

Vocal Behavior of the Rufous-Throated Solitaire in Dominica, WI

By: Monica Palacios

Texas A&M University – Study Abroad Dominica

May 19 - June 10, 2009

Dr. Tom Lacher

Dr. Jim Woolley

Abstract

The rufous-throated solitaire is a unique bird found only in the West Indies. I have conducted research on the vocal behavior of this mountain whistler by playing a series of two original songs and a territorial song all recorded by Andrea Walker in 2008. I have discovered that as the population of this bird varies in each location so does its behavior and responses to a variety of calls. In higher population areas such as Middleham falls, the rufous-throated solitaire responded quicker and louder than other solitaires at Emerald Pool and Syndicate Trail.

Introduction

The rufous-throated solitaire is found on the island of Dominica, Jamaica, Hispaniola, Martinique, St. Lucia, and St. Vincent. The island is a relatively undisturbed location which makes it a great habitat for a variety of tropical birds. There are many books, descriptions, and guides to the rufous-throated solitaire, but there are none that describe the vocalizations of this species and how each one can be interpreted. This bird is only found in the dense forest, mountain thicket, and elfin woodland on Dominica. Known as the mountain whistler by the local Dominican's, this bird is one of the most impressive songsters in the moist forests of Dominica.

There are eleven calls of the rufous-throated solitaire, in which only a few are documented, and hardly any are interpreted. I wanted to interpret some of these calls by playing them back to the bird and recording its behavior and actions. All of these calls are unique and can be heard in the same pattern but are sometimes produced in different pitches by these birds. While staying at the Archbold Tropical Research and Education Center (ATREC) in Springfield for three weeks, I recorded numerous calls and played back many to observe how the bird reacted. I continued my research at Morne Trois Pitons National Park, Cabrits National Park, and Morne Diablotin National Park.

Through my work I have identified several more calls and documented the behavior of the rufous-throated solitaire. Along with recording these calls, I have written down the location of the call, and the date of the call. Using the Raven program, I have been able to incorporate both the waveform and spectrogram of the calls.

Materials

Marantz Professional Portable Solid State Recorder Model PMD660

SHURE BG 4.0 Directional Microphone

Wind shield (For Microphone)

Switchcraft Rapco "RSMCA" Balanced Line Mic Cable

Sennheiser HD201 Headphones

Plastic Bags (for waterproofing)

Nikon Binoculars 7x35 power

Raven Pro 1.3 Interactive Sound Analysis Software

USB Cable

SME – AFS Amplified Playback Speaker

Apple IPOD

Methods

Before heading out to different locations, I would ensure that all the equipment was functioning properly and that I had extra batteries. In class field trips and on individual days I would walk around different trails surrounding ATREC and in national parks around the island. The recordings took place in the afternoon, as it took a couple of hours to reach these locations. When I reached the desired location, I would first listen for the rufous-throated solitaire and then I would play back one of the three original songs that Andrea Walker had originally recorded in her research

(<http://dominica.tamu.edu/student%20projects/Dominica%20Projects%20pdf%20copy/WalkerAndrea.pdf>). The order of the songs was always played as the following: original 1, original 2 and territorial. Since the territorial song received a great response most of the time, it was not saved until last to prevent any bias. The recording labeled “territorial” by Walker was recorded on June 5, 2008 at Boiling Lake. Playback calls were not altered to reflect the natural song. The recordings were only played once each. After playing the recording I would record any call backs that the bird would respond and document several observations. The microphone would be held about 6 ft above the ground in the direction the call was coming from. If there was no response from the birds I would continue walking until I heard another rufous-throated solitaire. I would then again repeat my songs in hopes that it would respond. I recorded the original songs that I played along with the songs that the birds in the tree would respond with. I would also document if the bird responded quickly or if there was a delay and if the song appeared louder or remained at the original volume observed. Other students nearby were asked to remain quiet during the process so that they would not distract birds from what they would originally perform and so that their noises would not interfere with the recording.

After recording the calls, I would transfer the files from the recorder onto the computer and edit them using the Raven Pro 1.3. Sounds that were not desired or interfered with the solitaire’s call would be cut out or filtered out. The sections of the clip that I wanted to focus on would remain and I would then amplify it if necessary. Noises that were usually removed included static, wind, and water. When the editing was completed, the sounds would be saved as size 16-bit wav files.

