Interim Core Map Documentation for the Umtanum Desert Buckwheat (*Eriogonum codium*)

Version 1

Review Completed: April 2026

Core Map Developer: U.S Environmental Protection Agency (EPA) Office of Pesticide Programs (OPP)

Species Summary

The Umtanum Desert buckwheat (*Betula uber*; Entity ID #6490) is a threatened terrestrial plant (dicot). This species is restricted to the edges of the steep slopes on Umtanum Ridge, a wide mountain ridge in Benton County, Washington. This species relies on insect pollinators (ants, beetles, moth, butterflies, flies, and spiders) and seeds set in approximately 10% of the population. There is a designated critical habitat for this species. Additional information is provided in **Appendix 1**.

Description of Core Map

The core map for the Umtanum Desert buckwheat is based on critical habitat. The single population, which is made up of three subpopulations, falls within the critical habitat. EPA found that key habitat for this species is found outside of the critical habitat within the range. **Figure 1** depicts the interim core map for Umtanum Desert buckwheat. This core map represents approximately 344 acres.

The Umtanum Desert buckwheat plant occupies exclusively lithosol soils and areas with hot dry summers and cold winters in semi-arid shrub steppes which is captured in the species' designated critical habitat. This species also occurs at elevations between 329 m (1,080 ft) and 390 m (1,280 ft). Landcover categories within the core map area are included in **Table 1**. Landcover within the core map is predominately grassland/herbaceous and scrub/shrub, which is consistent with the habitat of this species.

The core map developed for the Umtanum Desert buckwheat is considered interim. This core map will be used to develop pesticide use limitation areas (PULAs) that include the Umtanum Desert buckwheat This core map incorporates information developed by the U.S Fish and Wildlife Service (FWS) and made available to the public; however, the core map has not been formally reviewed by FWS. This interim core map may be revised in the future to incorporate expert feedback from FWS. This interim core map has a "limited" (2) best professional classification because it consists of the species' critical habitat without additions of subtractions. However, EPA did limit the core map only to designated critical habitat based on interpretation of FWS documentation. This core map does not replace or revise any range or designated critical habitat developed by FWS for this species.

