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### **Bioacoustics and Regional Differences of Florida Scrub-Jay Rattle Calls**

Rose Capek

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# Bioacoustics and Regional Differences of Florida Scrub-Jay Rattle Calls

Rose Capek and Dr. Stephen Ferguson • Biology • St. Norbert College

## Background

- Florida Scrub-Jays are endemic to Florida and use three unisexual calls to communicate.
- Most corvids produce a female -only rattle call when alarmed.
- Due to differences in dialects, birds from one region do not recognize the foreign rattle
- There is little known about the intensity and essence of geographic variation in Scrub-Jay calls, however, there are distinctions within the Florida regional populations.<sup>1</sup>
- Rattle calls include Tk notes that are either the entire call or followed by a softer syllable note seen in the spectrograms based on regional inhabitants.<sup>2</sup>
- We hypothesized that rattle call dialects vary by population

## Methods

- Calls were collected from Macaulay Library and processed in Raven
- Each Call was analyzed in a Band Limited Energy Detector to identify calls of interest (see spectrograms)
- The syllables of each rattle call were counted and characterized
- The number of Tks in each call was then divided by the overall syllables to determine the Tk ratio
- Length of the call was also noted in seconds and used to determine the Call Speed (syllables/sec).
- Tk Ratio and Call Speed were analyzed through a MANOVA across populations

## Discussion

- Population differences are clearly shown in Figures 1 and 2
- Habitat scarcity presents geographic barriers between dialect locations
- There are only 60 miles between populations but scrub-jays are sedentary, reducing the possibility for crossover and migration.
- These results are a clear representation of female specific call variation