Results

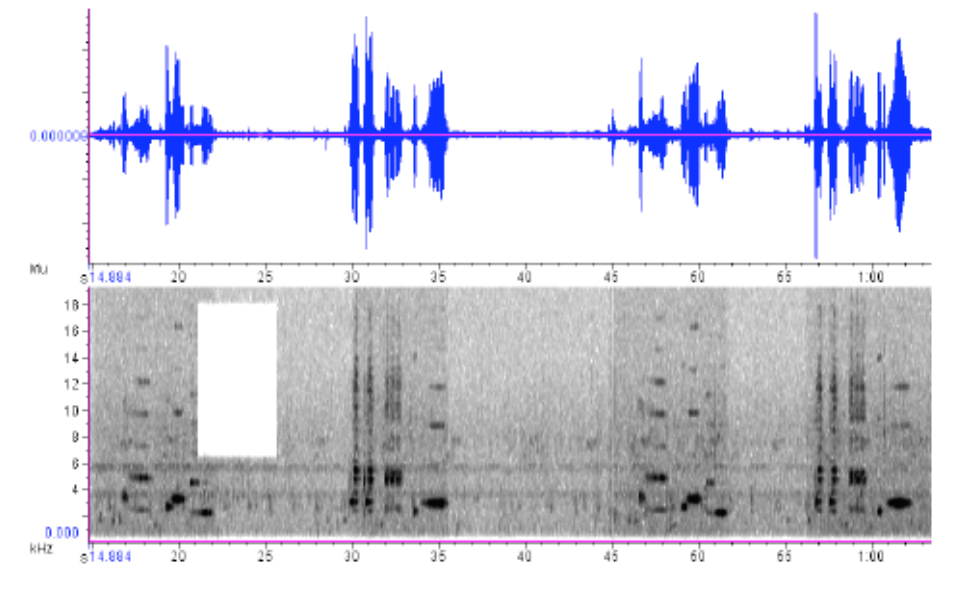
At Middleham falls I observed that the rufous-throated solitaires were quicker to respond and even continued to call back and forth with my original songs. However, on one occasion a bird believed to be a bananaquit sat directly in the tree above my position and listened to the sounds that I was playing. When I played the “territorial” call it quickly flew away and never returned. On the different occasions that I played my “territorial” call around the rufous-throated solitaire, it would respond quickly, within five seconds, and louder. At times the call sounded as if the bird was upset and bothered by the “territorial” call. The sounds began to sound more aggressive and interactive as the bird responded quicker and louder to the songs, and at times overlapping the sounds I played with songs of their own. When the “territorial” call was played while two birds were interacting with each other, there was no response. The birds continued to call to each other and ignored the call that I had played, even after I had played the original calls along with the territorial call. At Syndicate trail and at Emerald pool the rufous-throated solitaire was heard only on a few occasions. When played the other two original calls the birds would not respond and would either stay quiet or continue to play their original call. However, when the “territorial” call was played they would respond but not as quickly, about ten seconds or more, and not as strongly as the solitaires would in Middleham falls. These birds would seem to be interested in the call, but would not sound as if they were bothered. When I asked Clement “Clem” James what his reason was behind this observation, he claimed that there are more birds at Boiling Lake and at Middleham falls. This would support my theory that because there is less territory available at Middleham falls and Boiling lake for the birds, the birds would aggressively respond to the “territorial” call. Due to the weather at Freshwater Lake, Boiling Lake and Boeri Lake, no calls were able to be recorded.

When the birds were communicating there were similarities in the waveforms. The sounds wave would usually decrease as the call began and then would increase as the sound ended. With the waveform depicting the call the song appeared as a mirror image. The calls did not usually last long as the bird would continue to call the same song over again. More interactive calls were more intense and had a sound that was no more than twelve kilohertz. If a rufous-throated solitaire was just singing in the forest and not communicating then the call would have the same wavelength and would not decrease or increase. These calls were normally no more than four kilohertz.

Number of observations	Location	Kind of response	Type of call played	Date
3	Middleham Falls	Aggressive and interactive call back	Territorial and original	5/23/09
5	Middleham Falls	Aggressive and interactive call back	Territorial and original	5/25/09
2	Syndicate Trail	Little interactive response	Territorial	5/26/09
2	Middleham Falls	Little interactive response	Territorial and original	5/31/09

