Tink Frog Density

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Abstract

The Tink Frog is an amphibian that is approximately one inch long with a tan body and distinctive black eyeline. For twelve ten-minute periods on twelve different evenings, I collected the relative humidity and temperature digitally using the Kestrel. I noted all data in my project notebook separate from my journal. My data and graphs confirmed my hypothesis, which stated that their activity would increase as the humidity increased.

Introduction

On the tropical, Caribbean island of Dominica many types of reptiles and amphibians have established areas of population. Dominica is called the "Nature Island" for many reasons including its abundance of flora and fauna as well as its towering volcanic peaks. The island is located in the West Indies in the Lesser Antilles of the Caribbean Sea. It rests in between Guadeloupe to the north and Martinique to the south. The island itself is roughly thirty miles long and fifteen miles wide. (Lacher, Martin)

Eleutherodactylus martinincensis is a Lesser Antillean frog species endemic to Dominica. The "Tink Frog", as it is more commonly known, is extremely abundant across all of Dominica's diverse habitats including the Springfield Station and the Checkhall River area. The Tink Frog is an amphibian that is approximately one inch long with a tan body and distinctive black eyeline. This nocturnal frog makes a sound similar to metal clanging together like a "tink, tink, tink", thus giving it the name Tink Frog. (Evans)

In this three week long experiment I tested the correlation between the calling behaviors of Tink Frogs versus relative humidity and temperature. My hypothesis was that Tink Frog call frequency would increase with the increase of relative humidity in the air.

Materials

Headlamp

Pigma Pen

Project Notebook

Wristwatch

Kestrel: device used to take temperature and relative humidity readings

Methods

I tried several methods of collecting data before I settled on the final method for my project. The method I decided to use for my experiment included the use of the Kestrel and a watch as mentioned before. After dinner every night from approximately 8:00pm – 9:30pm, I went down to the trail that led to the Checkhall River and listened to the frogs. I usually stayed for over an hour in which during this time I located the frogs by their calls or by watching them and recorded the number of frogs calling during ten-minute intervals. I used this method every night. For every ten-minute period, I also collected the relative humidity and temperature digitally using the Kestrel. I noted all data in my project notebook separate from my journal. When I was finished for the night, I averaged all of the collected data.

Results

(See next page)

Discussion

I found that relative humidity for a specific night was affected by the amount of rainfall the day or days before. Thus, the humidity was greater when the amount of rainfall was larger. Therefore, the amount of frogs increased as well. The amount of rain and humidity directly affected the behavioral patterns of the frogs. The numbers of calling Tink Frogs were strongly and significantly correlated with relative humidity as shown by Table 1 and Figure 1. The strong correlation between relative humidity and number of calling frogs means that as the humidity increased, the frogs increased at approximately the same rate.

I observed several other interesting behavioral patterns. I found that the Tink Frogs make two separate calls contrary to previous thought that they make the single "tink, tink, tink" call. I noticed that the frogs made a "chirp" call which seemed to be affected by their distance away from the river. I found that the "chirp" was made further away from the river or water source and the "tink" was made closer to the river. I would speculate that these different calls originate because of different behaviors displayed. The frogs could be using the calls to mark their territory or to find a mate. Are these frogs displaying territoriality patterns by making these calls? Does the community of frogs use these separate calls as location points?

Conclusion

From my experiment, I concluded that my hypothesis was correct. The hypothesis stated that the density of Tink Frogs would increase with an increase in relative humidity. My data and graphs confirm this assumption as well as my field observation of the frogs themselves. I also used statistics software to determine the correlation between Tink Frogs and humidity and temperature. Their activity, which includes calling and feeding, increased when it rained more during the day and especially in late afternoon. I found that these frogs are more active when there has been an increase in humidity due to the weather.

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The curve-linear relationship shown in Figure 1 shows that there is a definite pattern involved with the frogs activity. It also shows that there could be a possible threshold involved. It shows that once the humidity reaches a certain point, the calling of the frogs make a significant increase.

