

Public Abstract

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Title:The Impacts of Partner Abundance on Benefits from Facultative Pollination Mutualism

Global declines in populations of native and commercial pollinators have prompted calls for better understanding of plant-pollinator relationships. My dissertation research has focused on the implications of varying pollinator abundance for linked plants that vary in their dependence on one pollinator species. I conducted my research in the Colorado Rocky Mountains using two clovers, *Trifolium dasyphyllum* and *T. parryi*, and a shared bumblebee pollinator, *Bombus balteatus*.

To predict how varying *B. balteatus* abundance would affect the clovers, I first studied bees' foraging preferences among clover plants and the reasons behind their biases. Second, I experimentally added varying numbers of bees to mixed clover patches and measured benefits to individual plants and predicted future population success. Third, I assessed whether clover reproductive rates correlated with the number of bumblebee colonies servicing different alpine habitats. Lastly, I examined the broader impacts of this research for society, in conducting an outreach program using pollinator gardens at a local high school.

I found that *B. balteatus* prefers *T. parryi* because of differences in clover architecture that affect bees' foraging efficiency. Because of this preference and a dearth of co-pollinators, *T. parryi* benefits more from increased *B. balteatus* than *T. dasyphyllum*, though benefits are not unlimited. In conducting outreach based on this research, I found that teacher beliefs about using outdoor classrooms mediated the implementation of planned activities. Findings of this research have implications for understanding the properties of mutually beneficial ecological relationships and for public policy and management efforts related to pollinator conservation and restoration.