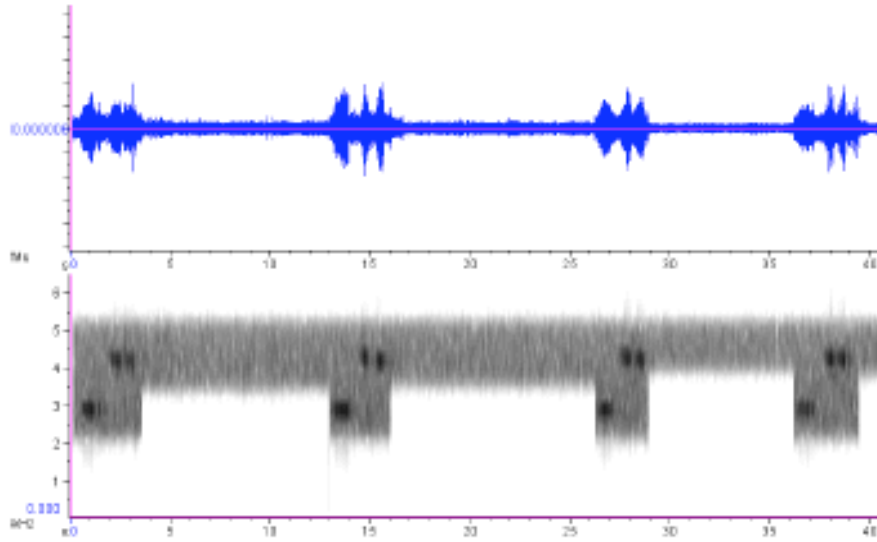
Territorial call

This call was recorded by Andrea Walker on June 5 from Boiling Lake. I have used it many times to play to other birds for a response. This call would receive a greater feedback from the rufous-throated solitaire than the other songs.



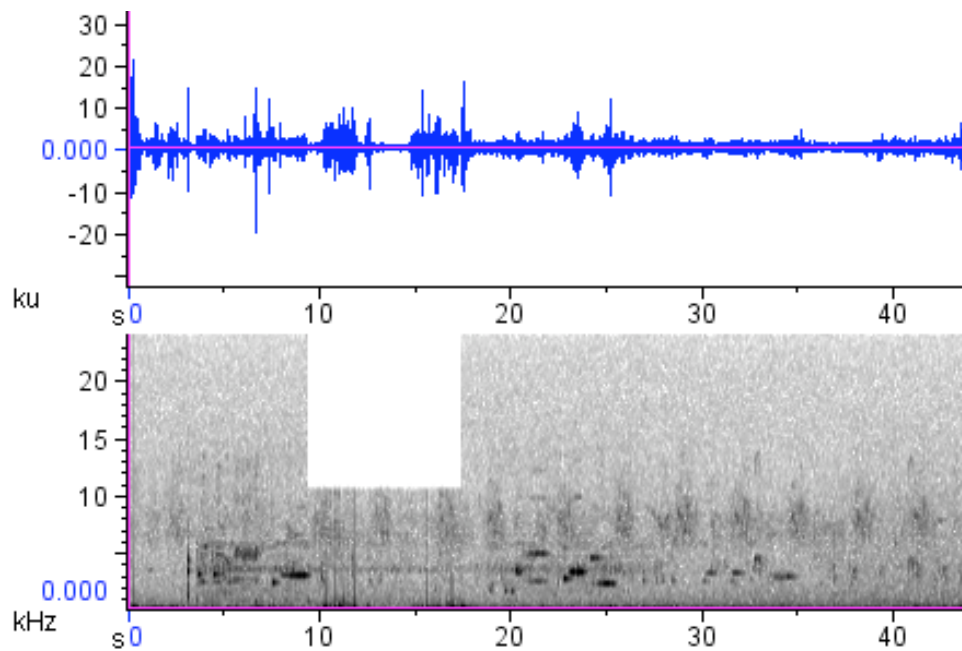
Original Call 1

One of the three calls that I would use, this call did not prove as effective as the “territorial” call. This call would stop the birds from calling for about a second or two and then they would ignore it and continue their own call with out any response. This call was recorded by Andrea Walker on May 24, 2008 on the hike to Middleham falls.



