

Feeding Times and Aggressive Behaviors of Dominican Hummingbirds

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Abstract

There are four species of hummingbirds in Dominica: *Eulampis jugularis*, *Sericotes holosericeus*, *Orthorhyncus cristatus* and *Cyanophaea bicolor*. Hummingbirds are known to be quite territorial, often displaying aggressive behaviors. In this study, four sucrose-water feeders were hung at SCEPTRE (Springfield Centre for Environmental Protection, Teaching, Research and Education) in order to observe species, sex, feeding time, feeder number and aggressive or territorial behaviors. Some behaviors observed were chasing an opponent, vocalizing, fluttering and constantly looking around the territory. Figures and tables are included, describing feeding times for each species, location preferences, feeder distances and behaviors observed. From the figures and tables, a pattern of hierarchy was determined. The Trembler and Purple-throated Carib control the top, followed by the other larger birds, leaving the female Antillean Crested hummingbird at a foraging disadvantage. By the end of the observation time, a Purple-throated Carib had dominated the territory.

Introduction

There are four species of hummingbirds found in Dominica: *Eulampis jugularis*, *Sericotes holosericeus*, *Orthorhyncus cristatus* and *Cyanophaia bicolor*. The Purple-throated Carib (*Eulampis jugularis*) is endemic to the Caribbean and very common around SCEPTRE. The habitat at the station is a deciduous or transitional forest and mixed cultivation. Purple-throated Caribs are about 5 inches in length and have a distinctive purple patch on their throat that can be seen in direct sunlight. Otherwise, they appear mostly black, with some green iridescence on their wings and a long curved beak. The sexes are indistinguishable. The Green-throated Carib (*Sericotes holosericeus*) is also endemic to the Caribbean, but found more often in dry forest and cultivated areas. It is about 4.5 to 5 inches in length, appearing green with a violet-blue patch on the throat. It also has a long curved bill, and the sexes are indistinguishable. The third species endemic to the Caribbean is the Antillean Crested hummingbird (*Orthorhyncus cristatus*). They are 3.5 inches in length and found in all habitats. Both sexes have a short straight bill, appear green and have a green and blue iridescent crest on the head. The female has a light gray underside, while the male's is dark. The last species to point out is the Blue-headed hummingbird (*Cyanophaia bicolor*), which is endemic in the Lesser Antilles, Dominica and Martinique. They are not seen around SCEPTRE because they are mostly found in rain forests and elfin woodlands at least 300-600 meters above sea level. They are 4.5 inches in length, with a distinctive blue head and sexes being unlike. This species was not studied.

Hummingbirds are known to be very territorial, often displaying aggressive behaviors. For this study, I chose to observe the hummingbirds that feed from four feeders placed at SCEPTRE. Feeding time was recorded, as well as any aggressive or territorial behaviors. From these observations, the range of a territory should be determined, as well as the hierarchy between different species of hummingbirds and other local birds.

Method and Materials

Four feeders were hung in the northwest garden of SCEPTRE. There was no specific concentration of sucrose water used, but all feeders contained the same concentration at all times. The feeders were hung about 7.6 to 10.4 feet apart from each other to promote interaction between the hummingbirds. Yet, the specified distance was also chosen to see if there was enough space for more than one individual feeding at a time. The feeders were watched for about six hours total. This time was dispersed over five days, at different times during the day. While observing the hummingbirds, attention was paid mostly to species, sex (if determined), feeding time, feeder number and aggressive or territorial behavior. The following items were used to perform this experiment:

- Four hummingbird feeders
- Pure cane sugar
- Teakettle
- Stove
- Water
- Rope
- Tape measure
- Video camera

Table 2: Distances Between Feeders

| Feeder A | Feeder B | Distance (ft) |
|----------|----------|---------------|
| 1 | 2 | 10.4 |
| 2 | 3 | 7.6 |
| 3 | 4 | 7.7 |
| 1 | 4 | 22.4 |
| 2 | 4 | 14.5 |
| 1 | 3 | 17.3 |

Table 2: Distances Between Feeders. The table to the left shows the approximate distances measured between each feeder combination.

