

**Species Data:**

**Index Result:**

Species ***Hackelia ophiobia***  
 English Name **Three forks stickseed**  
 Taxonomic Group Vascular Plant  
 Geographic Area Malheur county

**Moderately Vulnerable**  
**Confidence Moderate**  
 (based on entered data)

Cave/Ground Water Obligate No  
 Migratory area included in assessment: No

GRank G3  
 SRank S1  
 Assessor Caitlin Lawrence

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

| Category  | Factor   | Score | Comments  |
|---|----------|-------|---|
| Temperature Scope<br>(predicted increase)   | A >6.0F  | 0     |   |
|   | A 5.5F   | 0     |   |
|   | A 5.1F   | 100   |   |
|   | A 4.5F   | 0     |   |
|   | A 3.9F   | 0     |   |
|   | A <3.9F  | 0     |   |
| Hamon AET:PET Moisture<br>Metric Scope  | < -0.119 | 0     |   |
|   | -0.119   | 0     |   |
|   | -0.096   | 50    |   |
|   | -0.073   | 50    |   |
|   | -0.05    | 0     |   |
|   | >-0.028  | 0     |   |
| Sea level rise<br>Natural barriers<br>Anthropogenic barriers<br>Climate Change mitigation   | B1       | N     |   |
|   | B2a      | N     |   |
|   | B2b      | N     |   |
|   | B3       | N     |   |
| Dispersal/Movement<br>Historical thermal niche<br>Physiological thermal niche<br>Historical hydrological niche<br>Physiol. hydrological niche<br>Disturbance dependence<br>Ice/snow dependence<br>Physical habitat restrictions<br>Other spp create habitat<br>Dietary Versatility<br>Pollinator Versatility<br>Other spp for dispersal<br>Pathogen sensitivity<br>Competition sensitivity<br>Interspecific Relationship<br>Measured genetic variation<br>Bottlenecks<br>Plant reproductive system<br>Phenological response | C1       | N     | <p>Found in narrow precip range ~2 inches. But also small range overall.</p> <p>Most mesic talus and rock crevices along the Owyhee River and its tributaries near waterline and Artemista packardiae. (NatureServe)</p> <p>Changes in fire could threaten the species.</p> |
|   | C2ai     | N     |   |
|   | C2aii    | N     |   |
|   | C2bi     | GI    |   |
|   | C2bii    | Inc   |   |
|   | C2c      | SI    |   |
|   | C2d      | N     |   |
|   | C3       | N     |   |
|   | C4a      | N     |   |
|   | C4b      | U     |   |
|   | C4c      | N     |   |
|   | C4d      | N     |   |
|   | C4e      | N     |   |
|   | C4f      | N     |   |
|   | C4g      | U     |   |
|   | C5a      | U     |   |
|   | C5b      | U     |   |
|   | C5c      | U     |   |
|   | C6       | U     |   |

|                         |    |   |  |
|-------------------------|----|---|--|
| Documented response     | D1 | U |  |
| Modeled change          | D2 | U |  |
| Modeled overlap         | D3 | U |  |
| Modeled protected areas | D4 | U |  |

**Data sources and notes:**

Climate and precipitation data from Climate Wizard using the A1B emissions scenario and ensemble average general circulation model. Historical = past 50 years; Future = mid-century (2050s). Species data from ORBIC database. Assessment performed in conjunction with the Element Rank Calculator. Other resources consulted: NREL national wind resources, 50m resolution ([http://www.nrel.gov/gis/data\\_analysis\\_background.html](http://www.nrel.gov/gis/data_analysis_background.html)); SILVIS lab Wildland Urban Interface 2010 layer ([http://silvis.forest.wisc.edu/maps/wui\\_main](http://silvis.forest.wisc.edu/maps/wui_main)); Oregon Department of Geology and Mineral Industries geologic map (<http://www.oregongeology.org/sub/publications/GMS/gms.htm>); US mining claims on federal lands (<http://mrddata.usgs.gov/mine-claim/>); Oregon Protected Areas Database (<http://gapanalysis.usgs.gov/padus/data/>).

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**

|                                 |
|---------------------------------|
| <b>Affect to Vulnerability:</b> |
| <b>GI = Greatly increase</b>    |
| <b>Inc = Increase</b>           |
| <b>SI = Somewhat increase</b>   |
| <b>N = Neutral</b>              |
| <b>U = Unknown</b>              |

**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.