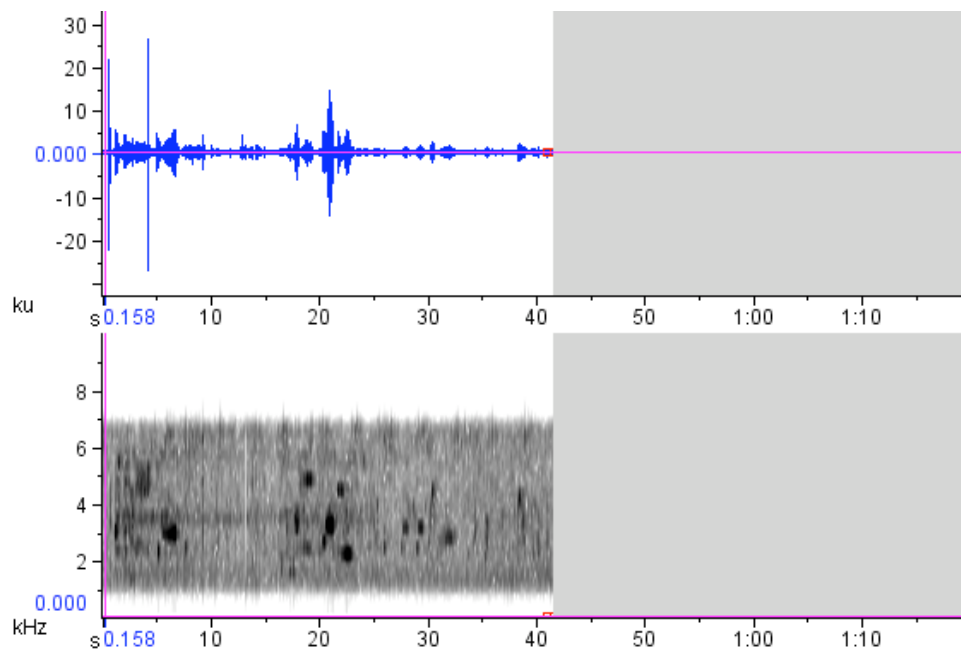
Original Call 2

Even though this call did provoke more feed back from the rufous-throated solitaire than the original call 1, it still did not work as well as the territorial call. In many instances this call would initiate a call response from the solitaire but then the bird would stop responding due to the same call being played back to him. Recorded on May 28, 2008, Andrea Walker also contributed this call.



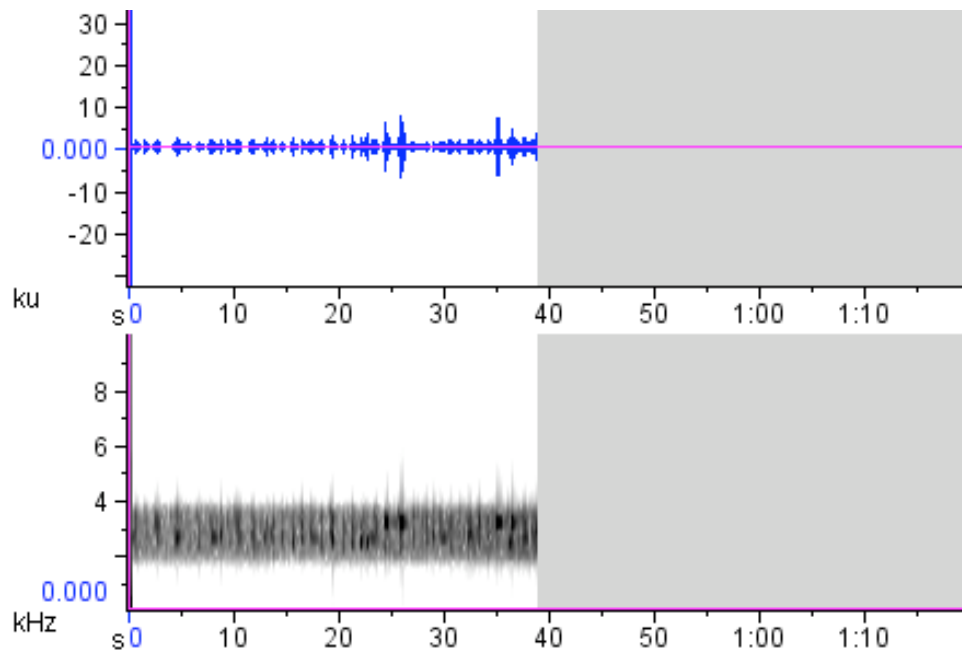
Middleham 1

This call provided great results from the territorial call that I had played. It was recorded on May 23, 2009 at Middleham falls on the hike into the forest. There was just one solitaire that continued to call when the song was played and even after the speaker was turned off. At first the solitaire responded quickly and aggressively but as the speaker continued to play the call the bird slowed its response and quieted it.