Figure 1: Average Feeding Times per Species

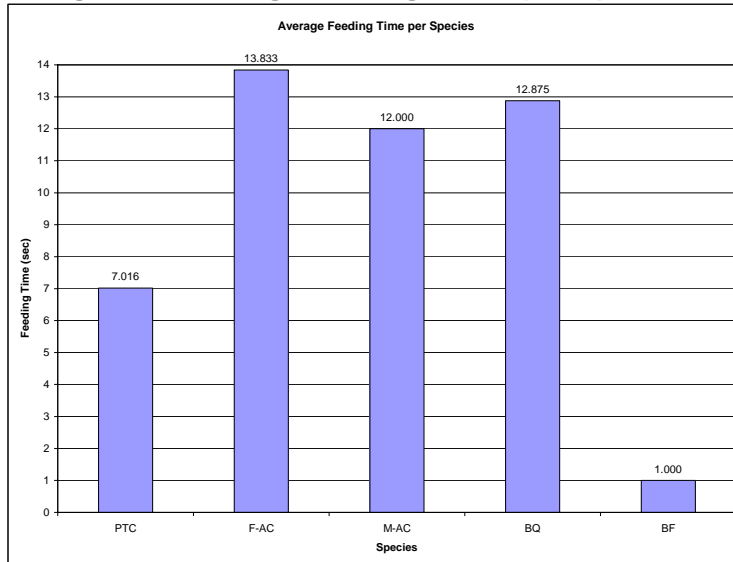


Figure 1: Average Feeding Times per Species. The graph to the left represents the average feeding time for each species observed. Calculations were determined by using data in Table 1.

Figure 2: Number of Feedings per Feeder/Flower

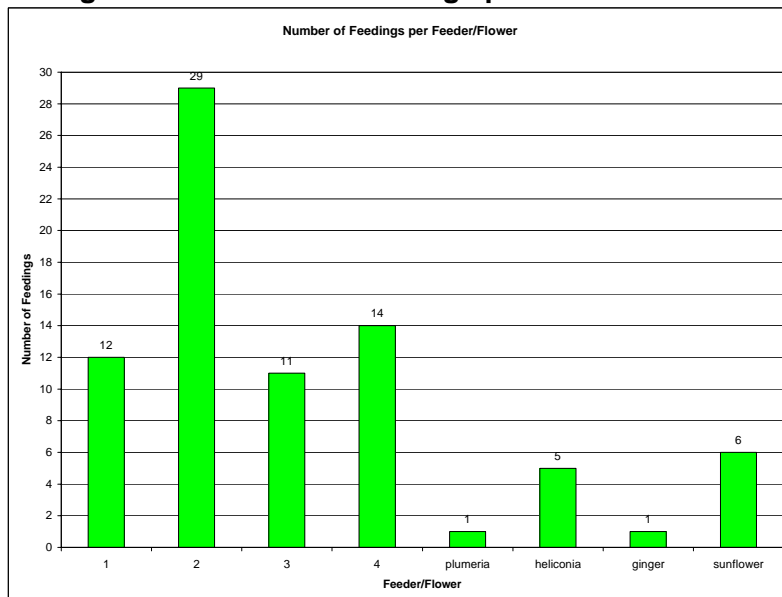


Figure 2: Number of Feedings per Feeder/Flower. The figure to the left represents how many times each feeder or flower was fed from. The data was found in Table 1.

Figure 3: Average Feeding Times of Feeders and Flowers

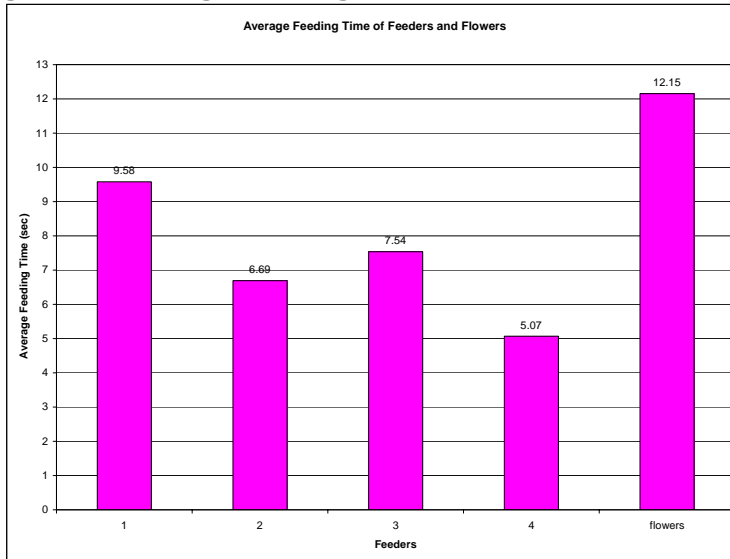


Figure 3: Average Feeding Times of Feeders and Flowers. The figure to the left represents the average time spent feeding at each feeder or the flowers combined. The data was taken from Table 1.

