ABSTRACT

TITLE:	The Effects of Soil Moisture Availability on Nectar Production in Three Subalpine Plant Species of the Family Ranunculaceae
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ABSTRACT: In some semi-arid regions, including the Rocky Mountains of western Colorado, climate change is predicted to cause a decrease in annual precipitation and increased temperatures. Climatic variations, including soil moisture availability, could have adverse effects on plant and pollinator communities. During the summer 2013 at the Rocky Mountain Biological Laboratory, Gothic, Colorado, I investigated the effects of soil moisture availability on nectar production (i.e., nectar volume, percent sugar concentration) and floral display characteristics (i.e., nectar spur length) in three subalpine species - Delphinium nutallianum, Aquilegia coerulea, and Delphinium barbeyi. Additionally, I investigated how nectar volume varied across time and how such variations could be explained by patterns in precipitation and mean temperature. All three focal species produced higher averages of nectar volume and had higher mean nectar spur lengths in response to increased soil moisture availability. Percent sugar concentration was lower for watered A. coerulea and higher for watered D. barbeyi. Nectar volume across time appears to be associated with precipitation and mean temperature. Drier conditions negatively affect nectar production, limiting the nectar reward availability and potentially affecting the survival, fitness, and distribution of plant and pollinator communities.