Kevin Lee, Vassar College. Variations in Flower Sex: Pollen Limitation and Reproductive Ecology in *Penstemon digitalis.* Mentors: Dr. Steven Franks and Dr. Jen Weber

Abstract: With climate change, populations of pollinators continue to dwindle, in turn altering patterns of pollen circulation. Subsequently, pollen limitation, a term that describes decreased reproductive success due to inadequate quantity or quality of pollen, may occur, which can affect the abundance and viability of fruits and seeds. Flowering plants that outcross, in particular, often exhibit increased pollen limitation because they require pollen from another plant, which is not always guaranteed (Knight et al. 2005). As a mechanism to decrease pollen limitation, some plants have evolved the ability to self, in which flowers can accept pollen from itself or the same plant. While self-compatibility provides reproductive assurance, it can also lead to inbreeding depression as a result of decreased genetic variation and increased expression of deleterious recessives. This experiment predicted that pollen limitation, inbreeding depression, and reproductive assurance of self-pollen occurred in a population of *Penstemon digitalis* Nutt. Ex Sims (Plantaginaceae) at the Louis Calder Center Biological Field Station in Armonk, New York. However, the results revealed that the population of *P. digitalis* was in fact not pollen limited. In addition, self-pollen neither provided reproductive assurance nor contributed to inbreeding depression in the experiment. Additional future studies should be conducted to determine whether environmental conditions contributed to the outcome observed.