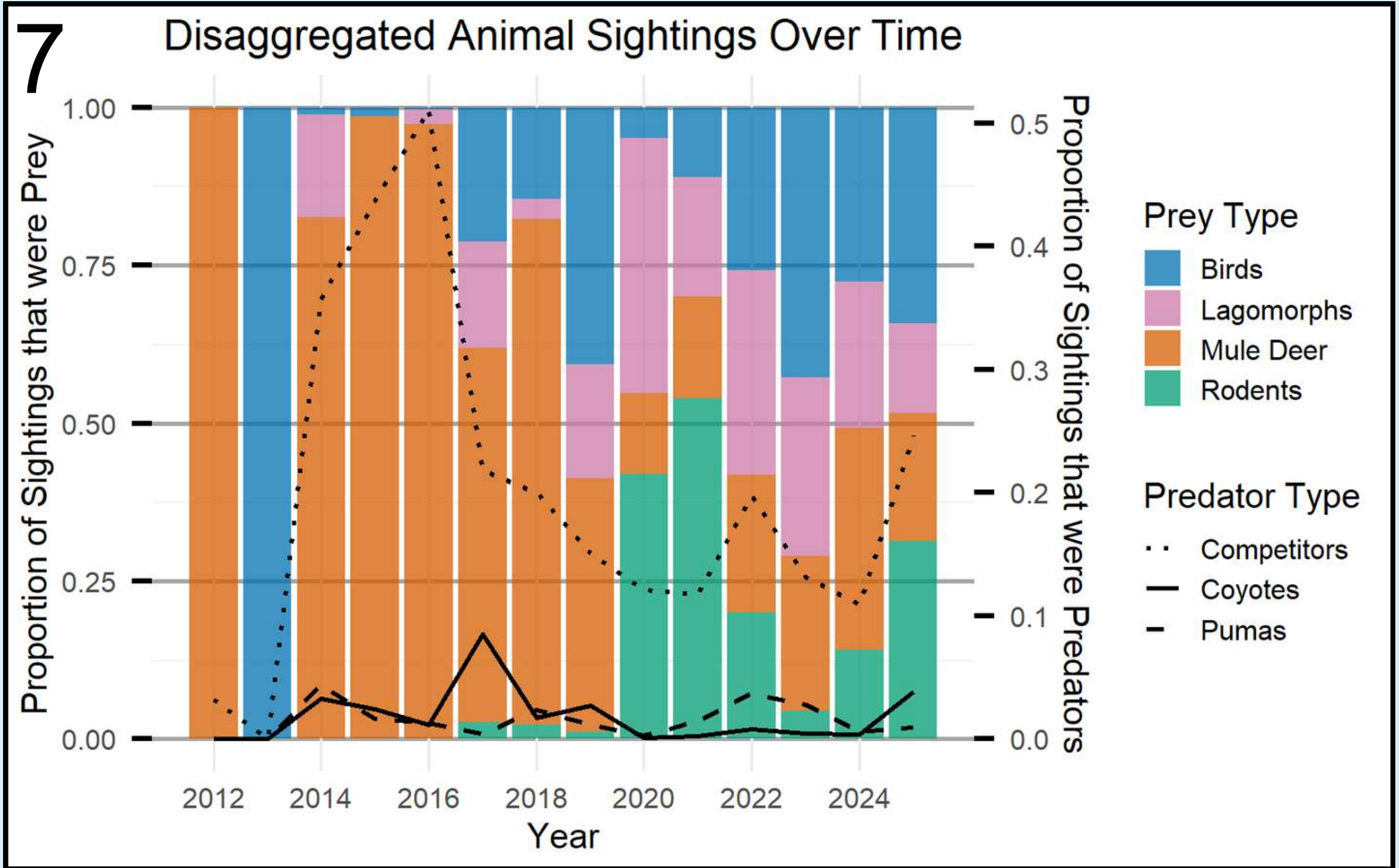


Figure 7. Stacked bar plot of animal sightings over time, disaggregated by taxonomic group. The black line represents the percent of total sightings that were coyotes.

References

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