Extrafloral Nectaries and Ant Attendance: Annotated Bibliography


This book is one of the few sources I found that ventured a hypothesis about the mechanism for the evolutionary development of the mutualistic relationship between plants and ants. It provides a table of plants with their associated assemblages of ant protectors, some of the history of the study of plant-ant interactions, and abundant information on ant-plant interactions that are not limited to ants that attend extrafloral nectaries.


This paper demonstrates that artificially applied nectar attracts pugnacious ants which defend the plants and so reduce tissue removal by herbivores. Bentley also shows that ant protection is most likely in disturbed habitats where the ants are in greatest abundance and extrafloral nectary-bearing plants are most common.


Bentley provides a good introduction to extrafloral nectaries and ant attendance and so this paper is a good place to start. She reviews the research done on ant attendance of extrafloral nectar bearing plants up to 1977, when the subject was quite hot. She provides a table of plant species that provide extrafloral nectar and she discusses the adaptive significance of extrafloral nectaries.


This paper examines the coincidence in the timing of the availability of extrafloral nectar, the presence of ants on the plant and the vulnerability of flower buds to phytophagous insects. Damage to flower buds prior to opening can result in high abortion rates and ant visitation reduces this damage.


This book will tell you more than you ever wanted to know about nectaries.


This paper presents evidence that the mere presence of ants can inhibit oviposition on a Brazilian shrub by a nymphalid butterfly, the larvae of which feed on the shrub.
Larva mortality is dependent upon the rate of ant visitation on the host-plant and the size of the larva.


This paper examines the benefit of ant visitation to the aspen sunflower at different elevations. At high elevations ants significantly reduced damage to seeds caused by larvae that feed on seeds before dispersal. At lower elevations, where all insects were most abundant, seed and ovule predation usually exceeded 60%.


McLain describes a manipulative study that was undertaken to examine the hypothesis that extrafloral nectar attracts pugnacious ants to the benefit of the plant. The author found that the ability of plants to provide ants with extrafloral nectar resulted in greater fruit production and tissue survival compared to plants that had had their extrafloral nectaries removed.


These researchers examined the composition of extrafloral nectar provided by *Ferocactus acanthodes* over time. The nectar comprised sugars and amino acids, with the ratios of the specific components changing with the phenology of the plant. They suggest that water (in the form of nectar) is an important resource provided by *Ferocactus acanthodes* to ants in a xeric environment.


Schemske found that the presence of ants on *Costus woodsonii* decreased the risk of oviposition by a fly, the larvae of which feed upon immature fruits. The protective abilities of two different ant species (one wet season and one dry season) were evaluated with very different results.


Tempel found that the presence of ants on braken fern did not reduce herbivory despite the coincidence of nectar production with frond vulnerability.


This paper explored ant protection on *Prunus serotina* with respect to the distance of trees to ant colonies, tree size, and the timing of protection. Tilman suggests that foliar nectar production coincides with the vulnerability of trees to tent caterpillar herbivory.