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Reward Frequency: Effects on Flower Choices Made by Different Honeybee Races in Turkey

İbrahim ÇAKMAK

Faculty of Agriculture, Uludağ University, 16059, Görükle, Bursa - TURKEY

Harrington WELLS

Department of Biology, University of Tulsa, Tulsa, OK 74104 USA

 [Keywords](#)
[Authors](#)



zool@tubitak.gov.tr

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Abstract: We compared the European honeybee races *Apis mellifera armeniaca*, *A.m. caucasica*, *A.m. cypria*, and *A.m. syriaca*. These subspecies are endemic to very different habitats. Additionally, they are exposed to very different levels of predation. *A.m. caucasica* exists where honeybee predators typically are rare, while the remaining subspecies have ranges that coincide with areas where honeybee predators are abundant. Foraging decisions of workers visiting artificial flower patches containing blue, white, and yellow flowers were recorded. We tested whether foragers responded to differences in rewarding flower frequency among flower color morphs. Division of labor occurred among foragers of each race; some bees frequented yellow flowers while other bees from the same hive visited blue and white flowers. *A.m. caucasica* foragers ignored differences in reward frequency among flower colors. Even bees that frequented blue and white flowers did not base flower choice on reward frequency differences between just these two color morphs. In contrast, *A.m. armeniaca*, *A.m. cypria*, and *A.m. syriaca*, however, did respond to differences in reward frequencies, tending to avoid the less frequently rewarding flower color morph. *A.m. armeniaca* forager division of labor (foragers committed to yellow or to blue and white flowers) was dominant to energy maximization. The reverse was true for *A.m. cypria*.

Key Words: *Apis mellifera* races, honey bees, foraging, prey-predator relationship, artificial flowers

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