Arianna M. Collins, Temple University. Characterizing Floral Traits and Pollinator Preference in a Penstemon digitalis Population. Mentor: Dr. Steve Franks

Abstract: Recently, there have been dramatic declines in pollinator populations. These declines may lead to increased interspecific and intraspecific competition among plants to attract the fewer available pollinators, thus strengthening selection or floral traits. In cases where selection has been observed, pollinators generally prefer plants that are taller and have a greater floral display, thus indicating that these are attractive plant traits. However, selection by pollinators for these traits can only occur if trait variation exists within a population. Here we characterize floral traits in a small population of Penstemon digitalis. We found substantial variation in height, flower size, and flower number within the population. Pollinator observations revealed that pollinators preferred taller plants and those with greater floral display. Specifically, a greater number of open flowers and a wider opening to the tube shaped posterior was strongly associated with increased pollinator visitation to P. digitalis. Furthermore, height, flower number, and flower size were found to be positively associated with greater plant fitness. Our results suggest that these pollinators are selecting for larger, showier Penstemon individuals, following the trend of selection commonly found in other plant-pollinator interactions.