

Urbanization Impact on Native Avian Species Richness

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Introduction

- Urbanization has expanded worldwide (Filloy et al. 2019), which impacts species composition and richness.
- Humboldt bay region is along the Pacific Americas Flyway and hosts 325 species of birds (WHSRN, accessed 18 Apr 2023).
- This study focused on native avian species due to their varying sensitivity to environmental changes (MacGregor-Fors et al. 2009).

Objectives

- Determine the impacts of urbanization on native species and examine if species richness decreases with an increase in urbanization.
- Expect richness of native avian species to be higher in Arcata Bottoms, a rural area/pasture land, and progressively decrease as the location becomes more urbanized (Figure 1).

Methods

- Point counts used to count and identify all bird species heard, seen, or both.
- Used NOAA data for temperature and weather.
- Statistically analysed native species richness to site location (n = 30) with ANOVA.
- Conducted a linear regression to compare avian abundance to temperature, and ANOVA to test relationship between abundance and weather.

Results

- Statistically significant difference in native species richness between Arcata, Arcata Bottoms, and Eureka ($F(2, 27) = 14.22, p < 0.001$).
- The relationship between the total individuals we observed and temperature was not statistically significant ($R^2 = -0.01515, F(1, 58) = 0.1197, p > 0.05$).
- Weather had no significant influence on our ability to detect species ($F(3, 56) = 1.725, p > 0.05$).

Discussion

- Results demonstrate that the increase of urbanization impacts native species richness (Figure 2; Table 1).
- Duration of the sampling period, sample size (n = 30), and size of point count radius, may have impacted our results.
- Other factors that could be included in future studies: vegetation cover, building density, and human disturbance.

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Literature cited

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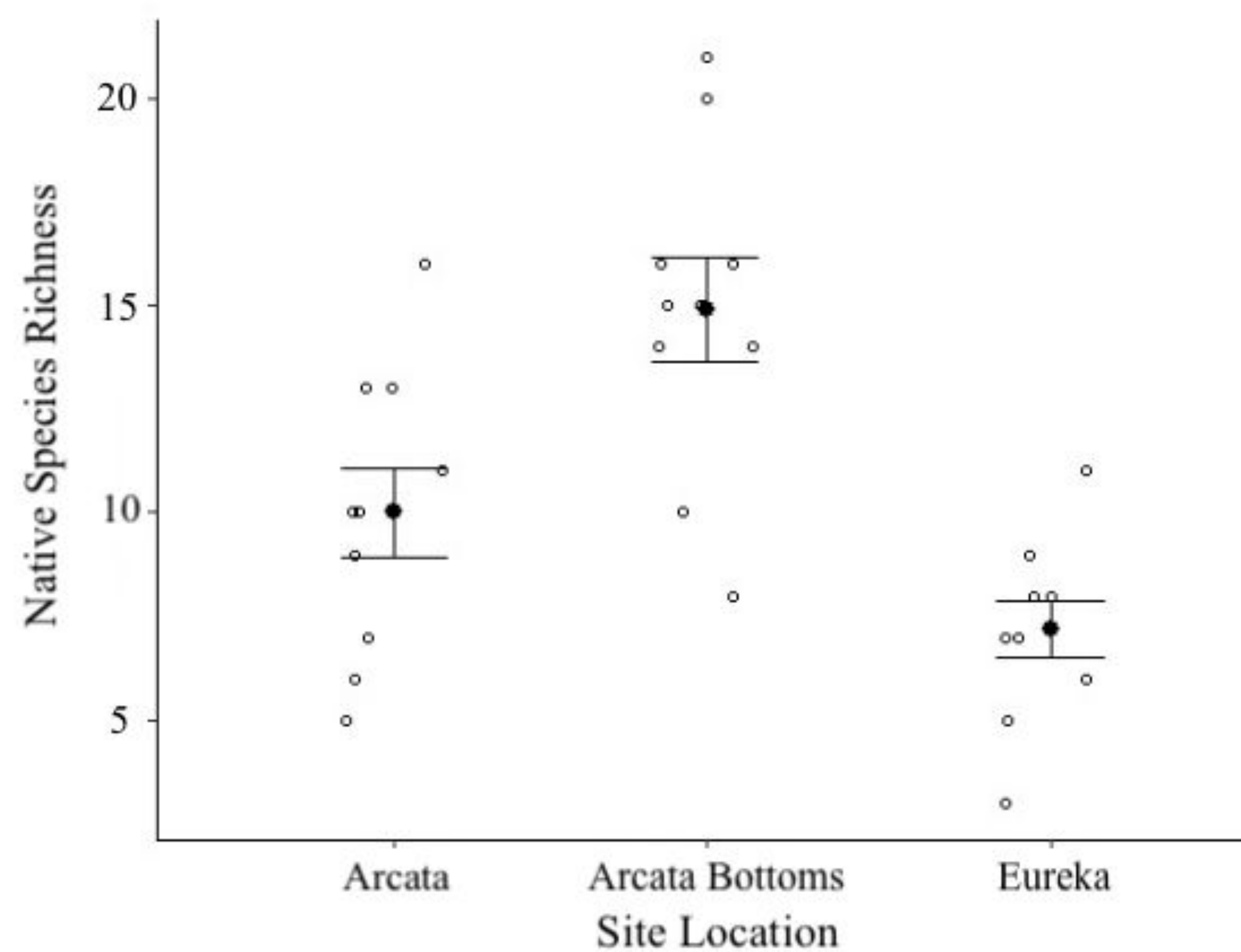


Figure 2. Native species richness across Arcata (n = 10), Arcata Bottoms (n = 10), and Eureka (n = 10), from February – April 2023.

Table 1. Total number of species and individuals observed across Arcata, Arcata Bottoms, and Eureka, from 16 February 2023 – 7 April 2023.

Site	Total Native	Total Species	Total Abundance
Arcata Bottoms	43	47	2,444
Arcata	28	32	623
Eureka	22	26	803



Figure 1. Map of the three study areas within Humboldt County, CA. Each point on the map represents a site and is colored based on its location. Sites in red are within the Arcata Bottoms (n = 10), orange sites are in Arcata (n = 10), and yellow sites are in Eureka (n = 10).