Comparing Corvid Abundance Between Habitats and Years

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Introduction

- **POI:** Density and abundance of crows and ravens fluctuate across habitat type.
- **Objective 1**: to see if there is a shift in habitat utilization of corvids across the years
- **Objective 2**: to see if there is a difference in corvid abundance across land cover use in Spring 2019

Hypothesis:

1. Ravens and crows will **increase in abundance** across all habitat types from 2011 to 2019.
2. Corvids will be found in **greatest abundance in urban sites.**

Prediction:

1. If they utilize different habitat types, then there will be different abundance in the varying habitat types
2. If they will be in greater abundance in urban sites, then there will be a significant difference between habitat types.

Study Area

- Arcata, Humboldt County, California 95521.
- Forty eight (48) sites divided across 3 different land cover types.
- Agricultural areas comprise of farmland with sparse tree cover.
- Urban sites contain a high degree of anthropogenic structures.
- Forest edge areas border residential sites and the Arcata Community Forest.

Methods

- 48 sites were surveyed 3 times each by different students pairs using point counts.
- There were 16 sites for each land type (Urban, Agriculture, Forest edge)
- Point counts were in 15 minute increments with 50 m radius and observations started after sunrise until 11 a.m.
- Environmental data recorded at each site: presence of human food, precipitation, wind speed, cloud cover, visibility, human presence, car traffic, and presence of trash cans or dumpsters, and present of trash outside of cans.
- Crow and raven counts were recorded using visual sightings and calls, with in or out of the 50 meters.
- Behavioral data recorded whether the birds were foraging, flying, or engaging in social behavior.

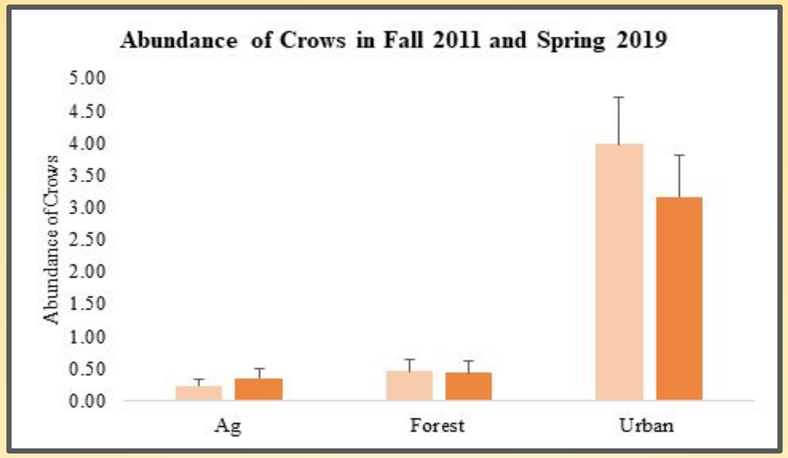

Figure 1. Light orange represents Fall 2011 and dark orange represents Spring 2019

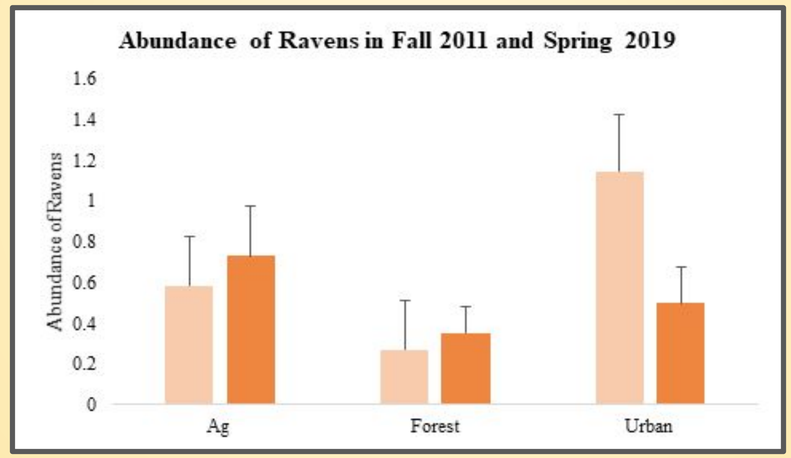

Figure 2. Light orange represents Fall 2011 and dark orange represents Spring 2019

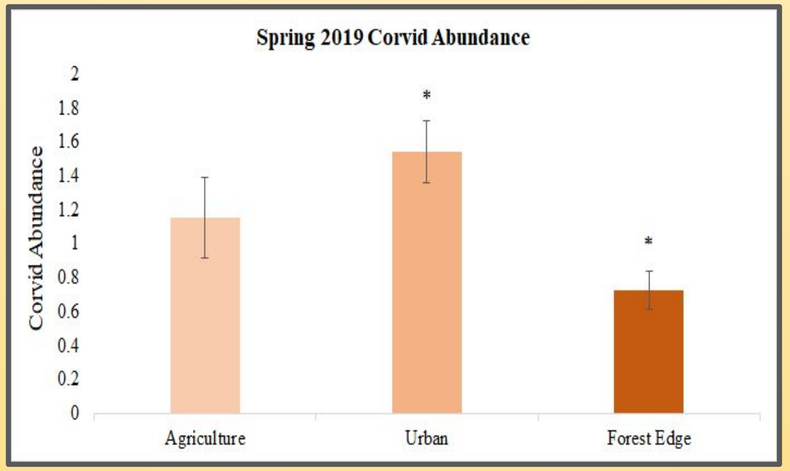

Figure 3. Asterisk (*) denotes significant difference

Results

Corvid Abundance Across 2011 & 2019

- An average of 13.33 crows and ravens were surveyed in 2011 and 2019 once a week for three weeks.
- Three surveys from each year were averaged to find our sample size in 2011 and 2019 (n=192).
- **No significance found**, but greater number of ravens 2011 in urban areas were **almost significant** ($t = 1.93$, $df = 30$, $P = 0.06$).

Corvid abundance across 3 gradients: Spring 2019

- ANOVA showed variation in gradient use with **urban** having **greatest** use, then agriculture, and forest edge having the lowest use (Fig 3).
- Post hoc with Bonferroni correction showed no significant difference agricultural and urban use ($P = 0.2$) and no significance between agricultural and forest edge use ($P = 0.12$).
- There was a **significant difference** in **urban and forest edge** use was found ($P < 0.02$), denoted with an asterisk (*).

Discussion & Management

- Our results indicated that there was not an increase in corvid abundance from 2011 to 2019. However, studies have suggested that corvid abundance has increased, especially in urban areas[4]. It is possible that we did not detect the true abundance of corvids because of our survey times and locations. Future research would be to extend this project to other areas and other times of the day.
- Corvid abundance in 2019 varied across 3 gradient types with significant results only found between urban and forest edge sites. This suggests that corvids prefer urban sites over forest edge sites. Studies have shown that corvids are found in greatest abundance in urban sites when compared to rural sites [3]. However, this does not mean that corvids do not use forest edges. Further research into forest use by corvids has the potential to show corvid presence in forest sites and could determine how corvids use those sites.
- Our results suggest that corvids dwell in urban and forest edge areas throughout the years. Corvids are generalist scavengers and studies show a positive correlation between their abundance and predation rates on nearby nests.[2] American crow breeding season falls within March 23-April 5 which is close to our study time so it may influence our detection[5]

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