

Evaluating the importance of sex ratios to conspecific pollen loads to female stigmas in the gynodioecious *Polemonium foliosissimum*

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Gynodioecy is a breeding system in flowering plants in which hermaphrodite and female morphs coexist. Because gynodioecy is thought to be an evolutionary step between hermaphroditic and dioecious species, understanding what contributes to its stability can shed light on breeding system evolution. Key to understanding the stability of gynodioecy is an understanding of factors influencing variable population sex ratios, and the importance of frequency dependent processes. Any factors that influence the relative fitnesses of the sex morphs may influence sex ratios in populations, and pollinators are likely to be important players. Sex ratio, for example, may not be as important as pollinator composition to the fitness of the sex morphs (Ashman and Diefenderfer 2001) and ultimately pollinator preferences for sex morphs may mediate any influence of sex ratio on pollen loads. This study is unique in using a species which is self-incompatible (both females and hermaphrodites require outcross pollen to set seed). Almost all studies to date have focused on self-compatible species, with inbreeding depression being invoked as a major mechanism maintaining females. We know little about the factors at play in self-incompatible species. In this study we evaluate whether conspecific pollen loads on female stigmas are dependent on the frequency of hermaphrodites in populations. Specifically, we evaluate the relative importance of sex ratio versus other characteristics of populations (size, elevation, abundance of co-flowering species) on conspecific pollen deposition on female stigmas. We will use a path analysis to explore this question for 25 populations with sex ratios of 5 to 35% female. Our results so far indicate that total pollen load (including all types of pollen, which is one index of pollinator visitation) is the most strongly correlated with *Polemonium* pollen loads, while sex ratio, elevation, population size are all weakly correlated.