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DO HONEYBEES ACT AS POLLEN THIEVES OR POLLINATORS OF *DATURA WRIGHTII*?

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Abstract—Datura wrightii (Solanaceae), a common shrub in the southwestern United States, bears massive, white, night-blooming flowers that attract and reward hawkmoth pollinators. However, *Apis mellifera* (honeybee) foragers are often observed on its flowers, especially at dusk and dawn hours. Their foraging activities are focused on the anthers, suggesting they could be pollen thieves. We used a series of observations and manipulative experiments to determine if honeybees are detrimental or beneficial to *D. wrightii*. We found that honeybees were the most frequent visitors to *D. wrightii* flowers at both dusk and dawn, and that they removed and carried large amounts of *D. wrightii* pollen. Flowers were capable of being pollinated at dusk and dawn and a single visit by a honeybee was sufficient to pollinate the flowers and produce fruit. There was no evidence that restricting visitation to diurnal hours yielded fruit set that was different from when we restricted visitation (likely by hawkmoths) to evening hours. These results suggest that honeybees are capable of effective pollination of *D. wrightii*. Although honeybees might interfere with pollen transmission mediated by their highly specialized hawkmoth pollinators, they may also increase plant fitness by pollinating *D. wrightii* when hawkmoths are not present.

Keywords: Pollen theft, pollen thieves, Datura wrightii, Apis mellifera

INTRODUCTION

Floral tissue can be damaged by animals in a number of ways. For example, it may be consumed (florivory; McCall &

(Proteaceae) but seldom visited female-phase flowers. This habitual theft reduced plant fitness, as flowers caged to allow only honeybee visits set fewer fruit than bagged control