

Climate Change Vulnerability Index

Plant Species Assessment

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Name: *Sisyrinchium sarmentosum*

Index Result: Highly Vulnerable

Exposure to Climate Change:

- 1) Temperature – All occurrences fall within the same temperature category (3.9-4.4^o F warmer).
- 2) Moisture – An estimated 90% of the occurrences fall within the -0.074 to -0.096 moisture metric category. The remaining 10% fall within the -0.097 to -0.119 category.

Climate: Indirect

- 1) Exposure to sea level rise - Neutral
- 2) Distribution relative to barriers
 - a. Natural barriers – Increase. Suitable habitat is limited and exists as relatively small open areas within a forested matrix.
 - b. Anthropogenic barriers – Somewhat increase. Historical locations at lower elevations impacted by agricultural practices; higher elevation sites impacted by grazing.
- 3) Predicted impact of land use changes resulting from human responses to climate change – Neutral.

Species-Specific Factors:

- 1) Dispersal and movements – Somewhat increase. Some evidence to suggest that animals (including livestock) may be responsible for some dispersal, but evidence is anecdotal and limited.
- 2) Predicted sensitivity to temperature and moisture changes
 - a. Predicted sensitivity to changes in temperature
 - i. historical thermal niche – Somewhat increase. Species has experienced a slightly lower than average mean seasonal temperature variation of 47.1^o – 57^o F.
 - ii. physiological thermal niche - Neutral
 - b. Predicted sensitivity to changes in precipitation, hydrology, or moisture regime
 - i. historical hydrological niche – Somewhat decrease. The species has experienced a greater than average range of mean annual precipitation (> 40 inches)
 - ii. physiological hydrological niche – Increase. Species occurs in wet/moist meadows that undergo a fairly regular annual cycle of being wet/saturated to drying out.
 - c. Dependence on a specific disturbance regime likely to be impacted by climate change – Somewhat decrease. Fire may play a role in maintaining the edge of some of the wet meadow habitats for this species. A predicted increase in fire frequency would likely benefit the species (as long as the increase isn't too dramatic).
 - d. Dependence on ice, ice-edge, or snow-cover habitats – Somewhat increase. Some occurrences of this species depend in part on a snowpack to maintain the open, meadow habitat.
- 3) Restriction to uncommon geological features or derivatives - Neutral
- 4) Reliance on interspecific interactions
 - a. Dependence on other species to generate habitat
 - b. Dietary versatility (animals only)
 - c. Pollinator versatility (plants only) – Neutral. At least a few pollinators have been observed, although pollination has not been thoroughly investigated.
 - d. Dependence on other species for propagule dispersal – Unknown
 - e. Forms part of an interspecific interaction not covered by 4a-d
- 5) Genetic factors
 - a. Measured genetic variation – Somewhat increase. According to Wilson et al. (2000), as reported in Ruchty and Raven (no date)
 - b. Occurrence of bottlenecks in recent evolutionary history (*use only if 5a is "unknown"*)
- 6) Phenological response to changing seasonal temperature and precipitation dynamics