

# Description and survey of epiphytic coverage of trees by vascular plants on Dominica with respect to horizontal and vertical surfaces

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Dominica Study Abroad 2008  
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## **Abstract**

The purpose of this study was to survey how horizontal and vertical surfaces affect the epiphytic coverage by vascular plants on trees of Dominica. Three types of tree areas exist for vascular, epiphytic plant coverage and they are the following: vertical trunk, horizontal branch, and horizontal crotch. Epiphytic, vascular plants were observed on trees and their orientation on the tree, either vertical or horizontal, was noted.

## **Introduction**

Epiphytes are non-parasitic organisms that obtain support from host trees. They obtain water, minerals, and nutrients from the environment and not their host trees. Vascular plants have specialized tissues, xylem and phloem, that allow them to grow taller than non vascular plants. Their roots attach to the bark of stems and branches on the host tree. The roots of epiphytic plants have evolved the abilities to derive support and assimilate water and nutrients from surfaces other than the ground. These adaptations may make some epiphytic plants better at anchoring onto different areas of their host; different plant root adaptations might cause for better attachment to the trunk or branch of a tree.

## **Materials and Methods**

Gear used for climbing the trees and taking photos for identification included the following: Waterproof Digital Camcorder/Camera, 150' Arborist Rope, Throw Ball,

200' Throw Line, New Tribe Work Saddle, CMI Texas System Ascenders, Petzl Grigri, Button Locking Carabiners, Screw Link, CMI Pulley, Army Pot (helmet), Lanyard, Cambium/Rope Saver

Once a tree was chosen and gear was prepared for the climb, procedures used for access into the tree were as follows:

1. Launch throw line over desired branch
2. Attach cambium/rope saver and then throw line to climbing line
3. Install cambium/rope saver and rope over desired branch
4. Attach screw link to rope and setup SRT
5. Attach Grigri to climbing line and harness
6. Attach ascender to rope and harness
7. Attach pulley to rope and then ascender
8. Bounce test the rope
9. Press down on foot loop with left leg and pull rope up through Grigri with right arm
10. Sit down and raise ascender with left arm
11. Repeat steps 9-10 until desired branch or height is reached

Once desired height was reached, photos were taken of the epiphytes. Later, the plants in the photos were identified and their orientation on the tree, either vertical or horizontal, was noted.

## **Results**

Tree 1 was a *Ficus insipida* near the end of the path leading west from the Springfield station down to the Check Hall River.

Vertical epiphytes:



A plant from the family Orchidaceae

Horizontal Epiphytes:



Ficus pic #1



Ficus pic #2

A Ficus that has long roots travelling down the trunk of the tree all the way to the ground



A plant from the family Rubiaceae

Tree 2 was a *Ficus insipida* at the end of the path leading north from the Springfield station into the rainforest.



Vertical epiphytes:



Suspected to be *peperomia emarginella* growing on the trunk of the tree

Horizontal Epiphytes:



Unknown species most likely in the genus of *Peperomia*



Unknown species most likely in the genus of Peperomia



Unknown species most likely in the genus of Peperomia



*Anthurium grandifolium* found high on a branch

### **Discussion**

The fig tree, *Ficus insipida*, has rough bark and large widespread roots that converge into a thick central trunk for a short while before splitting into branches and multiple trunks. It was a good subject to use for horizontal and vertical assessment. These trees were easy to find and climb into. They also had a fair amount of epiphytic coverage. A greater sample size and diversity of tree samples could have been achieved, but weather and time became issues that affected the efficiency and length of the project. The lack of tree diversity surveyed might cause for some bias.

### **Conclusion:**

Not enough data were obtained to make a definite conclusion about how the horizontal and vertical surfaces of a tree allow for different species of epiphytic plants to thrive. A greater diversity and number of sample trees should have been taken and assessed in order to achieve a more accurate and complete picture of the horizontal vs. vertical epiphytic coverage on trees of Dominica. Once data has been obtained in



this manner, experimental projects can be formulated to test hypotheses for the conclusions drawn from such a survey.

**Work Cited:**

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