

# Habitat Selection By Dominica Anoles

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### ABSTRACT

For roughly two weeks, the patterns for habitat selection for Dominica anoles (*Anolis oculatus*) were investigated. During this period, it was found that anoles seemed to prefer habitats with closed canopies, low perches, temperatures in the mid thirties (Celsius), and low elevations.

### INTRODUCTION

The Dominica Anole (*Anolis oculatus*) is a tree lizard belonging to the family Iguanidae and is endemic to Dominica (Malhotra and Thorpe, 1999). Their average SVL is approximately 5.0 centimeters, and an average total length of 12.3 centimeters. Their appearance varies depending on their environment (Malhotra and Thorpe, 1999). It may be deep green with bluish-white spots in rain forests, deep orange or chocolate brown along the east coast, or light tan or yellow along the west coast. Anoles typically just watch for small insects along the ground to feed on such prey as cockroaches, ants, crickets or grasshoppers, or other lizards that may enter their territory. When male anoles spot an intruder or if they're threatened, they make themselves look larger and intimidating by raising and lowering their dewlaps, doing "push-ups", or even briefly attacking (though usually without serious injury). Males will also display their dewlaps or do "push-ups" to attract mates. Females also have territories which they defend, though they're generally smaller than the males', and male territories may overlap with theirs, usually because the males wants to mate with them.

The aim of this experiment was to investigate the aspects of habitat selection for Dominica anoles during different parts of the day at various habitats in Dominica for approximately two weeks. The specific aspects that were tested were canopy cover, perch height, elevation, and temperature. My hypothesis was that anoles would prefer open canopy, warmer temperatures, and high perches so they can sun themselves more easily.

## MATERIALS AND METHODS

Data were gathered from May 27 to June 7, 2005 between 8:00 am and 6:31 pm at the selected habitats on the island of Dominica. The habitats surveyed included secondary rain forests at Springfield plantation and Mt. Joy, disturbed agricultural and marine areas at Batalie Beach, and dry scrub woodland forests at Cabrits national park. The secondary rain forest habitat at Springfield used to be primary rain forest until the land was cleared for agriculture (Valentine, 2002). After the land was donated to Clemson University for research, new vegetation recolonized the area and displaced most of the agriculture. Annual rainfall in secondary rain forests ranges from 444-762 centimeters per year, and this forest type occurs at elevations between 305-762 meters at Springfield. The disturbed marine area at Batalie Beach is characterized by frequent human activity, including some agriculture. The annual rainfall for this habitat is approximately 127-152 centimeters and elevation is 0-3 meters. Finally, dry scrub woodlands at Cabrits have trees that, on average, only grow to 9.1 meters because they lie in the rainshadow of Dominica's mountains (Valentine, 2002). Therefore, they only experience 152-178 centimeters of rainfall and occur at elevations between 0-305 meters.

When an anole was spotted, the local heat index was measured using a kestrel 3000, perch height was measured with a meter stick, and time was recorded with a watch. Whenever possible, elevation was recorded using a GPS, though a topographical map was occasionally used to estimate elevation whenever the GPS couldn't receive a strong signal, or whenever a GPS wasn't available. Canopy cover was also recorded.

## RESULTS

Table 1 shows the canopy cover, the heat index, elevations, perch heights and the times for all the locations at which anoles were found. Some areas had semi-closed canopies, where there was cover from treetops, but not enough to offer full shade.

The average heat index during surveys at secondary rain forests was 34.1 degrees Celsius. At Batalie Beach, average heat index was 42.0 degrees Celsius. Average heat index on the collection day at Cabrits was 39.9 degrees Celsius.