Works Cited

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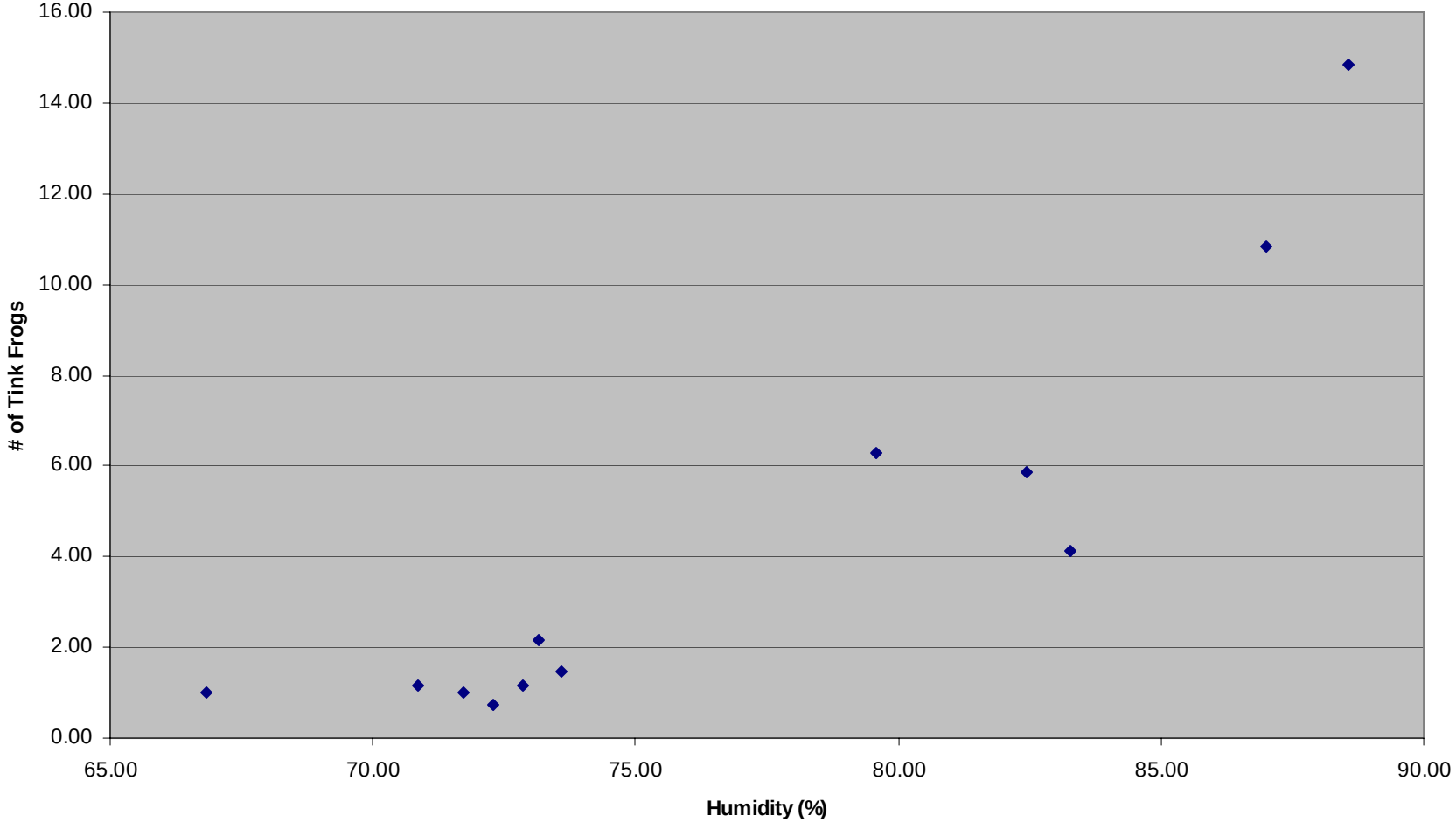
Figure 1: Humidity vs. Tink Frogs



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