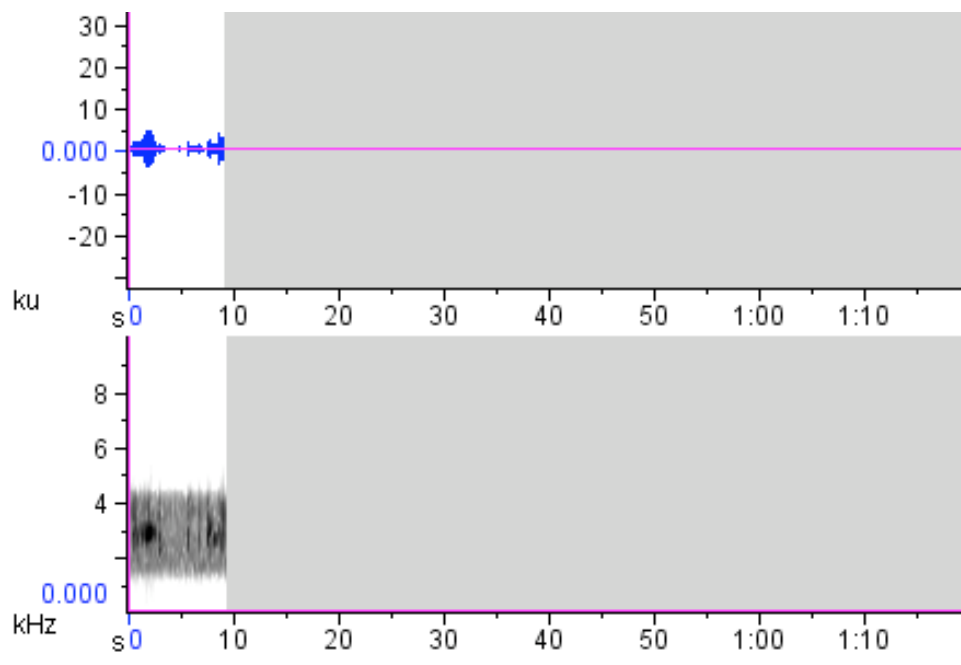
Middleham 2

Recorded on May 3, 2009 in Middleham falls on the hike back, this call was a response to the “territorial” call. This call was not as aggressive as the first one but was very interactive between the recorder and the solitaire. There was a consistent pattern with the exception of a few spikes in the waveform. This could be due to the bird’s excitement and communication. Through the sound the solitaire did not seem as responsive as the first call did.



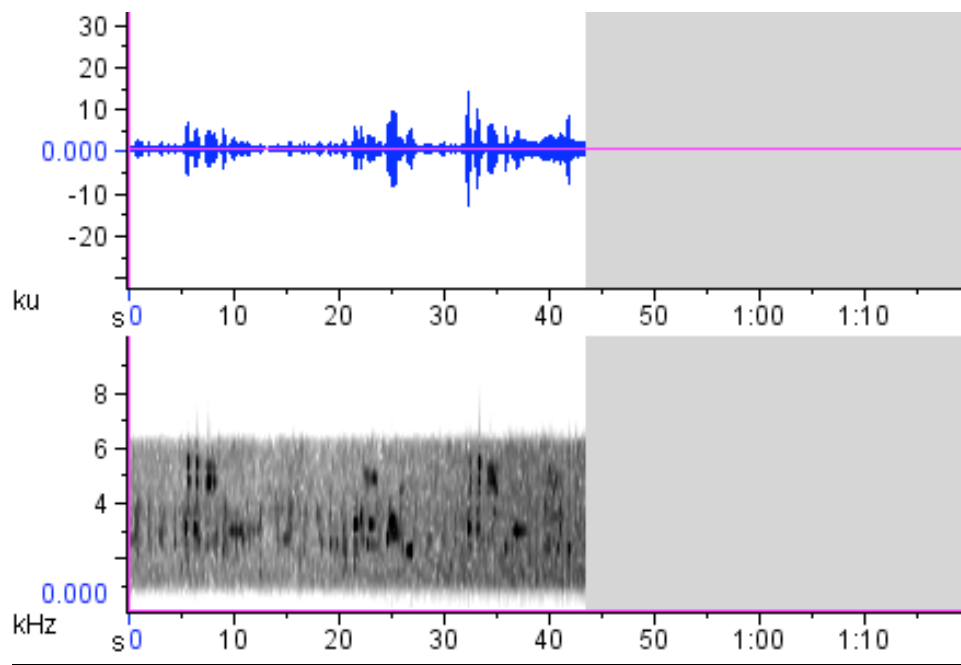
Middleham 3

This call was recorded at Middleham Falls on May 23, 2009 as the group was hiking out of the forest. The territorial call was played along with the original songs. The response received was surprising because the waveform did not exhibit any great intensity. The waveform demonstrated that the solitaire responded in a song to the calls that were played on the speaker.



