

## Quantifying the effect of nearby nectar resources on hummingbird visitation rates to feeders

HMN undertook a large research project, headed up by University of Arizona Ph. D. student Rachel McCaffrey, in order to investigate the relationship between hummingbird feeder visitation, and floral abundance. Field work occurred from October 2003 – October 2004. The study, which is now in the data analysis stage, picks up where a 1991 Colorado study by Inouye et al. left off. The Colorado study noticed a correlation between flower abundance and visitation rates to feeders. When flowers were abundant in the mountain meadows, there were fewer hummingbirds at the feeders.

Our study goes one step further and asks the question, “How does the changing abundance of nearby floral nectar resources affect hummingbird visitation rates to feeders?” The relationship between floral abundance and hummingbird feeder visits is especially important because HMN uses hummingbird feeder patches to estimate hummingbird population sizes. Determining the significance of this relationship will allow HMN to more accurately assess trends in hummingbird populations.

A former HMN banding site, the Tohono Chul Park in Tucson, AZ, was chosen for this study. The park is an ideal location because its gardens contain many species of hummingbird-visited plants that vary in flower production throughout the year. Because of this unique situation, we were able to observe and assess how hummingbird feeder visits changed in response to the abundance and types of plants in bloom.

Our volunteer observer team monitored hummingbird activity at nine different patches within Tohono Chul for three hours a morning, two mornings a month. Each patch contained several species of flowering plants as well as a hummingbird feeder. Before each observation morning, a density rating of zero through ten was assigned to each flowering plant species in each of the patches. Observers then recorded all of the hummingbird feeder and flower visits for each patch, making sure to note the species visited and duration of each visit. Over 20 mornings were spent observing the birds’ behavior between October 2003 and October 2004. This resulted in a huge amount of data regarding hummingbird’s feeding patterns at Tohono Chul.

Although data analysis has just begun, some interesting patterns have already emerged:

- Hummingbird feeding (both flower and feeder) varied substantially throughout the morning, with two general peak times: the half-hour following sunrise and approximately 1.5 to 2 hours after sunrise.
- The number of hummingbird visits was lowest in the winter and during the breeding season and highest in the late summer and fall.
- For much of the year, hummingbirds were highly territorial, with a single male aggressively defending a feeder.
- From the available flowers, favorite hummingbird plants were the Baja fairy duster (*Calliandra californica*), Mexican sage (*Salvia leucantha*), red yucca (*Hesperaloe parviflora*) and cherry-red and autumn sages (*Salvia coccinea* and *greggii*).

Further data analysis will investigate how differing floral abundances impacted hummingbirds use of feeders and flowers.