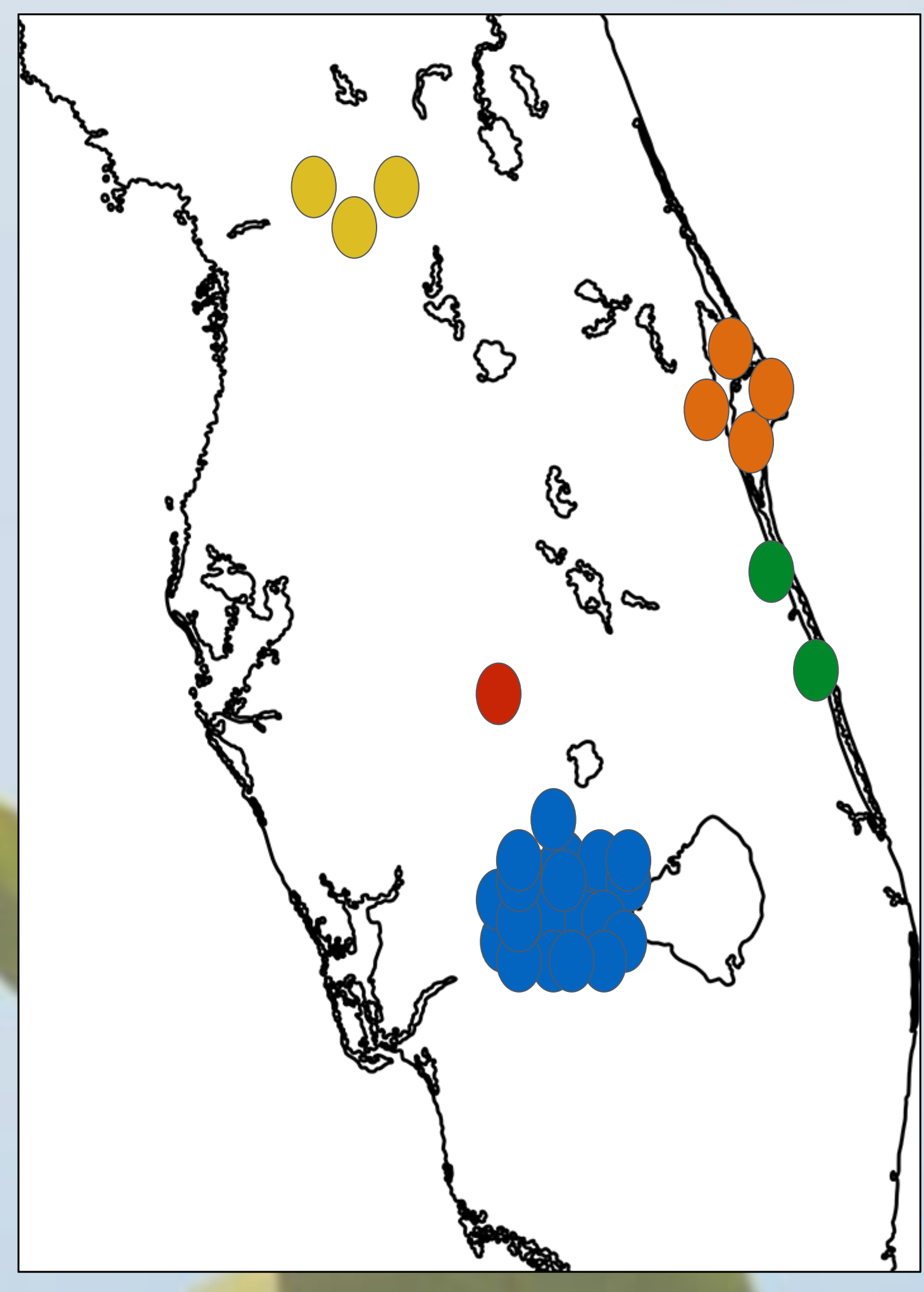
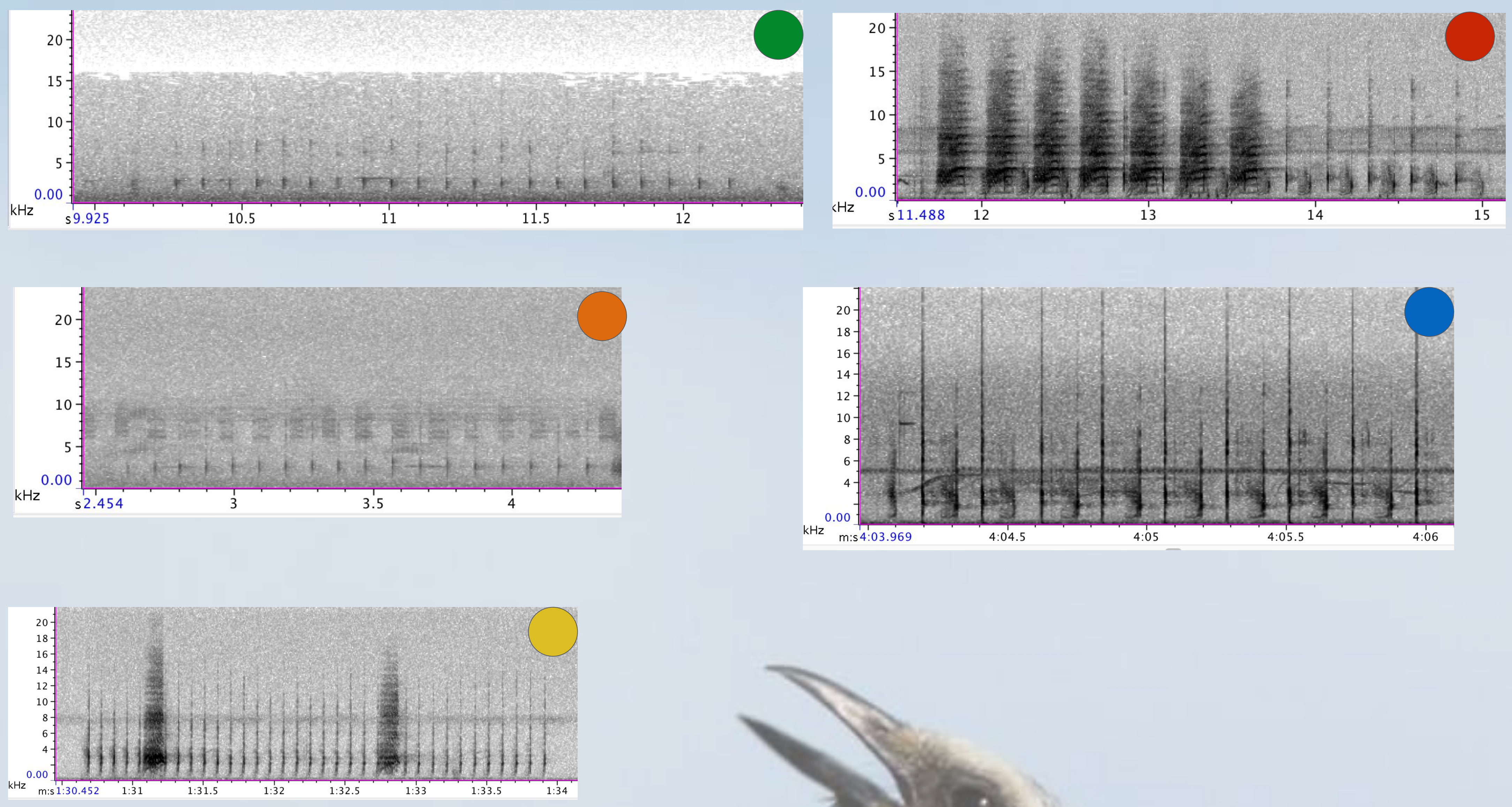


Figure 2. Map of Florida with regions of birds geographical locations.

