**Species:**

*Scirpus pendulus*  
**Drooping bulrush**  
Vascular Plant

**Geographic Area:** Western Oregon

**Date Assessed:** 5/12/2020

**GRank:** G5  
**SRank:** S1

**Assessor:** Sue Vrilakas

**Index Result:**  
Less Vulnerable  
Confidence: Very High  
(based on entered data)

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

### Climate Change Vulnerability Index Values:

<table>
<thead>
<tr>
<th>Category</th>
<th>Factor</th>
<th>Score</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Temperature Scope</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(predicted increase)</td>
<td></td>
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<td></td>
</tr>
<tr>
<td></td>
<td>A &gt;6.0F</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td></td>
<td>A 5.5F</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td></td>
<td>A 5.1F</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td></td>
<td>A 4.5F</td>
<td>0</td>
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<tr>
<td></td>
<td>A 3.9F</td>
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<td></td>
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<tr>
<td></td>
<td>A &lt;3.9F</td>
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<tr>
<td>Hamon AET:PET Moisture Metric Scope</td>
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<td></td>
</tr>
<tr>
<td></td>
<td>&lt; -0.119</td>
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<td>-0.096</td>
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<td></td>
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<td></td>
<td>-0.05</td>
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<td></td>
<td>&gt;-0.028</td>
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<tr>
<td>Sea level rise</td>
<td>B1</td>
<td>N</td>
<td>No coastal occurrences</td>
</tr>
<tr>
<td>Natural barriers</td>
<td>B2a</td>
<td>N</td>
<td></td>
</tr>
<tr>
<td>Anthropogenic barriers</td>
<td>B2b</td>
<td>N</td>
<td></td>
</tr>
<tr>
<td>Climate Change mitigation</td>
<td>B3</td>
<td>N</td>
<td></td>
</tr>
<tr>
<td>Dispersal/Movement</td>
<td>C1</td>
<td>N</td>
<td></td>
</tr>
<tr>
<td>Historical thermal niche</td>
<td>C2ai</td>
<td>Inc</td>
<td>Currently has fairly wide range in Oregon; found in most of the US states</td>
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<tr>
<td>Physiological thermal niche</td>
<td>C2aIi</td>
<td>N</td>
<td></td>
</tr>
<tr>
<td>Historical hydrological niche</td>
<td>C2bi</td>
<td>N</td>
<td></td>
</tr>
<tr>
<td>Physiol. hydrological niche</td>
<td>C2bii</td>
<td>N</td>
<td></td>
</tr>
<tr>
<td>Disturbance dependence</td>
<td>C2c</td>
<td>N</td>
<td></td>
</tr>
<tr>
<td>Ice/snow dependence</td>
<td>C2d</td>
<td>N</td>
<td></td>
</tr>
<tr>
<td>Physical habitat restrictions</td>
<td>C3</td>
<td>N</td>
<td></td>
</tr>
<tr>
<td>Other spp create habitat</td>
<td>C4a</td>
<td>N</td>
<td></td>
</tr>
<tr>
<td>Dietary Versatility</td>
<td>C4b</td>
<td>U</td>
<td></td>
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<tr>
<td>Pollinator Versatility</td>
<td>C4c</td>
<td>N</td>
<td></td>
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<tr>
<td>Other spp for dispersal</td>
<td>C4d</td>
<td>N</td>
<td></td>
</tr>
<tr>
<td>Pathogen sensitivity</td>
<td>C4e</td>
<td>N</td>
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<tr>
<td>Competition sensitivity</td>
<td>C4f</td>
<td>N</td>
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<tr>
<td>Interspecific Relationship</td>
<td></td>
<td>U</td>
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</tr>
<tr>
<td>Measured genetic variation</td>
<td>C5a</td>
<td>U</td>
<td></td>
</tr>
<tr>
<td>Bottlenecks</td>
<td>C5b</td>
<td>U</td>
<td></td>
</tr>
<tr>
<td>Plant reproductive system</td>
<td>C5c</td>
<td>U</td>
<td></td>
</tr>
<tr>
<td>Phenological response</td>
<td>C6</td>
<td>U</td>
<td></td>
</tr>
<tr>
<td>Documented response</td>
<td>D1</td>
<td>U</td>
<td></td>
</tr>
<tr>
<td>Modeled change</td>
<td>D2</td>
<td>U</td>
<td></td>
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</tbody>
</table>

**Metric Scope**

<table>
<thead>
<tr>
<th>Category</th>
<th>Factor</th>
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</table>

**Hamon AET:PET Moisture Metric Scope**

- A >6.0F: 0  
- A 5.5F: 0  
- A 5.1F: 0  
- A 4.5F: 0  
- A 3.9F: 4  
- A <3.9F: 96

**Sea level rise**

- B1: N  
- Natural barriers: B2a N  
- Anthropogenic barriers: B2b N  
- Climate Change mitigation: B3 N  

**Dispersal/Movement**

- C1: N  
- C2ai: Inc  
- C2aIi: N  
- C2bi: N  
- C2bii: N  
- C2c: N  
- 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  
- D1: U  
- D2: U

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

- Temperature Scope (predicted increase):  
  - A >6.0F: 0  
  - A 5.5F: 0  
  - A 5.1F: 0  
  - A 4.5F: 0  
  - A 3.9F: 4  
  - A <3.9F: 96

- Hamon AET:PET Moisture Metric Scope:  
  - < -0.119: 0  
  - -0.119: 16  
  - -0.096: 65  
  - -0.073: 19  
  - -0.05: 0  
  - >-0.028: 0

**Calculations and Additional Notes:**

- **Sea level rise**
  - B1: N
  - No coastal occurrences

- **Natural barriers**
  - B2a: N

- **Anthropogenic barriers**
  - B2b: N

- **Climate Change mitigation**
  - B3: N

- **Dispersal/Movement**
  - C1: N

- **Historical thermal niche**
  - C2ai: Inc

- **Physiological thermal niche**
  - C2aIi: N

- **Historical hydrological niche**
  - C2bi: N

- **Physiol. hydrological niche**
  - C2bii: N

- **Disturbance dependence**
  - C2c: N

- **Ice/snow dependence**
  - C2d: N

- **Physical habitat restrictions**
  - C3: N

- **Other spp create habitat**
  - C4a: N

- **Dietary Versatility**
  - C4b: U

- **Pollinator Versatility**
  - C4c: N

- **Other spp for dispersal**
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- **Pathogen sensitivity**
  - C4e: N

- **Competition sensitivity**
  - C4f: N

- **Interspecific Relationship**
  - C4g: U

- **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

<table>
<thead>
<tr>
<th>D3</th>
<th>U</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Modeled protected areas</th>
<th>D4</th>
<th>U</th>
</tr>
</thead>
</table>

### Additional Notes:

Range map created using ArcMap Minimum Mapping Boundary-Convex Hull on ORBIC element occurrence data, 4-29-2020 export. 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).

### References:

Data sources and notes:

Range map created using ArcMap Minimum Mapping Boundary-Convex Hull on ORBIC element occurrence data. 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](http://www.natureserve.org/conservation-tools/climate-change-vulnerability-index)

### 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.

### Legend and Definitions:

**Affect to Vulnerability:**

- GI = Greatly increase
- Inc = Increase
- SI = Somewhat increase
- N = Neutral
- U = Unknown

**Citation:**

Oregon Biodiversity Information Center. 2020. Climate Change Vulnerability Index assessment for Drooping bulrush (Scirpus pendulus). Institute for Natural Resources, Portland State University, Portland, OR.