Foraging Habits and Frequencies of Eurema venuste

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ABSTRACT:

I surveyed the area around the trail by the Archbold House for Eurema venuste. Eurema venuste feeds on Ludwigia octovalvis, Stachytarpheta urticifolia, Oxalis barrelieri, Malvastrum coromandelianum, and Sauvagesia erecta.

INTRODUCTION:

What is a common butterfly on Springfield Plantation, and what plants does it feed upon? Although general surveys have been done on the butterflies of Springfield Plantation, there was no existing information about the flowers upon which they feed. The goal of this project, therefore, was to determine the food sources of one of the butterflies present. There are 57 different species of butterflies found on Dominica in 8 different families (Anonymous). There has been one project on Lepidoptera done in the past; it was a survey of the butterflies here at Springfield Plantation (Bedgood, 2001).

My original project was to complete a survey of butterflies on the trails at Springfield Plantation, but I noticed one prominent species of butterfly and was curious as to what plants it fed upon. Then I decided to try and make a connection between plant foraging and observation times.

MATERIALS AND METHODS:

Various trails around Springfield were surveyed, and the greatest concentration and variety of butterflies was found along the trail that runs on the north side of the Archbold residence, down the hill to a large fig tree that is just beyond the Springfield Plantation property line. Therefore this site was chosen for continuous observation. Surveys were conducted daily when we were at the plantation, for a total of six days. Daily surveys were broken up into five observation periods: before breakfast, after breakfast, a couple of hours before lunch, after lunch, and just before dinner. I surveyed during all of these times until I determined what kind of weather affected their foraging. I then adjusted my surveys to avoid periods of rain, high winds, and certain hours, surveying less at these times.

Various species were netted for identification, and it was determined that a little yellow butterfly, Eurema venuste, was the most common. After determining that Eurema

venuste was not too fragile to handle, this species was selected for observation of foraging behavior along the trail by the Archbold House. During surveys of foraging behavior, butterflies were occasionally captured to verify if they were Eurema venuste. The following data were recorded: foraging time, species of flowering plants upon which they fed or landed, and flight patterns. Flowers upon which the butterflies fed or landed, as well as additional plants in flower at the time were identified using Lack (1997) and the knowledge and time of Nancy Osler.

Initial observations suggested certain patterns to the foraging behavior. In order to determine if foraging patterns were correlated with availability of flowers, notes were made on when flowers opened or closed for species on which butterflies foraged.

RESULTS:

I found that Eurema venuste fed upon Ludwigia octovalvis, Stachytarpheta urticifolia, Oxalis barrelieri, Malvastrum coromandelianum, and Sauvagesia erecta. Observations were made for six days at about 4 hours a day. Table 1 shows general information about the plants visited, and Table 2 shows the times of observed feedings made over the six days. Figure 1 shows the frequency of floral usage by Eurema venuste.

DISCUSSION:

The information I gathered allowed me to attempt to make a connection between feeding times and certain plants. I found that the only thing that seemed to affect feeding times was the time that the flowers opened. Oxalis barrelieri opened first thing in the morning, before breakfast, and it was fed on earlier and more often than the rest of the plants. Malvastrum coromandelianum did not open until sometime between 10 and 11 A.M., and was not visited until just before lunch. Stachytarpheta urticifolia closed at night and did not open again until early morning, after Oxalis barrelieri. Plectranthus sp. stayed open all night and all day, but despite constant observation, it was only visited around 1:40 in the afternoon.

It was interesting that Eurema venuste visited these certain plants when there were other flowering plants in the area where they foraged. For instance, Mimosa pudica was present and blooming, but they did not feed upon it. Also, Desmodium adscendens was

widely available, but it was not fed upon. Other plants in the area that Eurema venuste did not feed upon were Solanum torvum, Pterolepis glomerata, and Trimezia martinicensis. If I were to do this project again, I would test sucrose levels in these plants and compare them to the sucrose levels in the plants they did feed on.

Eurema venuste were observed landing on Mimosa pudica (the sensitive plant) on numerous occasions. At least 4 or 5 different Eurema venuste butterflies exhibited this behavior. They will land on it and stay until it closes, then fly off to find another sensitive plant to rest on. They will even fly very close to other plants that resemble the sensitive plant but it seems like they figure out that isn't the plant they want and go off in search again. This behavior may be how they lay their eggs, but it would require more observation to determine this. They would rarely land on other plants, and when they did, I checked for any eggs, but I could not find anything. I did not have time to determine the other species of plants that they landed on. One time I noted that after Eurema venuste landed on a leaf, there was a silver residue. I did not pursue a determination of this product due to time constraints. I also did not catch them to determine sex when they landed on plants, which might be something to pursue in the future.

Efforts to determine whether or not eggs were being laid were foiled by grazing cattle that trampled or buried many of the plants. These same cows attracted enough flies and gnats to keep the butterflies away for days afterward.

