

The Territorial Behavior of the Mountain Chicken

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Abstract

Leptodactylus fallax is one of the four frogs occurring on the island of Dominica. Leptodactylus fallax can easily be tracked by its distinct vocal sound. The frogs call to each other in a “ping pong” type of fashion, one after the other. In this study areas in which the frogs occurred were flagged with different colors of flagging tape. GPS readings were taken the next day of the locations. The areas were measured to find an average distance between the frogs. The measurements were calculated and analyzed.

Introduction

On any given night in the forest of Springfield one can hear a very loud and strange whoop in the distance. This call belongs to a unique species of frogs called Leptodactylus fallax, although they are more commonly referred to as Mountain Chicken. The frogs were given the name Mountain Chicken by many of the locals because when prepared, their meat has very similar taste to chicken.

Mountain Chickens are nocturnal creatures found in leeward valleys (Evans and James 1997:16). They are distributed mainly in valleys with coastal dry forest and scrub and adjacent cultivation areas. Also they seem to stay in areas with low to medium elevation (Evans and James 1997:16).

This project is designed to analyze the territorial behaviors of the male Mountain Chicken. I hypothesize that males will return to the same areas on a nightly basis or stay within a 20-meter range. Also I will assess the types of habitats the males inhabit. Finally I will determine if there is a consistent male to male distance when calling.

Materials and Methods

There were two main areas of study. The first was a path on the eastern side of the veranda by a small garden. The second area was a staircase and the road going up the hill near a structure called the Bee House. Other sites where occurrences would seem possible or where frogs had been seen by others did not yield any individuals. For example the path leading to the Check Hall River was visited on three separate occasions but no Mountain Chickens were found.

The Mountain Chicken started calling at dusk, though on days of heavy rainfall the calling would begin before dusk. The specimens observed for the report were viewed in the time frame of 7:45 p.m. to 9:30 p.m. The males were selected for study because they were the only ones who made the calls. The male Mountain Chicken has a very loud vocalization that covers a great distance. The calls were followed to an area and then the area would be searched for the presence of the frog. In many cases the frog would continue calling until light was shined upon them.

A flashlight would be aimed directly at the specimen's eyes so as to blind him. At the time the light shines into the face of the frog he does not move and stops his calling completely. An area near the specimen would then be flagged. Each day I would carry a different color of flagging tape, to help keep track of which day the occurrences occurred.

In about four cases the frog was heard and was extremely close but not seen. For example, once a frog was heard by the side of the road. The road had a very large drop off but the frog was heard very loudly coming from the bottom of this area and so the area was marked and the distance was estimated. In cases such as these the frogs were no further than five meters or less from the area flagged.

The next morning a GPS reading would be taken of the flagged areas to record the different positions and elevation. Also the weather on the day of and prior to the flagging was recorded in order to see what role weather played in the calling location of the frogs. I also noted whether the frogs found were in an open area or an area with vegetation.

On the last day measurements were taken of the area between the flags.

A problem that should be noted is that since the frogs themselves were not marked it can not be determined whether the same frogs were returning to the same location or whether these locations were just a prime areas for different frogs. The standards were set in order to get more accurate measurements of the points.

Results

Eleven actively calling male Mountain Chicken were located during surveys conducted between 27 May and 5 June 2001. The habitats for each of these are characterized in Table 1.