Table 3: Behaviors and Number of Occurrences

| Behavior | # of Occurrences |
|--|--|
| PTC chase off PTC | 17 |
| PTC chase off BQ | 2 |
| PTC chase off F-BF | 3 |
| PTC chase off GTC | continuous over time period of 5 minutes |
| PTC chase off F-AC | 1 |
| PTC chase off M-AC | 2 |
| PTC chase off Trembler | attempt |
| F-AC chase off F-AC | 1 |
| PTC on heliconia at same time as PTC on plumeria | 1 |

Table 3: Behavior and Number of Occurrences. The table above represents specific behaviors displayed between species and how many times that behavior occurred. The data was taken from field notes.

Discussion

There is a definite pattern of hierarchy between the species of birds seen. Throughout the observation time, the Purple-throated Carib dominated the territory, as shown by the data in Table 3. They were observed chasing off (or at least attempt to) every other species of bird that appeared. From monitoring in person and examining the recorded video, a few main aggressive behaviors were noticed. The most common behavior displayed was chasing after the opposing bird. Vocalization from the hummingbirds was heard during this. At times, the Purple-throated Carib would merely flutter his wings while remaining perched at his location. With other Purple-throated Caribs, the dominating hummingbird would at times, chase in circles around the feeders, instead of just a straight shot to getting rid of them. When there was no direct threat, the controlling hummingbird would look in all directions around him, keeping an eye on his territory.

The Green-throated Carib tried to feed for a time period of five minutes, being chased off by the controlling Purple-throated Carib the entire time. It is assumed that since the two species are close to the same size, the individual that first is able to secure the territory is likely to be dominant over any other individuals.

The male Antillean Crested hummingbird attempted to feed several times when a Purple-throated Carib was present. He did not succeed in feeding, and had to wait until the dominating hummingbird was gone so that he could feed.

Being the smallest of the hummingbirds, the female Antillean Crested hummingbird did not even attempt to use the feeders. They were observed chasing off other female Antillean Crested hummingbirds, suggesting that they too have a certain dominance hierarchy at the flowers.

It would be assumed that the larger species of birds would dominate over the larger of the hummingbirds. This did not occur. The Purple-throated Carib chased both the Bananaquit (*Coereba flaveola*) and the female Bullfinch (*Loxigilla noctis*) from the feeders. An attempt was made by the Purple-throated Carib to chase a Trembler (*Cinclocerthia ruficauda*) in a tree next to one of the feeders. It did not succeed, but the Trembler left soon anyway. Tremblers appeared to show no interest in the feeders.

By the time that the final observations were recorded, a Purple-throated Carib seemed to be holding his territory. He would perch on a tree next to feeder number one, feeding occasionally and chasing away other species that came near. After the observation time was over, the feeders were still studied. Every time I observed them, the Purple-throated Carib was guarding its territory, or there were no birds around. He

became familiarized with me, and often allowed me to get within a few feet. Therefore, a hierarchy between the birds might place the Trembler at top, closely followed by the Purple-throated Carib. Then the other larger birds, the Bananaquit, female Bullfinch, Green-throated Carib and male Antillean Crested hummingbird would follow. This left the female Antillean Crested hummingbird at a foraging disadvantage.

The feeding times of different species are shown in Figure 1 and Table 1. When competition was not present, the birds would feed for a longer time period. But when threatened, shorter feeding times were observed. The amount of time that the hummingbirds fed at the flowers was longer than at the feeders, as shown in Figure 3. This is because when at the flowers, they are less of a threat to the territorial boundaries of other hummingbirds. In addition, the quality of the food resources might be higher at the flowers than at the feeders. Also, by the data in Figure 2, it is shown that feeder number two was used quite a bit more than the others. I do not know why and see no definite pattern in location of feeding. The distances between the feeders, shown in Table 2, seem to show no significance. They were close enough to provoke interaction, but too close for multiple feedings at one time.

References

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