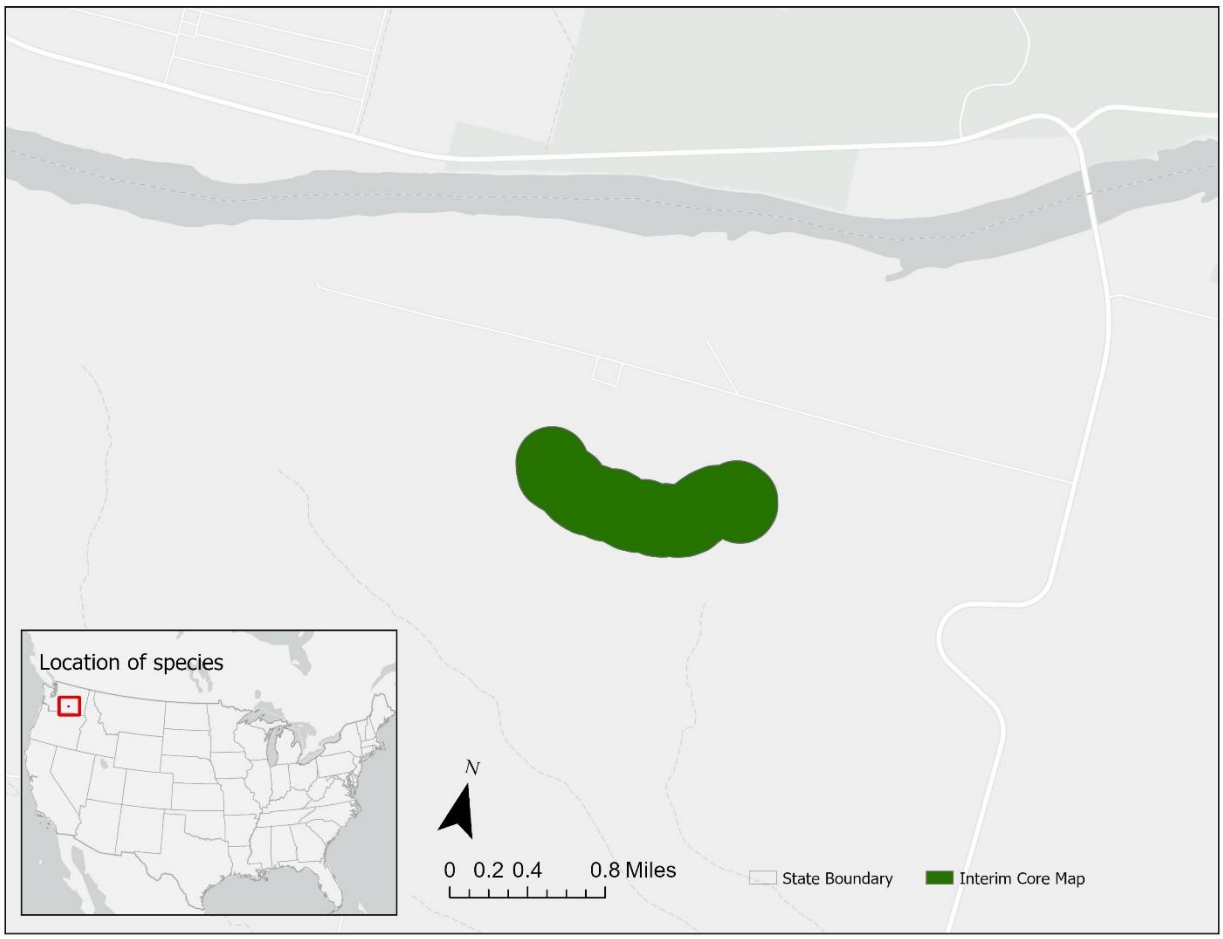

Figure 1. Interim core map for the Umtanum Desert buckwheat. The total acreage of the interim core map is approximately 344 acres.

Table 1. Percentage of Interim Core Map Represented by NLCD[2] Land Covers and Associated Example Pesticide Use Sites/Types.

Example pesticide use sites/types	NLCD Landcover (Value)	% of core map represented by landcover
Invasive Species Control	Open water (11)	1%
Invasive Species Control	Grassland/herbaceous (71)	65%
Invasive Species Control	Scrub/shrub (52)	32%
Invasive Species Control	Barren land (rock/sand/clay; 31)	2%
Total Acres	**Interim Core Map Acres**	**~344 acres**

Evaluation of Known Location Information

There are four datasets with known location information for this species:

- Descriptions of locations provided by FWS
- Occurrence locations included in iNaturalist
- Occurrence locations included in the Global Biodiversity Information Facility (GBIF)
- Occurrence locations included in NatureServe

EPA evaluated these sets of data to inform or support the core map. FWS provided the most refined descriptions of the occurrence information and confirmed that all known locations of extant populations are located within the critical habitat. iNaturalist has 13 research grade observations which, when accounting for coordinate obscuration by iNaturalist to protect geospatial privacy, are consistent with the species' range near Umtanum Ridge. GBIF's occurrence data consisted of 12 human observations that had also been accounted for in iNaturalist. NatureServe included three documented areas that were consistent with the location of the species range. **Appendix 1** includes more information on the available known location information.

Approach Used to Create Core Map

The core map was developed using the "Process EPA Uses to Develop Core Maps for Draft Pesticide Use Limitation Areas for Species Listed by the U.S. Fish & Wildlife Service (FWS) and their Designated Critical Habitats[3]" (referred to as "the process"). This core map was developed by EPA using the 4 steps described in the process document:

1. Compile available information for a species
2. Identify core map type
3. Develop the core map for the species
4. Document the core map

For Step 1, EPA compiled available information for the Umtanum Desert buckwheat from FWS, as well as observation information available from various publicly available sources (including iNaturalist, GBIF, and NatureServe). The information compiled for the Umtanum Desert buckwheat is included in **Appendix 1**. Influential information that impacted the development of the core map included:

- Current existing population occurs in a location consistent with the critical habitat.
- The species' critical habitat is highly refined.

For step 2, EPA used the compiled information to identify the core map type, including the species range, critical habitat, and known location information. EPA compared known location data to the range and critical habitat and found that the FWS known locations of currently existing (extant) populations are consistent with the location of the designated critical habitat. Other locations containing suitable habitat have been intensely searched and no additional individuals or populations have been found. The species range is much larger than the areas where known locations occur. Based on this information, EPA used the designated critical habitat as the core map.

Discussion of Approaches and Data that were Considered but not Included in Core Map

EPA did not explore approaches other than those described in this documentation.

