

Pollinator-Mediated Selection on Floral Traits in the Arctic Plant *Parrya nudicaulis* (Brassicaceae)

Matthew Carlson¹ and Justin Fulkerson¹

¹University of Alaska Anchorage

April 12, 2021

Abstract

The evolution of floral traits is largely attributed to pollinator-mediated selection; however, the importance of pollinators as selective agents in pollen-limited environments is poorly resolved. In pollen-limited arctic and subarctic regions, selection is expected to either favor floral traits that increase pollinator attraction or promote reproductive assurance through selfing. We quantified phenotypic selection on floral traits in two arctic and two subarctic populations of *Parrya nudicaulis*. Additionally, we measured selection in plants in both open-pollination and pollen-augmentation treatments to estimate selection imposed by pollinators in one population. Seed production was found to be limited by pollen availability and strong directional selection on flower number was observed. We did not detect consistently greater magnitudes of selection on floral traits in the arctic relative to the subarctic populations. Directional selection for more pigmented flowers in one arctic population was observed however. In some populations, selection on flower color was found to interact with other traits. We did not detect consistently stronger selection gradients across all traits for plants exposed to pollinator selection relative to those in the pollen-augmentation treatment; however directional selection tended to be higher for some floral traits in open-pollinated plants.

Hosted file

Parrya_Pollination_Selection_ECO_EVO_2021_04_09.pdf available at <https://authorea.com/users/407418/articles/517732-pollinator-mediated-selection-on-floral-traits-in-the-arctic-plant-parrya-nudicaulis-brassicaceae>

Hosted file

Parrya_Pollination_Selection_Figures_2020_08_25.pdf available at <https://authorea.com/users/407418/articles/517732-pollinator-mediated-selection-on-floral-traits-in-the-arctic-plant-parrya-nudicaulis-brassicaceae>