

Scientific Name	Species: <i>Chlorocrambe hastata</i>	Index Result: Highly Vulnerable
Common Name	Spearhead	Confidence Low
Taxonomic Group	Vascular Plant	(based on entered data)
Geographic Area	NE Oregon	Date Assessed 1/23/2020
Cave/Ground Water Obligate: No		GRank G3?
Migratory area included in assessment: No		SRank S1
		Assessor Sue Vrillakas

Climate Change Vulnerability Index Values: (greatest score shown when range was selected)

Category	Factor	Score	Comments
Temperature Scope (predicted increase)	A >6.0F	0	
	A 5.5F	0	
	A 5.1F	0	
	A 4.5F	100	
	A 3.9F	0	
	A <3.9F	0	
Hamon AET:PET Moisture Metric Scope	< -0.119	15	
	-0.119	67	
	-0.096	18	
	-0.073	0	
	-0.05	0	
	>-0.028	0	
Sea level rise	B1	N	Grows in the interior
Natural barriers	B2a	N	
Anthropogenic barriers	B2b	N	
Climate Change mitigation	B3	N	
Dispersal/Movement	C1	SI	
Historical thermal niche	C2ai	SI	Known occurrence site has temp variation of about 58 deg. (neutral); historic occurrences in 47-57 deg range (some what increase)
Physiological thermal niche	C2aii	Inc	About 1/2 the records describe habitat, wet or riparian or creek, which implies coolness
Historical hydrological niche	C2bi	SI	Based on the two most recent records, 2017 (value=35.048) and 1982 (value=56.117); difference=21.061. This number is close to the "somewhat increase" value range.
Physiol. hydrological niche	C2bii	Inc	About 1/2 the records describe habitat as "moist bank", "near stream" or the location is by a waterway
Disturbance dependence	C2c	N	None known
Ice/snow dependence	C2d	N	None
Physical habitat restrictions	C3	N	None
Other spp create habitat	C4a	N	
Dietary Versatility	C4b	U	
Pollinator Versatility	C4c	N	
Other spp for dispersal	C4d	N	
Pathogen sensitivity	C4e	N	
Competition sensitivity	C4f	N	
Interspecific Relationship	C4g	N	
Measured genetic variation	C5a	U	

Bottlenecks	C5b	U	
Plant reproductive system	C5c	U	
Phenological response	C6	U	
Documented response	D1	U	
Modeled change	D2	U	
Modeled overlap	D3	U	
Modeled protected areas	D4	U	

Additional Notes:

Range map manually digitized based on ORBIC element occurrence data and herbarium records, convex hull type polygon attempted. Climate and precipitation data from Climate Wizard using the A1B emissions scenario and ensemble average general circulation model: Historical = 1951-2006; Future = mid-century (2050s); Hamon AET:PET moisture metric (Hamon 1961).

Detailed definitions of criteria and methodology can be found in the documentation at <http://www.natureserve.org/conservation-tools/climate-change-vulnerability-index>

Legend and Definitions:

Affect to Vulnerability:
GI = Greatly increase
Inc = Increase
SI = Somewhat increase
N = Neutral
U = Unknown

Index Scores:

Extremely Vulnerable: Abundance and/or range extent within geographical area assessed extremely likely to substantially decrease or disappear by 2050.
Highly Vulnerable: Abundance and/or range extent within geographical area assessed likely to decrease significantly by 2050.
Moderately Vulnerable: Abundance and/or range extent within geographical area assessed likely to decrease by 2050.
Less Vulnerable: Available evidence does not suggest that abundance and/or range extent within the geographical area assessed will change (increase/decrease) substantially by 2050. Actual range boundaries may change.
Insufficient Evidence: Information entered about a species' vulnerability is inadequate to calculate an Index score.

Citation:

Oregon Biodiversity Information Center. 2020. Climate Change Vulnerability Index assessment for Spearhead (*Chlorocrambe hastata*). Institute for Natural Resources, Portland State University, Portland, OR.