The Effects of Pollinator Decline on The Evolution of Floral Traits

Hannah Brazeau1, Christina Caruso1

1Integrative Biology, University of Guelph, Guelph

Recent declines in pollinator abundance could cause the evolution of floral traits associated with self-pollination (smaller flowers with reduced anther-stigma distance), or traits that both facilitate selfing and outcrossing (i.e. larger flowers with reduced anther-stigma distance). The evolution of selfing traits, by reducing the resources available to pollinators, could cause further declines in pollinator abundance (i.e. an eco-evolutionary feedback loop). To determine how floral traits will respond to pollinator decline, we evolved experimental populations of Mimulus guttatus under high vs. low abundances of bumblebee pollinators for three generations. We found that after two generations of experimental evolution, anther-stigma separation and flower size were ~0.2 SD lower in plants grown under low pollinator abundance. These preliminary results suggest that plants may respond to pollinator decline by evolving traits that facilitate self-pollination, which could initiate a feedback loop that further reduces pollinator abundance.