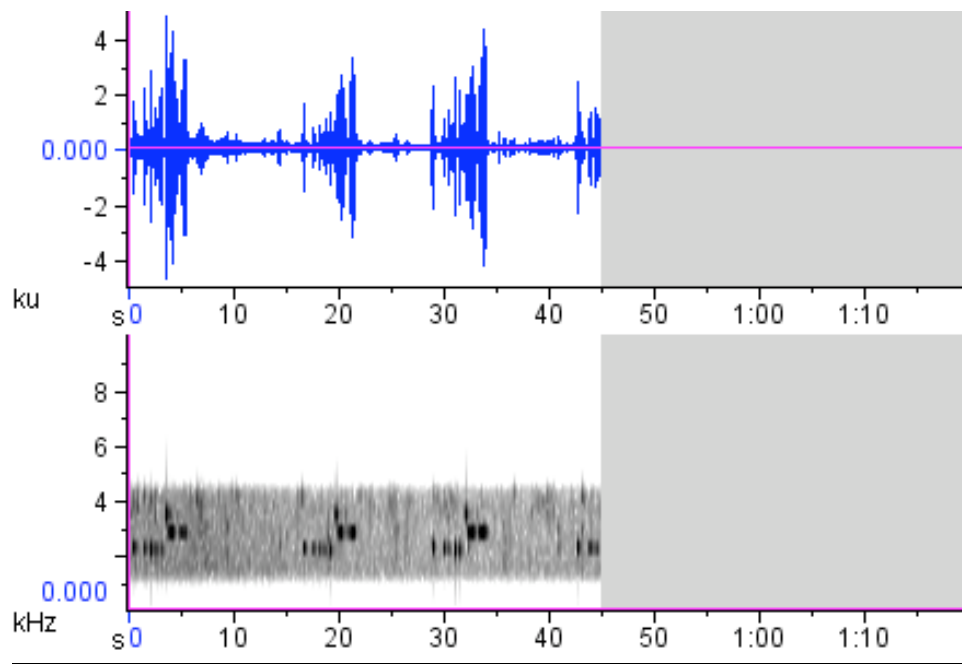
Middleham 4

After receiving good feedback on the previous days, I decided to walk up the trails and attempt the same songs again on May 25, 2009. The waveform was similar to “Middleham 1” but had a few differences. In this waveform the solitaire sounded more excited as the sounds came at a faster pace and were louder than the first recording.



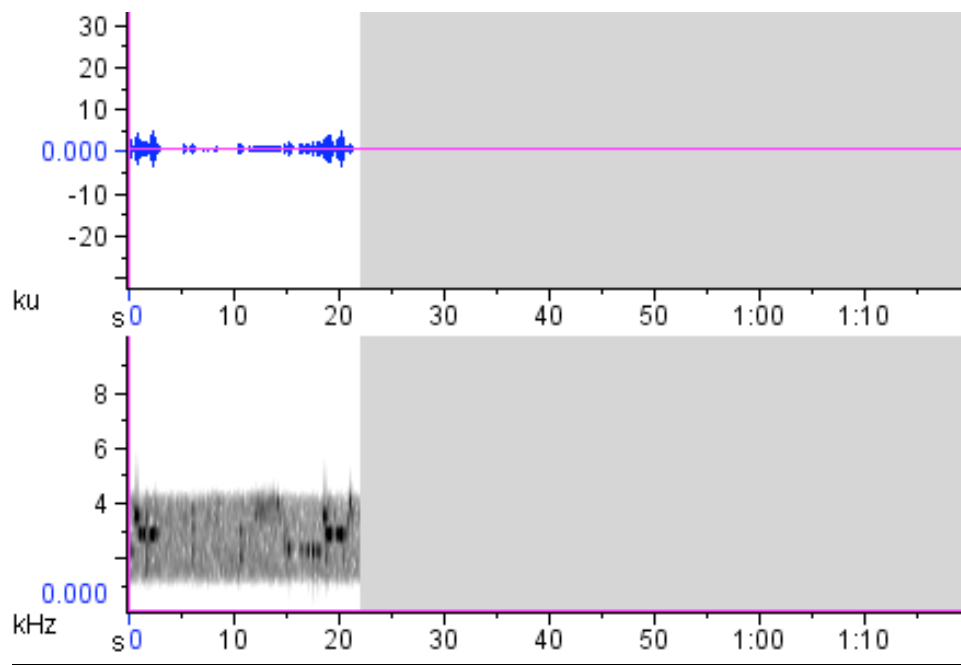
Middleham 5

This call was also recorded on May 25, 2005. Even though the bird did not interact with the territorial call that I had played, it continued to play its own song. The waveform shows a consistent pattern in the song with some of the characteristics of the solitaire. The increasing waves are easily displayed but there are no decreasing ones because the solitaire was singing and not communicating.