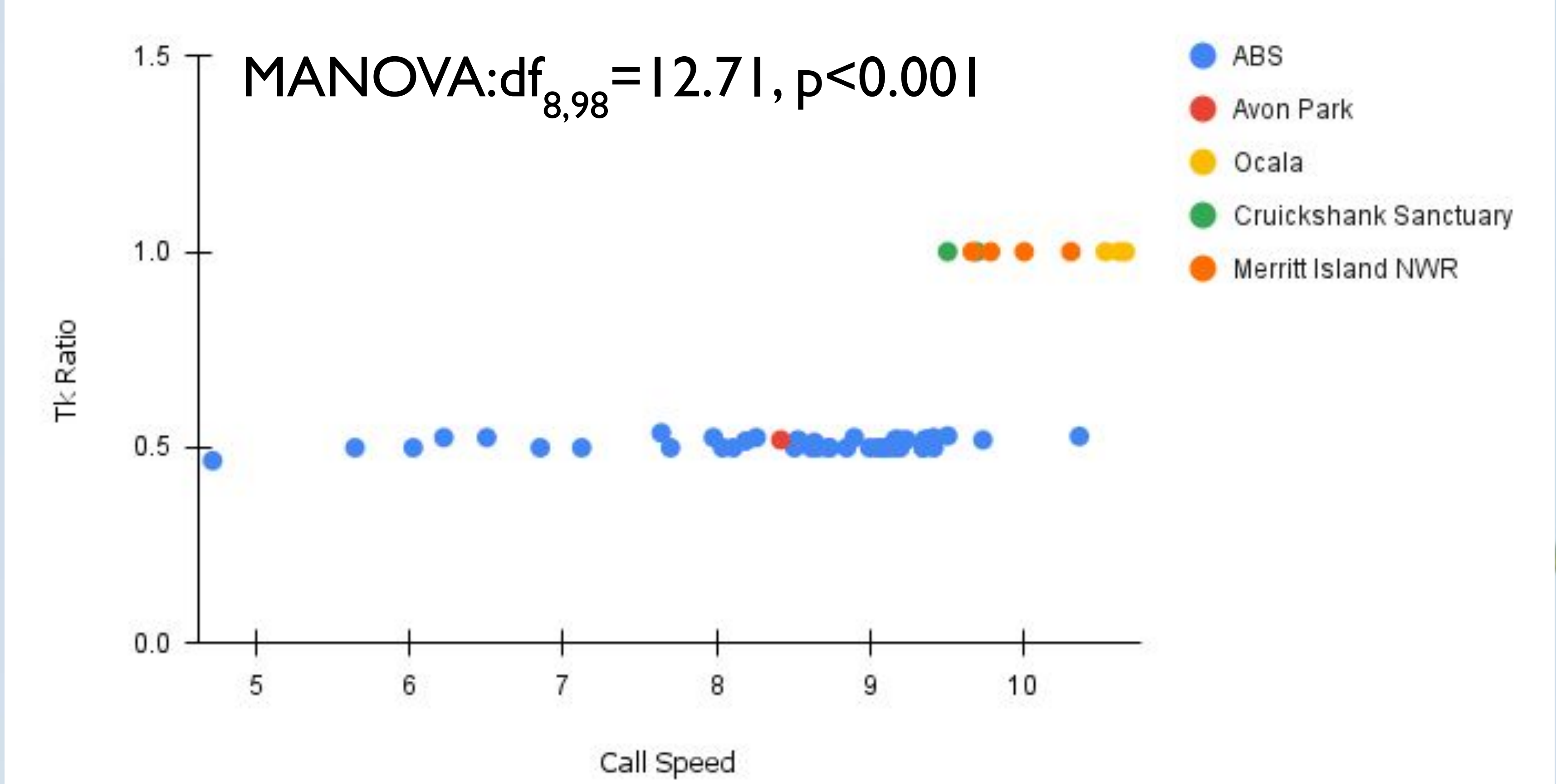


Figure 1. Call Speed was determined by dividing the syllables of the call by the seconds the call lasted. While the Tk ratio is the number of Tk syllables divided by the total number of syllables. This illustrates how the different regions that the birds originated from directly affect the accent and difference in call dynamics.

## References

<sup>1</sup>Webber, Tom, and Rosemary A. Stefani. "Evidence for Vocal Learning by a Scrub Jay." *Oxford Journals*, 1990, pp. 202–04, [www.jstor.org/stable/pdf/4087823.pdf](http://www.jstor.org/stable/pdf/4087823.pdf).  
<sup>2</sup>Russel, Kory C. "Quantification of Call Variations Between Sub- Regional Florida Scrub Jay (*Aphelocoma coerulescens*) Populations." *Pillars at Taylor University*, 2005, pp. 17–18