

Long Term Population Trends of Schmoll's milkvetch (*Astragalus schmolliae* C.L. Porter)  
2016 Report Abstract

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## Abstract

Chapin Mesa milkvetch (*Astragalus schmolliae*) is a rare plant that is endemic to a small area in Montezuma County, Colorado. The Colorado Natural Heritage Program (CNHP) completed an eighth year of Chapin Mesa milkvetch density monitoring and a second year of demographic monitoring in Mesa Verde National Park. In 2016, Colorado Natural Heritage Program staff collected density and demography data for Chapin Mesa milkvetch (*Astragalus schmolliae*) during the second half of May, and additional demographic ("poker plot") data one day during each summer month, June-August. Preliminary results suggest that the positive effects on plant density that were originally seen after the 2002 Long Mesa Fire are waning or have reversed. It appears that Chapin Mesa milkvetch initially benefitted from the large scale burn, resulting in a high recruitment rate. By 2015-2016 the recruitment and reproductive output in the burned area was far below that in the unburned woodland, suggesting that fires may have an overall long-term negative impact, and that this species is essentially a woodland species. In 2015-2016, pollination, flowering, fruiting, seed germination, and seedling survival of the milkvetch all appear to be less in the burned areas. It is unclear why the burned areas are less favorable, but our observations present multiple hypothesis, including 1) seedlings are suppressed due to abundant cheatgrass cover, 2) lack of bare ground in burned area inhibits pollinators, 3) higher soil temperature in burned area suppresses pollinators and seedling germination, 4) late frosts are more likely to kill flowers in the burned area. Currently the burned areas are dominated by grasses, both native and non-native, with some shrub recovery evident but virtually no tree regeneration. Projected climate change is likely to increase the fire risk in the remaining woodlands. Post-fire management plans that encourage a rapid conversion from grassland to shrubland to woodland may be beneficial.



Chapin Mesa milkvetch belt transect with demography plot in foreground.