

Some Population Characteristics of Metabus gravidus
Colonies in Monteverde

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Introduction

We studied the social orb weaving spider, Metabus gravidus, on the Quebrada Guacimal, Monteverde. This is a colonial species that constructs connected orbs over streams during the night and morning. Individuals communicate by means of web vibrations produced with their legs. Males do not construct orbs; they are short lived and spend their time soliciting females. Females attach egg cases to rocks near the social web. Young spiders also construct orbs in the social web. These orbs tend to be smaller than those of older spiders and of a smaller mesh. We investigated the relation between colony size and age (size) composition of the colony, sequence of orb construction, dispersion of spiders on the web and relation between orb size and prey size.

Methods

On 23 July, 1981, we censused 13 spider colonies at 0700, 0900, and 1100. We recorded the number of spiders present, their size (age) in three categories (1 = small and 3 = large), their location on the web (center or margin) and whether they were on an orb or not. The size of the prey captured in an orb was also recorded. At 0745, 0930, and 1130 we conducted insect sweep samples over the stream to determine the size distribution of available insects.

Results and Discussion

The proportion of small spiders (size 1) on the web increased over time, but the results were not significant (Table 1). The mean number of spiders on the web did not vary appreciably; however, the variance of our sample was too large to make conclusive statements (Table 2). The number of spiders on orbs decreased over time (Table 2). This might be due to increased disturbance as we went about censusing the colonies. When graphed, the percent of spiders in class 1 was not related to the size of the colony. As colony size increased the number of spiders in each size class also increased. We found that a greater proportion of size 3 spiders seem to place their orbs in the center, but, again, the results are inconclusive. Only 24 individual insects (Coleoptera and Hymenoptera) were captured in the sweep samples and even fewer insects were observed in the orbs. We attribute the low insect capture rate (on our part and the spiders') to the cold and overcast weather conditions that occurred that morning.

Tentatively, we suggest that larger spiders arrive at the web earlier and construct the orbs closer to the center. The capture rate of insects in the center orbs might be higher due to lower obstruction from adjacent rocks, but no data is available.

Table 1. Change in the age-size composition of Metabus gravidus colonies over time.

Time Period	Mean Percent Spiders in Each Age-Size Category		
	<u>1</u>	<u>2</u>	<u>3</u>
0700	24	43	33
0900	35	36	27
1100	39	40	22

Table 2. Change in the size of Metabus gravidus colonies over time.

Time Period	Mean Number of Spiders in the colony (s.d.)	Mean Number of Spiders on Orbs
	0700	12.9 (7.4)
0900	17.3 (12.3)	16.1
1100	15.8 (10.2)	6.0