

Introduction and Objectives

There has been vast research on the development of dialect in bird species because of spatial separation, with some more populous regions developing accents as well [1]. Most studies have been on the development of dialect in passerines, such as the Japanese Great tit [2] and the Northern Cardinal [3], but not many on non passerine species. There are many taxonomic distinctions to determine a passerine species, however the most prevalent to this study is that these birds have a well-developed song that is partly or entirely learned [4]. This has been noted as one of the larger contributors to the development of dialect in birds as the separation makes the taught song increasingly different [5]. However, there has also been a suggested genetic link to dialect development [6]. This led me to wonder if a non passerine species could develop dialect as well. In this study, I aim to compare the dialect development of a passerine species and a non passerine species. My hypothesis is that both will show development of dialect while the null is that one or neither show dialect development.

Methods

For this study, I focused on the passerine species, the American Robin, and the non passerine species, the Rock Pigeon. For both species, five call samples from each region were taken from Macaulay library's eBird audio library and analyzed for differences in dialect. The three regions were California, Missouri, and New York. In each call sample, two independent calls were recorded. Dialect has previously been measured using call duration, time between calls and the frequency of the call [3], so those are the parameters I will be using.

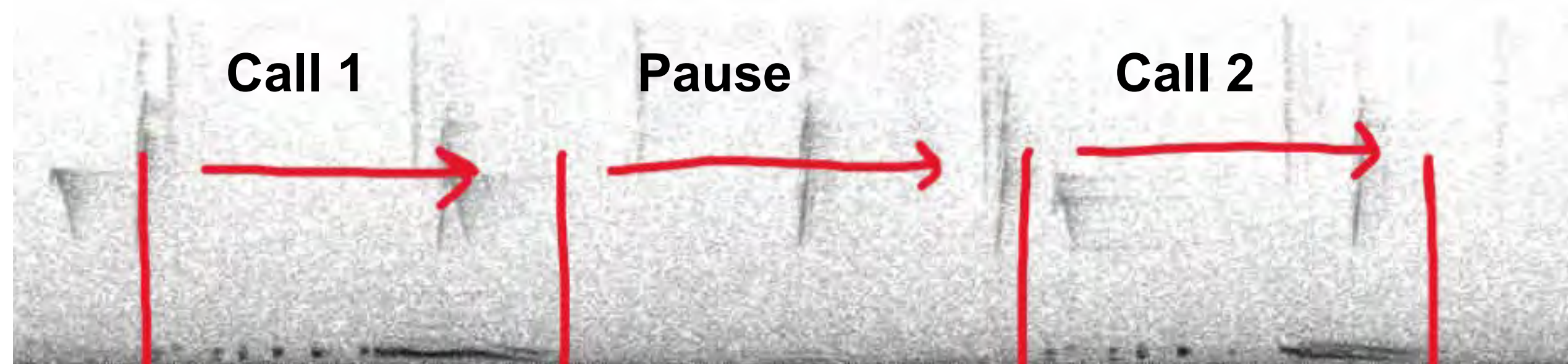


Fig 1. Depicts the how sections of call samples were selected to be measured. (Rock Pigeon, California)