There are other interesting behaviors that were also noted. Eurema venuste forages in a grid pattern. They will start at one point, and move either to the side or forward a few feet, and then move up or sideways some more and move parallel to the stretch they just searched. Eurema venuste also seems dominate smaller species by chasing them away. Similarly, they in turn are easily chased away by larger species.

ACKNOWLEDGEMENTS:

The assistance of Nancy Osler with verification of all plant species is gratefully acknowledged.

REFERENCES:

Bedgood, T. 2001. "Field guide to the butterflies of the Springfield Plantation", Texas A&M Study Abroad Program Reports

Lack, Andrew et al. 1997. Dominica Nature Island: Illustrated Flora

Anonymous. "Field Guide: Butterflies of Dominica", Texas A&M field course reference material

TABLES:

Table 1

Characteristics of Plants upon Which Eurema venuste Fed

Plant Species	Color	Environment	Average Plant Height
Ludwigia octovalvis	Bright Yellow	Disturbed/cultivated	24 inches
Stachytarpheta urticifolia	Purple/Blue	Disturbed/cultivated	24 inches
Oxalis barrelieri	White/Pink	Disturbed/cultivated	10 inches
Malvastrum coromandelianum	Golden	Disturbed/cultivated	24 inches
Sauvagesia erecta	White	Disturbed/cultivated	18 inches

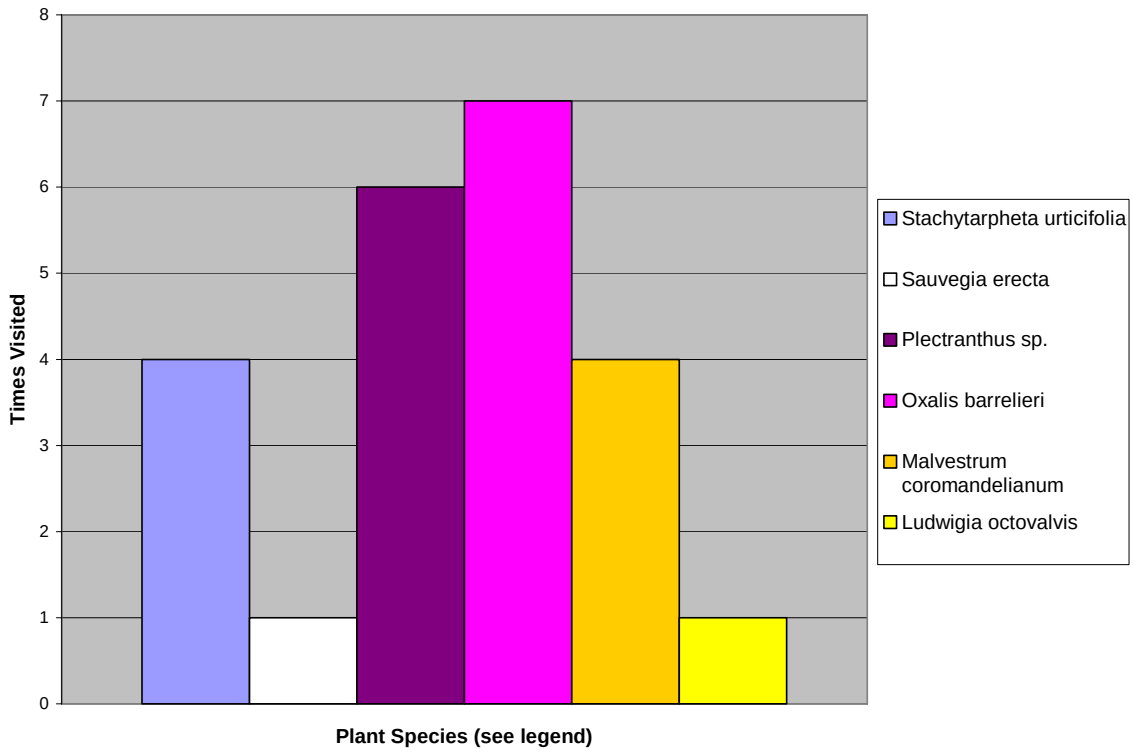
Table 2

<u>Eurema venuste</u> Foraging Plants and Observation Times

Check Time	Species
8:10	Oxalis barrelieri
8:15	Oxalis barrelieri
8:30	Oxalis barrelieri
10:11	Ludwigia octovalvis
10:50	Stachytarpheta urticifolia
11:00	Malvastrum coromandelianum
11:00	Sauvegia erecta
11:53	Oxalis barrelieri
11:55	Oxalis barrelieri
12:08	Malvastrum coromandelianum
13:34	Malvastrum coromandelianum
13:36	Stachytarpheta urticifolia
13:40	Oxalis barrelieri
13:40	Plectranthus sp.
13:40	Stachytarpheta urticifolia
13:41	Plectranthus sp.
13:47	Plectranthus sp.
13:47	Plectranthus sp.
13:47	Plectranthus sp.
13:48	Plectranthus sp.
13:52	Oxalis barrelieri
14:57	Stachytarpheta urticifolia

FIGURES

Figure 1.



Frequency of Floral Usage by <u>Eurema venuste</u>