



# Grasshopper Sparrow Song Diversity in the Caribbean

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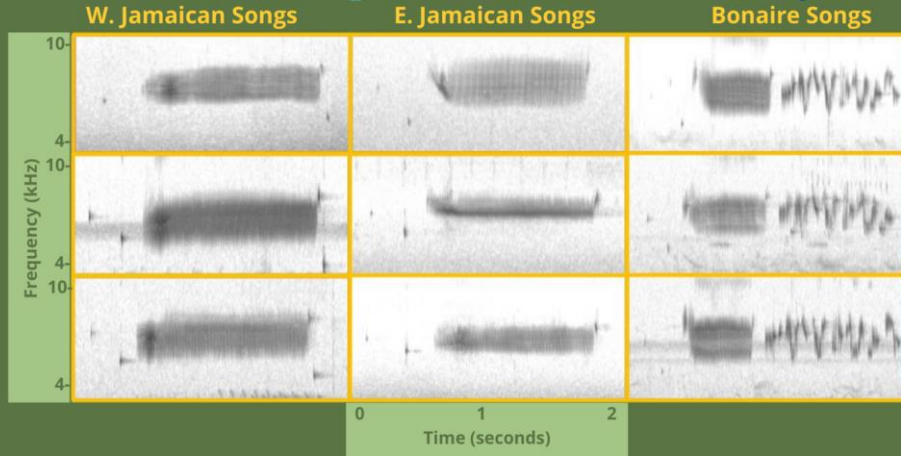
## Introduction :

We conducted a comparison of male song in the Grasshopper Sparrow (*Ammodramus savaannarum*) across several island populations in the Caribbean (in particular, as part of this study: Jamaica and Bonaire/Curacao). *A. savaannarum* males sing two distinct songs: an insect-like “buzz” song and a “warble” song. By studying these songs, we determined how songs across the islands varied and what these differences could mean for the entire species

## Recording Methods :

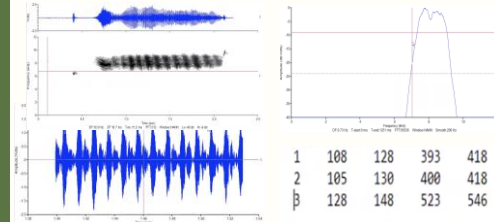
We recorded songs of singing males in each location during the 2018 breeding season (April – July). These recordings were part of a larger study involving all the Caribbean subspecies of the Grasshopper Sparrow. Recordings were made using a Sennheiser ME-67 long shotgun microphone with a Tascam HD-P2 digital recorder at a sample rate of 48 kHz. We recorded songs in several locations on Jamaica (constituting a “western” and “eastern” set of subpopulations). We found only one singing male on Curacao (not well-recorded), and a small population (n = 12 males) on Bonaire.

# Grasshopper Sparrow songs show island-typical patterns across the Caribbean unlike songs in North America.



## Analysis Methods :

We segmented island recordings using the Raven and SIGNAL sound analysis software to isolate the Grasshopper Sparrow songs and develop a library for each bird. We examined sample spectrograms from each bird to evaluate song variation within and between islands. The Jamaican and Bonaire subspecies songs are being analyzed based on introductory note frequencies and duration, the amplitude modulated introduction of the trill, and the trilled and final short notes of each song.



## Results :

Qualitative spectrographic analysis showed clear regional and island-specific distinctions. We distinguished key differences between songs/singing patterns by geographical origin. The Jamaican subspecies had two introductory notes, but the western population differed from the eastern population by containing two final notes rather than one. Like most Grasshopper Sparrow subspecies, Jamaican buzz songs were sung independently of warble song and were the most common song. The Bonaire/Curacao subspecies had the most distinctive song. All songs of this subspecies were sung as a combination buzz-warble song. Further, songs showed a marked similarity across individuals when compared with songs of other islands/subspecies, and with songs on the North American mainland.

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