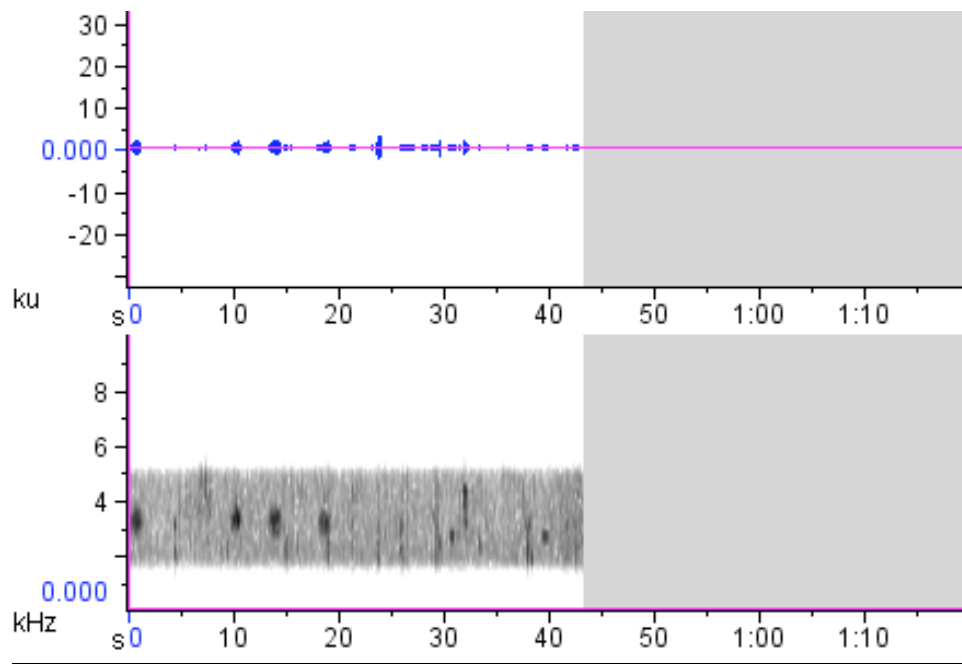
Middleham 6

This solitaire call was recorded on May 25, 2009 at Middleham falls. This waveform is comparable to the characteristics of the response that a solitaire usually gives in response to another bird. After playing the territorial call I received a quick response that demonstrated no aggression since the birds tone was calm and steady.



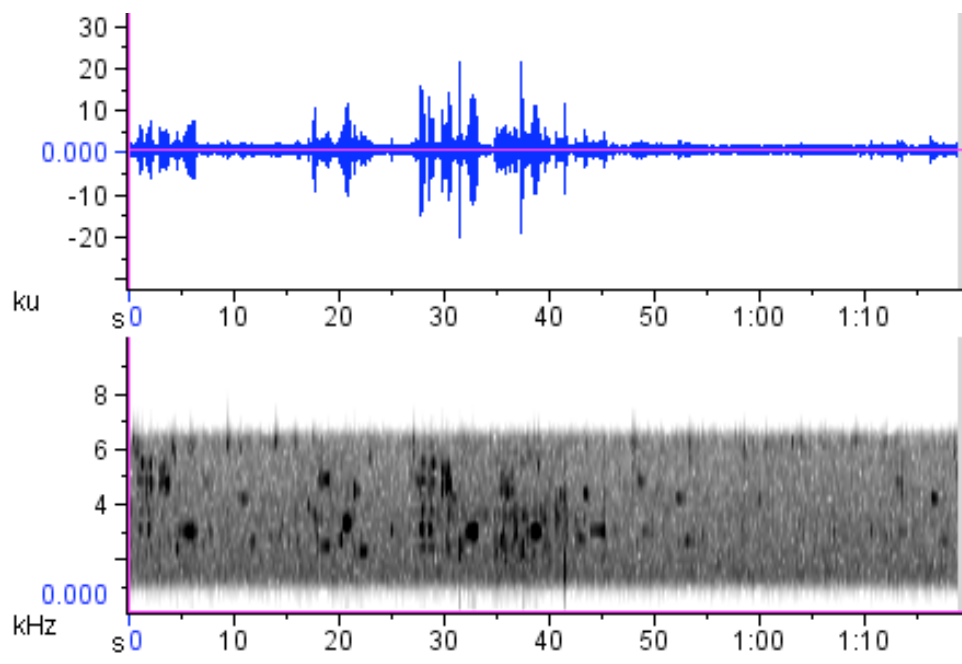
Middleham 7

On May 25, 2009 I recorded this call in Middleham falls. Even after playing all of the original calls and the “territorial” call, this solitaire showed no interest by continuing his song and not responding. There are some differences in the call at the end which could possibly mean that he changed his song. The waveform shows that he speeded up the call and then changed his style towards the end.