Table 1 Characteristics of sites occupied by the male Mountain Chicken

Date Observed Point number	GPS Reading	Weather	Description of the Site
5/27/01 Point 1	15° 20' 48' N 061° 22' 09' W 385 meters	It had rained all day that day.	Near an area of several bushes
5/27/01 Point 2	15° 20' 50' N 061° 22' 11' W 363.6 meters	It had rained all day.	The area was very open; there were some cabbage like plants around.
5/28/01 Point 3	15° 20' 49' N 061° 22' 10' W 369.4 meters	It had not rained in the daytime at all. There was some rainfall that occurred an hour before the frog was caught.	On a rock surrounded by high grasses.
5/28/01 Point 4 ***	15° 20' 51' N 061° 22' 06' W 405.7 meters	Rainfall did not occur at all that day until about 30 minutes before the frog was captured.	In very dense vegetation on the top of an outside staircase.
5/29/01 Point 5 ***	15° 20' 50' N 061° 22' 06' W 393.5 meters	There was only a light rain before 7 p.m.	In dense vegetation on top of outside staircase (about 5 ft from the location of point four).
5/31/01 Point 6***	15° 20' 50' N 061° 22' 07' W 385.6 meters	There was no rain on this day or the day before.	On top of a staircase near the old fallen bamboo and thick grass.
5/31/01 Point 7***	15° 20' 49' N 061° 22' 09' W 359.7 meters	There was no rain on this day or the day before.	At the bottom of the hill with thick grass and other vegetation.
6/3/01 Point 8***	15° 20' 50' N 061° 22' 07' W 385.6 meters	There was rain early that morning but it then stopped.	On top of the staircase near some old bamboo.
6/3/01 Point 9 ***	15° 20' 49' N 061° 22' 09' W 359.7 meters	There was rain early in the morning but none for the rest of the day.	At the bottom of the hill with thick grass and other vegetation.

6/05/01 Point 10	15°20'48" N 061°22'09" W 359.7 meters	No rain.	Near several bushes in the garden beside the stream house.
6/5/01 Point 11	15°20'51" N 061°22'04" W 351.7 meters	No rain.	Frog was spotted in the middle of the staircase going to the Bee House.

***Denotes places where markers were separated by five feet or less. These areas were counted as areas of possible reoccurrence.

Table 2 The table below show the measurements taken from point to point.

Maps of the areas surveyed are attached on the next page (Figure 1 and Figure 2).

Distances between calling frogs:

From Point	To Point	Meters
1	10	12.6
2	SG	10.5
SG*	3	43.1
9	SB	70.7
7	SB	70.7
SB**	4	10.7
4	11	11.9
11	5	19.8
5	6	.4
6	8	.1

* SG denotes a standard garden point taken at the
GPS 15°20'49" N 061°22'11" W 343.5 meters

**SB denotes a standard Bee house point in front of the gate with a
GPS 15°20'51" N 061°22'05" W 471.2 meters

The average distance between each of the areas as recorded in table 2, was 24.2 meters. For the garden the average was 22.1 meters. This includes an outlier point, 43.1 meters, that made the average is much higher. Without the outlier the average of the garden would have been 11.5 meters. The Bee House average was also elevated by an outlier point, 70.7 meters. The average with this point is 26.3 meters and without this point the average would have been 6 meters. I believe that these frogs were not calling within the same groups but to frogs closer to their area. Since I did capture the distant frogs and there are no other data to support the hypothesis I added the outliers to my calculations.

Discussion

From the information gained in this report it can be seen that even in populations at two different locations the average distance of the frogs from one another was quite similar. From this we can say that the Mountain Chicken seems to space themselves about 6-12 meters from one another, or 3-6 meters between territories. This is a much larger distance than originally hypothesized.

The rate of reoccurrence was determined by assuming that the points within 1.524 meters of one another were the same frog. It is difficult to know that these were the same frogs since they were not marked.

Also the areas that the frogs seemed to prefer were areas of tall vegetation. Almost all of the frogs found were near areas of high grass, bushes, or tall trees. This was documented in a earlier study (Heath and Roesner 2000).

Conclusion

The Mountain Chicken appeared to be a very territorial species. The males seem to protect their areas with their calls and also returned to the same position. They seem to prefer places of high vegetation. Also the sightings of the Mountain Chickens happen at a higher rate when rainfall has occurred.

Further Study or Extension of the Project

I would first like to say that this project is better done as a group project than by an individual. Because of the nocturnal nature of the frogs it is safer for more than one person to go out at night and look for the Mountain Chicken. Also in future projects if there is to be any type of capture two people are needed, one person to shine the light and the other to hold the frog.

It would be good to test the hypothesis of reoccurrence at certain location of the same frogs by actually flagging the frogs in some of the areas of frequent sighting..

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