

## Climate Change Vulnerability Index

### Plant Species Assessment

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Name: *Bolandra oregana*

Index Result: Moderately Vulnerable

#### Exposure to Climate Change:

- 1) Temperature – Occurrences fall within two temperature categories: 50% in 3.9-4.4<sup>o</sup> F warmer and 50% less than 3.9<sup>o</sup> F warmer. [Actually, the southeastern WA occurrences fall just barely in the next higher category, but the raw values for the pixels is at the low range for that category, so I lumped them into the 3.9 – 4.4<sup>o</sup> category.
- 2) Moisture – Occurrences fall within three moisture metric categories: -0.051 - -0.073 (5%), -0.074 - -0.096 (75%) and -0.097 - -0.119 (20%).

#### Climate: Indirect

- 1) Exposure to sea level rise - Neutral
- 2) Distribution relative to barriers
  - a. Natural barriers – Selected ‘Increase’ vulnerability. Species is primarily limited to rocky, wet areas within very steep terrain.
  - b. Anthropogenic barriers - Neutral
- 3) Predicted impact of land use changes resulting from human responses to climate change - Neutral

#### Species-Specific Factors:

- 1) Dispersal and movements – Selected ‘Somewhat increase’ vulnerability based on assumption that 5% of seeds can disperse at least 10 m but not likely greater than 100 m.
- 2) Predicted sensitivity to temperature and moisture changes
  - a. Predicted sensitivity to changes in temperature
    - i. historical thermal niche - Neutral
    - ii. physiological thermal niche – Selected ‘Somewhat increase’ vulnerability, although could argue for ‘Increase.’ Based on restriction to cool, moist to wet microhabitats.
  - b. Predicted sensitivity to changes in precipitation, hydrology, or moisture regime
    - i. historical hydrological niche – Selected ‘Somewhat decrease’ vulnerability. Western Skamania County and Clark County occurrences have experienced greater than 40 inches precipitation variation in the last 50 years.
    - ii. physiological hydrological niche – Selected ‘Somewhat increase’ vulnerability because of species restriction to moist to wet microhabitats, some of which are along small streams. Some occurrences may be moist because of groundwater seepage, and the relationship to precipitation isn’t clear.
  - c. Dependence on a specific disturbance regime likely to be impacted by climate change - Neutral
  - d. Dependence on ice, ice-edge, or snow-cover habitats - Neutral
- 3) Restriction to uncommon geological features or derivatives - Neutral
- 4) Reliance on interspecific interactions
  - a. Dependence on other species to generate habitat - Neutral
  - b. Dietary versatility (animals only)
  - c. Pollinator versatility (plants only) - Unknown
  - d. Dependence on other species for propagule dispersal – Neutral (assumed)
  - e. Forms part of an interspecific interaction not covered by 4a-d
- 5) Genetic factors
  - a. Measured genetic variation - Unknown
  - b. Occurrence of bottlenecks in recent evolutionary history (*use only if 5a is "unknown"*)
- 6) Phenological response to changing seasonal temperature and precipitation dynamics - Unknown