

	Species:	Index Result:
Scientific Name	<i>Erythronium howellii</i>	Moderately Vulnerable
Common Name	Howell's adder's-tongue	Confidence Moderate
Taxonomic Group	Vascular Plant	(based on entered data)
Geographic Area	SW Oregon	Date Assessed 1/14/2020
		GRank G3
Cave/Ground Water Obligate: No		SRank S3
Migratory area included in assessment: No		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	0	
	A 3.9F	0	
	A <3.9F	100	
Hamon AET:PET Moisture Metric Scope	< -0.119	0	
	-0.119	1	
	-0.096	61	
	-0.073	38	
	-0.05	0	
>-0.028	0		
Sea level rise	B1	N	Populations not close to the sea
Natural barriers	B2a	N	
Anthropogenic barriers	B2b	N	
Climate Change mitigation	B3	N	
Dispersal/Movement	C1	U	
Historical thermal niche	C2ai	Inc	Most of the range occurs in the 47-57 deg historic variation (Somewhat Increase) Not restricted to cool micro- or macro-environment
Physiological thermal niche	C2aii	N	
Historical hydrological niche	C2bi	Inc	Highest value: 52.5670; lowest: 43.7891; difference=8.7809
Physiol. hydrological niche	C2bii	N	
Disturbance dependence	C2c	Inc	Grows in area where fire frequency and intensity has increased and may negatively impact plants
Ice/snow dependence	C2d	N	
Physical habitat restrictions	C3	SI	Often found on serpentine substrate
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	U	
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 created using ArcMap Minimum Mapping Boundary-Convex Hull on ORBIC element occurrence data, excluded historic report from "Trail" and "Game Lake". 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). Taxonomic issues, synonym of *Erythronium citrinum* var. *citrinum*

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 Howell's adder's-tongue (*Erythronium howellii*). Institute for Natural Resources, Portland State University, Portland, OR.