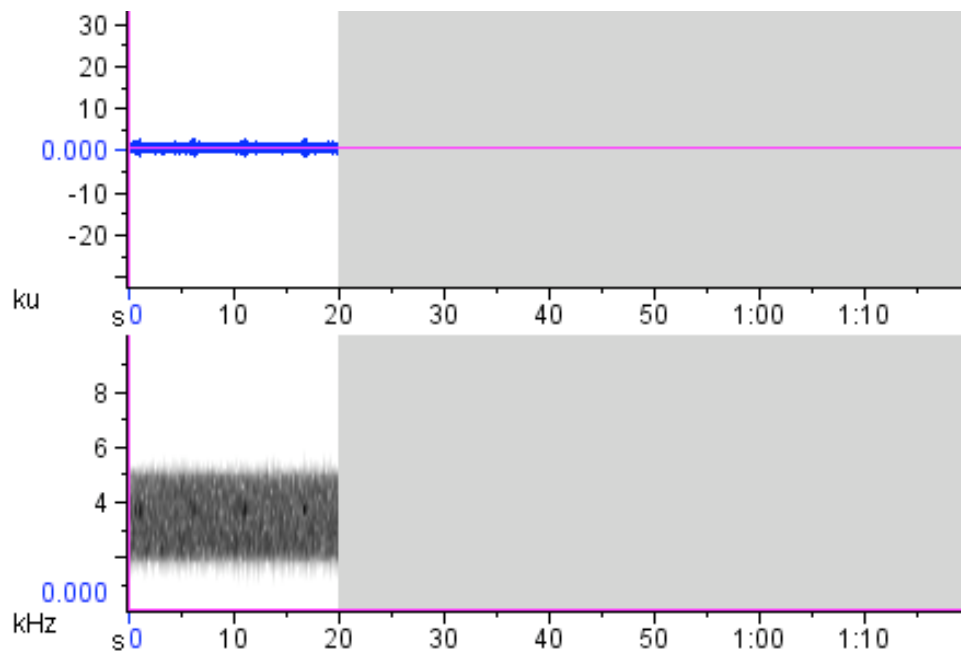
Syndicate 1

On May 26, 2009 we visited the Syndicate Trails, where I had to search for a solitaire. After finding one at the end of the trail I played the “territorial” call, after playing it twice the distance in the solitaire’s call began to decrease. The bird sounded like he was in a nearby tree and began responding to the call. The call was loud and intense, the bird seemed agitated and began responding with an aggressive call.



Syndicate 2

At the Syndicate Trail on May 26, 2009 I played the “territorial” call at the trail head and got no response from the solitaire. The solitaire continued to play his song which I recorded and ignored the call that I had played on the speaker to him.



Discussion

The rufous-throated solitaire, like many other birds, call to communicate to other birds, claim territory, and to find mates. Throughout my research I have discovered more calls of the solitaire and recorded some of their vocal behavior. Since these birds live in higher elevations I was unable to document their physical behavior. Because of their habit being difficult to see with the naked eye, there are also few books that have information on them and their behavior. Many projects could be structured around the Rufous-throated solitaire such as their behavioral patterns or their population size on Dominica. As I was researching this unique bird there was no picture in the book and very little information. I tried to study the bird through online resources but fell

short when many pages redirected me to the Dominican Republic. There was also no documented amount of the population size of the solitaire, however, some websites failed to acknowledge that the Rufous-throated solitaire existed on the island of Dominica.

Acknowledgments

I would like to thank Dr. Woolley for helping me understand the equipment and the Raven program. I would also like to thank Dr. Lacher for his technological support with the Raven program and his assistance in helping me record the bird calls. Without their support and dedication to students, none of this would be possible. I would also like to thank Clement James for his wide knowledge on the rufous-throated solitaire and his observations. Last but not least, I would like to thank Andrea Walker for her ideas and assistance in starting this project.

Works Cited

1. James, Arlington, Stephen Durand, and Bertrand Jno. Baptiste. Dominica's Birds. Forestry, Wildlife & Parks Division of Dominica, 2005.