Ant Species Diversity at different heights along the *F.insipida*

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ABSTRACT

Ficus insipida is a common fig tree on Dominica. The intent of this project was to determine the ant diversity at different heights in *F. insipida*. Baits were made and set at heights of 3.05m, 6.10m, and 9.15m, and in the litter. Nine different genera were living on the tree. Eleven different species were found living in the litter, four at the 3.05m height, five at the 6.10m height, and eight at the 9.15m height. Ant diversity was thus higher up in the branches and canopy than at the two intermediate heights along the trunk of the tall tree.

INTRODUCTION

Dominica, also known as the Nature Island, is located in the Lesser Antilles between Martinique and Guadeloupe (Honychurch 1995). Dominica is a mere 29 miles long x 16 miles wide, and has a land area of 751 km^2 (Honychurch 1995). This island is full of rich vegetation and unique wildlife. *Ficus insipida* is a common fig tree on the island with huge buttresses and aerial branching making it a prime tree for research on insect communities (Lack et al. 1997).

Ant diversity is very important in maintaining a "balance" in nature. Ants can be found in homes, around food, and in many natural habitats on Dominica. Previous TAMU study abroad projects have examined ant species in the litter but no one has yet examined the ant community in the forest canopy. Because of its size, *F. insipida* was the perfect setting for studying Formicidae in the canopy.

METHODS AND MATERIAL

Two *Ficus* trees were located in the vicinity of Springfield Centre for Environmental Preservation, Teaching, Research and Education (SCEPTRE). The larger of the two trees, located at 15^o 20' 46" N latitude and 61^o 22' 24" W longitude was selected for this study on SCEPTRE at an altitude of 315.2m. Once the tree was selected heights of 3.05m, 6.10m, and 9.15m were measured and then marked on the tree.

Baits were made out of plastic vials with lids. Holes were drilled in the side near the top for the string to be placed for hanging. Two vials were placed at each height- 3.05m, 6.10m, 9.15m, and litter samples. Litter samples were taken near the base, between the buttresses of the tree. The baits used were either jelly or tuna. One spoonful was sufficient.

After finding a suitable tree, a good branch is necessary for securing the rope. The rope needs to be secured and then the climbing harness put on. The climbing equipment must be properly checked before climbing the tree. All tree climbing information can be found in Jeremiah Dye's Dominica 2000 report- "Tree Climbing as a Means of Studying Arboreal Ant Populations."

One jelly and one tuna bait were placed at each height. Baits were allowed to sit for 2-3 hours and then all ants found near or in the baits were collected. This procedure was repeated three times daily for as many days as felt necessary for a sufficient collection.

Three different day's samples were taken from the fig tree. After each climb the samples were taken to the lab and separated into vials for each height and time of day collected. The various specimen were kept in a 70% alcohol solution for later identification.

Once all samples were collected each ant that appeared to be a different species was pinned up for examination under a microscope. Once the specimen was pinned and identified ants found at each height were recorded. Ants were identified to subfamily and genera if possible. All data were tabulated by height.

The following materials were used for this experiment:

Glass vials
95% alcohol solution
Plastic vials
String
50 foot tape measure
Jelly
Can of tuna
Soft Forceps
Hard Forceps
Petri dish
Microscope
Ant identification keys
Pins
Glue
Climbing equipment (see Jeremiah's report for extended list)

RESULTS

Four ant subfamilies (Table 1) and nine possible genera were collected at the fig tree (Table 2). One common ant- MYRMICINAE Crematogaster sp. 1 was located at all four heights (Table 3). Twelve different ant species were found in the litter around the buttresses of the *F. insipida*. The 3.05m collection site acted as a "highway" for the ants, they merely ran through this area as it was only a trunk sample and no vegetation was present. Four different species were located at this height. The 6.10m level was rich in vegetation and housed five different species. The most interesting observation was at 9.15m where eight different species were found. At this height rich vegetation and dead branches were plentiful.

TABLE 1: List of all subfamilies found at *F. insipida* and the number of species in each subfamily

Subfamilies

MYRMICINAE	7
FORMICINAE	4
DOLICHODERINAE	2
PONERINAE	3

TABLE 2 These are the various species collected at the *F. insipida* and the subsequent heights they were found.

	LITTER	3.05m	6.10m	9.15m
1 MYRMICINAE unknown genus *	x		x	x
2 MYRMICINAE Pheidole sp1	x		x	x
3 MYRMICINAE Pheidole sp2				x
4 MYRMICINAE Crematogaster sp1	x	x	x	x
5 FORMICINAE unkown genus sp1 *				
6 DOLICHODERINAE Azteca sp1	x	x		
7 PONERINAE Platythyrea		x		
8 PONERINAE Odontomacus sp1	x			x
9 FORMICINAE Camponotus sp1				x
10 DOLICHODERINAE Azteca sp2				x
11 MYRMICINAE Crematogaster sp2	x		x	
12 MYRMICINAE Crematogaster sp3	x		x	
13 FORMICINAE Camponotus sp2	x	x		x
14 FORMICINAE unknown genus sp2 *	x			
15 PONERINAE Odontomacus sp2	x			
16 MYRMICINAE Cyphomyremex	x			

* Species needs verification

DISCUSSION

The results from this experiment were quite interesting. The expected outcome was a few common species found at all heights. I did not expect to find so many species (16). The comparatively large number at 9.15m was also unexpected. Whatever the reason, the data proves sixteen different ant species were found and possibly more with further studies.

One reason why eleven species were found in the litter might be that some only survive in the litter. Some species utilize only the ground surface. Eight species where found at the 9.15m level perhaps because at this height there where dead branches which ants may use for nesting and at this height there is also a change in vegetation growth. The habitat may be more suitable at the 9.15m level than lower on the tree. The 3.05m level was more less used as a "highway" or means for movement between levels. At this height there was no vegetation or decaying wood. This was simply a part of the trunk that the ants used for traveling.

This experiment could be used as a stepping stone for another student's research.

REFERENCES

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