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# Availability of Perches Correlates with the Abundance and Richness of Raptors in Humboldt County

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## Introduction

Most raptor species rely on perches for hunting, resting, preening and roosting and in many habitat areas and the lack of elevated perch structures can limit the abundance of raptor species in these habitats (Preston 1990; Widen 1994; Kross et al. 2018).

## Objective

My research aimed to address the question of whether local raptor abundance and richness correlates with the presence of a variety of perch types in a plot

## Methods

- I conducted my morning surveys during sunrise (7:30-7:45 am), while evening surveys were within the duration of (6:00-8:00 pm).
- I recorded (1) the plot location; (2) identification of the species; (3) how many individuals were observed; (4) time of day; (5) total available perch structures within the plot and (6) types of perch structures.
- When recording how many perch structures were in the area, I counted every individual structure as its own perch.



## Results

- As the total number of perches (within a given plot) increases, species richness and abundance also increase (Figure 3 & 4).
- No statistical evidence that types of perches correlate with raptor abundance nor richness.
- The total number of detections (raptor abundance) is significantly influenced by the availability of tall utility towers, unused and metal posts.
- Species richness is significantly influenced by unused posts, barns, and utility towers.

## Discussion

The number of perches in total in a given plot, has a significant impact on local raptor abundance and richness.

My analysis does not account for prey availability, so my results may differ from other habitat types if prey abundance is the main limiting factor (Kross et al. 2018).



Figure 1. Shows the map of my overall study area, of the Arcata Bottoms. The red point marks represent the plots that I surveyed for the six weeks of data. Plot 1 is the far-right point on the map while plot 57 is the last plot on the left of the map.

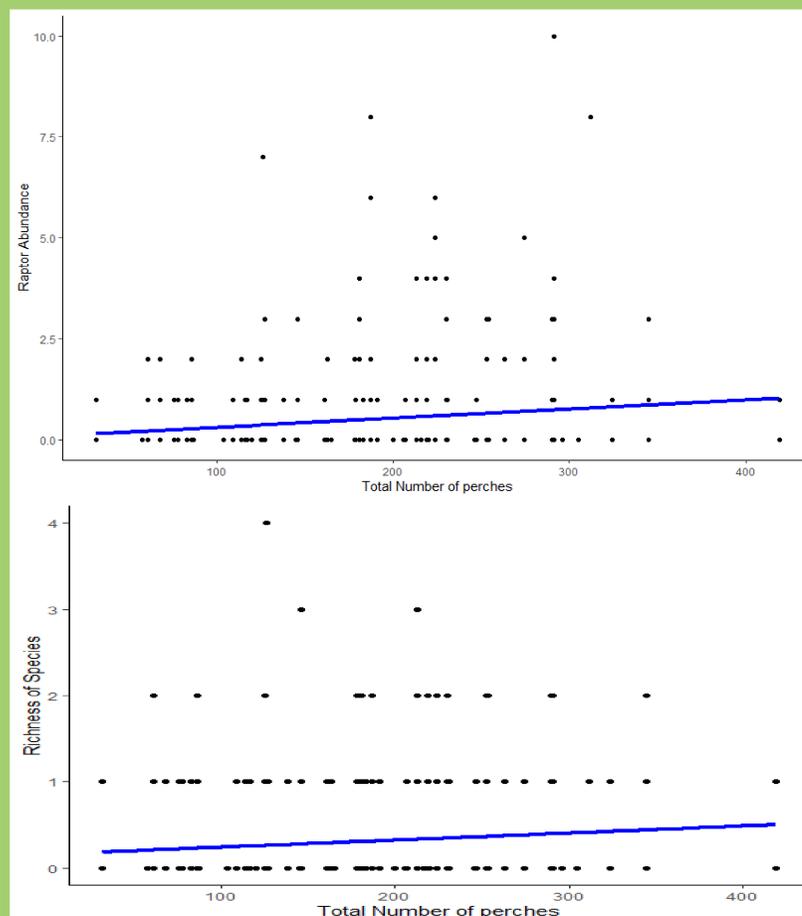


Figure 3. Illustrates the relationship between total number of perches in a plot vs. total number of detections (raptor abundance),  $p < 0.001$ . Figure 4. shows the relationship between total number of perches vs. the richness of raptor species,  $p = 0.002$ .

Table 1. Represents the relationship between each covariate to species richness of all (ten) raptor species that I recorded. (\*) Represent the significance level that each specific covariate has on richness strictly. Table 2. Represents the significance that each listed covariate has on the raptor abundance (N=228) at all 57 plots at the Arcata Bottoms, CA. (\*\*\*) represent strong significant values in relation to abundance.

Covariate	Estimate	Std. error	P-value
Intercept	-1.65	0.3	<0.001***
# perches	<0.01	0.001	<0.001***
# perch types	-0.06	0.07	0.4
# barns	0.5	0.13	<0.001***
# gates	-0.14	0.06	0.01*
# horizontal plank	<-0.01	0.003	0.2
# metal posts	<-0.01	0.002	0.05
# short utility posts	-0.2	0.07	0.006**
# tall posts	0.04	0.03	0.2
# tall utility posts	0.2	0.05	<0.001***
# tree stumps	-0.05	0.05	0.3
# trees	<-0.01	0.01	0.2
# unused posts	0.03	0.01	<0.001***

Covariate	Estimate	Std. error	P-value
Intercept	-1.74	0.34	<0.001***
# perches	<0.01	0.001	<0.001***
# perch types	-0.05	0.1	0.5
# barns	0.35	0.2	0.04*
# gates	-0.10	0.07	0.2
# horizontal plank	<-0.01	0.01	0.5
# metal posts	<-0.01	0.003	0.3
# short utility posts	-0.22	0.1	0.02*
# tall posts	-0.03	0.04	0.4
# tall utility posts	0.14	0.1	0.02*
# tree stumps	-0.03	0.04	0.5
# trees	<-0.01	0.01	0.4
# Unused posts	0.03	0.01	0.005**

Literature Cited:  
Kross, S., R. Chapman, A. Craig, and T. R. Kelsey. 2018. Raptor Use of Artificial Perches in California Rangelands in Fall.  
Preston, C. R. 1990. Distribution of Raptor Foraging in Relation to Prey Biomass and Habitat Structure. The Condor 92:107-112.  
Widen, P. 1994. Habitat Quality for Raptors: A Field Experiment. Journal of Avian Biology 25(3): 219-223.