

Cospecies Recognition of Black-crowned Antshrike Dialects

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Black-crowned Antshrike Photographed by fernando Burgalin Sequeria via eBird

Introduction

- Bird species can have dialects based on the region of the world they live in.
- Bird populations of different species that live in the same region, can learn to associate the other species' calls with specific events.
- Studies have found that co-occurring species will react to another species alarm call by becoming more alert of their surroundings or fleeing the area (Magrath et al., 2007).
- Eavesdropping on other species calls has even been seen in young chicks to reduce nest predation (Jiang et al., 2022).
- Despite previous research, it is not well known if co-occurring species can recognize a different dialect from the same species.

Expected Results

I hypothesized that the co-occurring species would react to an alarm call the Antshrike from a region close to La Selva Biological Station and that they would react less often to an alarm call of the Antshrike from a region in northern South America.

Methods

- I first selected alarm call recordings from the Black-crowned Antshrike, in a few different regions in Central and northern South America.
- Once at La Selva Biological Station in Costa Rica, I started by finding a bird of a different species than the Antshrike.
- Once a bird was located, I identified and recorded what species the bird was.
- I then recorded the bird's initial behavior when no recordings of the Antshrike were playing.
- I then played the song of the Antshrike and recorded the behavior of the bird immediately following the playback.
- After, I played the recorded alarm call from either Panama or Columbia and recorded the behavior of the bird immediately following the playback.
- After playing the necessary audio recordings for one bird, I moved to a bird at a location far enough away that they wouldn't have been able to hear the recordings played for the other bird and then conducted the same procedure for the new bird.
- I repeated this process as much as I could in the day allotted for the project.
- After recording behavioral data from 19 different birds, I then used a chi-squared test to analyze the data's significance.
- The first analysis tested the difference between the bird's reaction to the song playback vs both the alarm call playbacks combined.
- The second analysis tested the difference between reactions to the Panama alarm playback and the Columbia alarm playback.



A recording of the Black-crowned Antshrikes alarm call from a region in Central Panama.

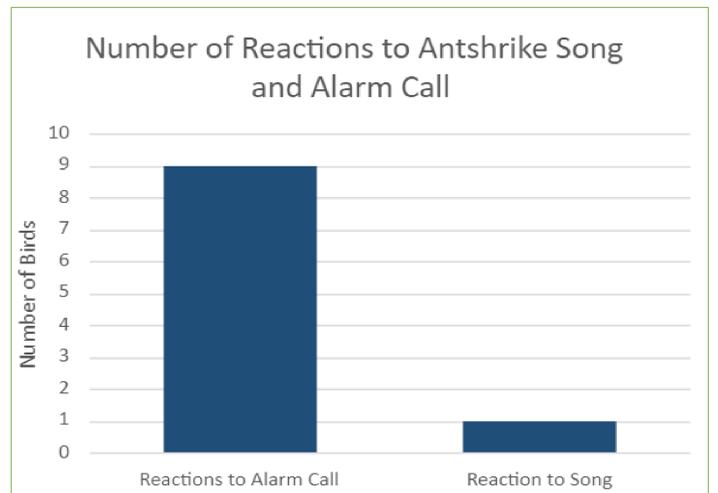
Results

The chi-squared test analyzing the difference in the birds' reactions to the song vs, the reaction to both the alarm calls combined was 5.199 with one degree of freedom and the p-value was 0.0226. This means that there is a statistical significance between how the birds reacted to the song and alarm calls.

The second chi-squared test that analyzed the difference between the reactions to the Panama alarm call and the Columbia alarm call resulted in a chi-squared of 1.531 with one degree of freedom. The p-value for this comparison was 0.2541 meaning that the difference in reactions to the alarm calls was not statistically significant.



Top left: Blue-gray Tanager, bottom left: Great Kiskadee, right: Scarlet-rumped Tanager. All photographs by Megan Kast



Conclusion

From the results of my analysis, we can conclude that birds that potentially cohabitate with the Black-crowned Antshrike, can recognize its alarm call and respond to it in a way that we would expect. However, due to the insignificance of the second chi-squared, We cannot make any conclusions on how co-occurring species react to different dialects of the Antshrike. This result could be due the limited sample size that I had to work with or that the regions the alarm call recordings are from, are too close geographically to have a significant enough dialect difference to elicit different responses in the co-occurring birds.

It's important to understand the ways co-occurring bird species interact and communicate with each other because the majority of conservation efforts rely on knowing how the species interacts with the rest of their environment. Learning more about the Antshrikes alarm call could help to conserve not only the Antshrikes, but other bird species they co-habitate with.

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References

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Acknowledgements

- USU Department of Biology
- USU Office of Global Engagement
- Organization of Tropical Studies



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