## DISCUSSION

The data gathered suggest that habitat selection by anoles does occur on Dominica, and that anoles prefer closed or semi-closed canopy. My hypothesis had to be rejected because they don't prefer open canopy. In fact, anoles may only perch in areas with more closed canopy, since I rarely saw an anole in open canopy areas. Perhaps anoles need the closed canopy to avoid predators, and only need semi-closed canopy to sun themselves. In addition, anoles seemed to be more common along the ground or at low perches for most of the day, and roosted primarily at higher perches before 1:00 pm. It could be because anoles stay close to the ground for most of the day to find prey such

as ants or crickets. Anoles may only go to higher perches to sun themselves, especially since most of the higher perches were recorded in semi-closed canopy areas. Also, while anoles seem to find apt habitats in temperatures ranging from 31.9°C to 43.1°C, anoles seemed to be more common in areas with heat indices in the mid thirties (34°C-37°C), whether they're in closed or semi-closed canopy areas. Perhaps this temperature range is most efficient at minimizing heat loss. And finally, anoles generally selected habitats at lower elevations. I also noted that trees with large leaves seemed to be more common at higher elevations while trees with smaller leaves are found at lower elevations. The only reason why I mention this is that perhaps the small-leaved trees at low elevations don't offer as much protection for prey items for the anoles, so they make their habitats where they can easily find their food.

If I were to do this experiment again, I would've preferred more time surveying in areas such as Cabrits and Batalie Beach. Most of the data was gathered in secondary rain forests, and I would've preferred gathering more readings at Cabrits or Batalie Beach to see if different environments show different patterns of habitat selection.

## REFERENCES

- Malhorta, Anita and Roger S. Thorpe. 1999. Reptiles and Amphibians of the Eastern Caribbean. School of Biological Sciences, University of Wales, Bangor UK. 21-22, 27-31.
- Valentine, Lori. 2002. Morphological Variation in *Anolis oculatus* Between Dominican Habitats. Texas A&M Study Abroad Program. Individual Project Report. 2 pp.

TABLES

Table 1. Environment Characteristics of Habitat Selection of Anoles on Dominica from May 27 to June 7.

Anole	Location	Canopy Cover	Time	Perch Height	Elevation	Heat Index
1	Springfield	Closed	10:30 am	Ground	284 m	37.1°C
2	Springfield	Closed	10:30 am	Ground	284 m	37.1°C
3	Springfield	Closed	10:30 am	30 cm	284 m	37.1°C
4	Springfield	Closed	10:30 am	30 cm	284 m	37.1°C
5	Batalie	Semi-Closed	9:30 am	160 cm	0 m	42.0°C
6	Cabritts	Semi-Closed	12:30 pm	164 cm	23 m	36.6°C
7	Cabritts	Semi-Closed	12:30 pm	164 cm	23 m	36.6°C
8	Cabritts	Closed	1:59 pm	Ground	22 m	43.1°C
9	Cabritts	Closed	1:59 pm	100 cm	22 m	43.1°C
10	Springfield	Semi-Closed	10:10 am	112 cm	290 m	31.9°C
11	Springfield	Semi-Closed	10:10 am	112 cm	290 m	31.9°C
12	Springfield	Closed	1:22 pm	Ground	279 m	37.5°C
13	Springfield	Semi-Closed	1:46 pm	Ground	279 m	36.2°C
14	Springfield	Semi-Closed	1:46 pm	Ground	279 m	36.2°C
15	Springfield	Closed	3:23 pm	28 cm	279 m	32.8°C
16	Springfield	Closed	3:23 pm	10 cm	279 m	32.8°C
17	Springfield	Closed	3:27 pm	Ground	279 m	33.3°C
18	Springfield	Semi-Closed	3:35 pm	Ground	279 m	34.7°C
19	Springfield	Closed	3:45 pm	10 cm	279 m	33.7°C
20	Springfield	Closed	11:02 am	Ground	279 m	34.8°C
21	Springfield	Closed	4:21 pm	114 cm	279 m	32.6°C
22	Mt. Joy	Closed	5:43 pm	Ground	430 m	30.6°C
23	Mt. Joy	Closed	5:45 pm	Ground	430 m	33.0°C
24	Mt. Joy	Open	6:16 pm	Ground	423 m	32.3°C
25	Mt. Joy	Semi-Closed	6:29 pm	Ground	330 m	31.0°C
26	Mt. Joy	Semi-Closed	6:31 pm	Ground	330 m	32.6°C