Results

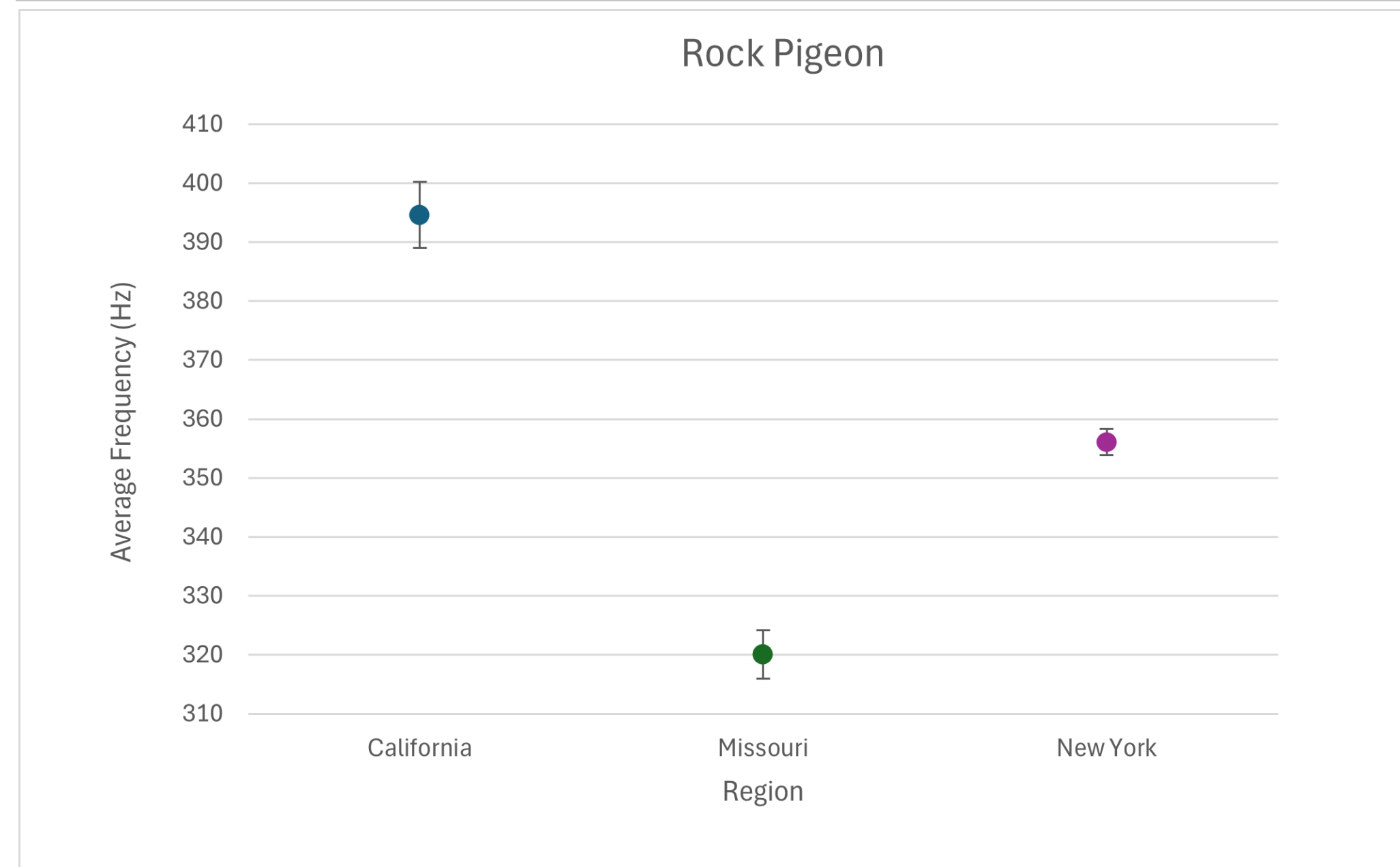
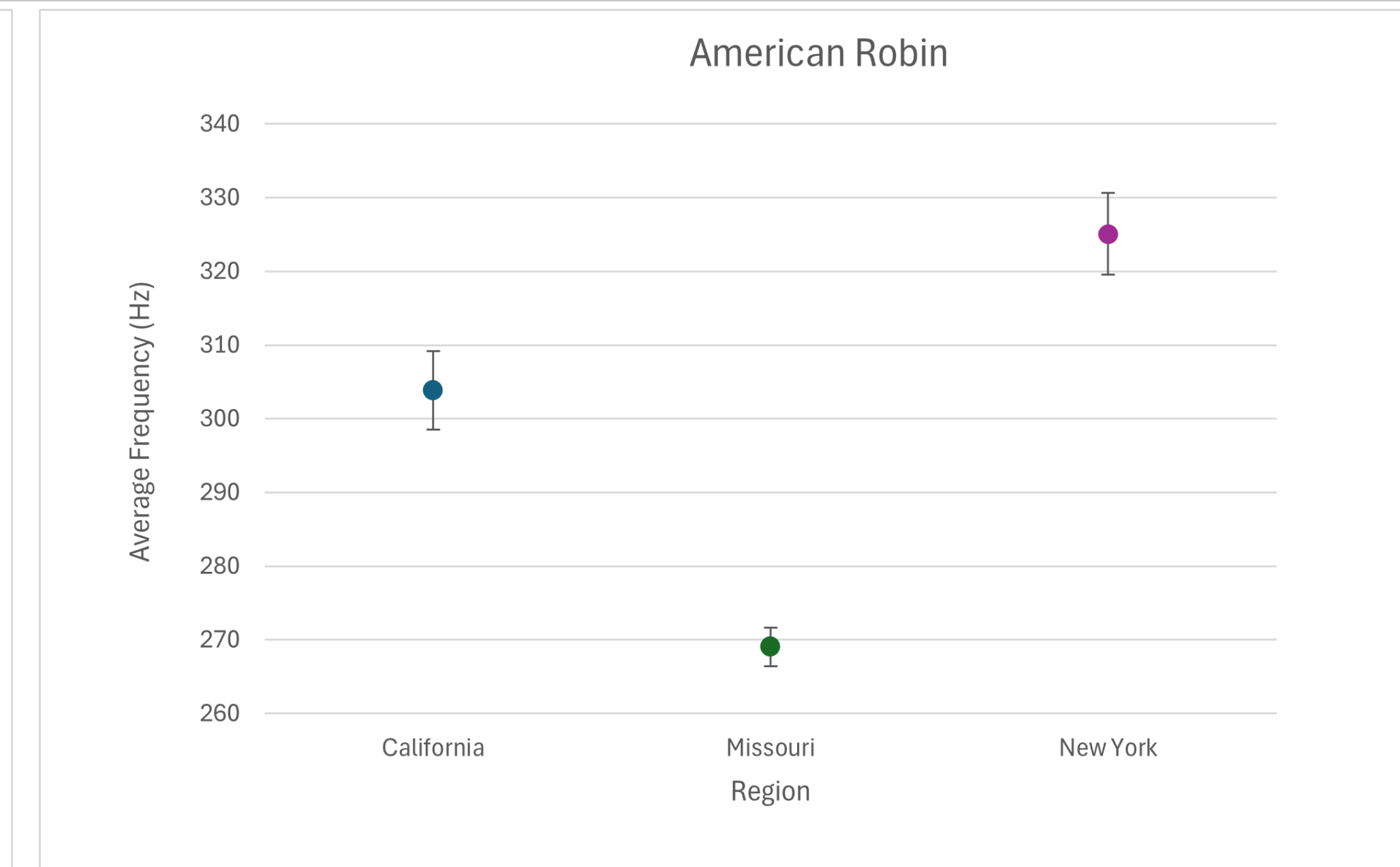


Fig 2. Graphs depicting the mean and standard errors of each recording's frequency by region.

The raw data was collected for the frequencies and duration of the recorded calls. The calls were divided into sections with section one being the frequency and duration of call 1, section two being the duration of the pause, and section three being the frequency and duration of call 2. The data was also split into three categories based on the region the call was from. The averages and standard error of each column were then recorded, still separated by region. There was a notable difference in the averages of call duration for the different regions, however, the standard error leads me to believe that this is not significant or region specific. The frequencies, however, do show a notable difference by region for both birds and have low standard errors supporting the statistical significance of the data. A graph of the means and standard errors can be seen in Figure 2 to the left. This difference in frequency by region strongly suggests a link of call frequency to region in both species.



Conclusions

The results shown indicate a significance in call frequency differences by region for both the passerine species and non passerine species. It is interesting to note that the calls for the non passerine species, the Rock Pigeon, varied much more within and between regions than the American Robin. This is because passerines have a unique song they use to communicate. This has made passerine species a much better candidate to study dialect in, as they are more easily compared. However, the findings of this study suggest that non passerine species can develop dialect as well.

Literature Cited & Acknowledgements

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