Appendix 1. Information Compiled for Species

1. **Recent FWS Documents**
   - Recovery Plan for Umtanum Desert Buckwheat (Eriogonum codium) – 2022
   - Umtanum desert buckwheat 5-Year Review 2021
   - Designation of Critical Habitat for Eriogonum codium (Umtanum Desert Buckwheat) and Physaria douglasii subsp. Tuplashensis (White Bluffs Bladderpod); Final Rule – Apr 2013
   - Threatened Status for Eriogonum codium (Umtanum Desert Buckwheat) and Physaria douglasii subsp. Tuplashensis (White Bluffs Bladderpod) and Designation of Critical Habitat – Dec 2013
   - https://www.fws.gov/species/umtanum-desert-buckwheat-eriogonum-codium

2. **Background Information on Species**
   - **Status:** Federally listed as threatened in 2013 (Recovery Plan 2022)
   - **Taxonomy:** FWS identifies the Umtanum Desert buckwheat as a long-lived perennial plant belonging to the Polygonaceae (Knotweed/Buckwheat) family (https://www.fws.gov/species/umtanum-desert-buckwheat-eriogonum-codium; Recovery Plan 2022) .
   - **Resiliency:** Low
     "The species has low resiliency mainly due to the poor condition of its habitat and demographic factors such as invasive species abundance and low recruitment."
   - **Redundancy:** Non-existent
     "There is only one population, so redundancy is non-existent."
   - **Representation:** Low
     "The species is a narrow endemic occupying a small area with little ecological differentiation and most likely has little genetic diversity resulting in a low representation."
   - **Habitat Description:**
     - "It is found exclusively on lithosol soils (Recovery Plan 2022)."
       - Lithosol is a "term describing the well-drained, shallow, generally stony soils over bedrock, and talus slopes associated with eroding outcrops and cliffs (Critical Habitat Apr 2013)."
     - "In addition to lithosol soils, hot dry summers and cold winters in semi-arid shrub steppe are the assumed primary habitat and environment requirements for the species (Recovery Plan 2022)."
     - "Umtanum desert buckwheat occurs at elevations between 329 m (1,080 ft) and 390 m (1,280 ft) on a flat gently sloping substrates that generally face north (Recovery Plan 2022)."

   - **Pollinator/Reproduction:**

    - "A variety of insect pollinators were observed on Umtanum desert buckwheat flowers, including ants, beetles, flies, spiders, moths, and butterflies (Critical Habitat Apr 2013."
    - Based on a pollinator exclusion study, the species is probably capable of at least limited amounts of self-pollination (Critical Habitat Apr 2013."
    - "Seed set occurs in approximately 10 percent of flowers observed (Critical Habitat Apr 2013)."
- **Relevant Pesticide Use Sites:**
  No relevant information.
- **Threats:**
  The most significant threats to the Umtanum Desert buckwheat are wildfires, invasive species, climate change, a narrow geographic distribution, a declining population, and low recruitment.
- **Recovery Criteria/Objectives (2022 Recovery Plan):**
    - **Objective** – "Manage habitat and threats to enhance and establish resilient and self-sustaining populations that conserve existing genetic diversity in the species' natural geographic range. Populations will not be substantially threatened by wildlife, nonnative plant species, or threat."
    - **Criteria #1** – "At least six Umtanum desert buckwheat populations exist in suitable habitat that are managed to achieve the long-term conservation of the species. These populations can be comprised of newly discovered populations or those established through reintroductions."
    - **Criteria #2** – "Each population will be self-sustaining with an average population size of at least 1,200 adult plants for a period of at least 15 years."
    - **Criteria #3** – "Populations that contribute to Recovery Criterion 1 will be in a matrix of native shrub-steppe habitat within the effective pollinator distance and threats are being managed by partners with long-term management commitments."
    - **Criteria #4** – "Populations that contribute to Recovery Criterion 1 are adequately protected from wildfire. To minimize fuels that may increase wildfire frequency and severity, all populations will be located in shrub-steppe habitat with less than 15 percent total cover with less than 1 percent cover of nonnative or invasive plant species."
    - **Criteria #5** – "Establish, store, and maintain seed collections at seed banks to support augmentation and reintroduction efforts in accordance with currently accepted standards (see CPC 2019) and to provide for ex-situ conservation in the event the species becomes extinct in the wild. A target of 3,000 viable seeds per subpopulation (9,000 total) from at least 50 maternal lines should be stored at a minimum of two Center for Plant Conservation-approved seed storage facilities."
- **Recovery Actions (2022 Recovery Plan):**
    - "Protect the extant population and reduce wildfire risk. Implement habitat restoration activities to reduce the abundance of invasive plant species."
    - "Preserve and augment the extant population by connecting subpopulations and isolated individuals to increase reproductive rates."
    - "Identify potentially suitable habitat sites and survey for additional Umtanum desert buckwheat populations."
    - "In areas of suitable habitat, establish and/or identify at least five additional populations to increase the species' redundancy, representation, and resiliency."

- “Monitor the rangewide population, track trends, and assess threats. Implement a rangewide monitoring protocol and determine population trend. Develop and implement a detailed monitoring plan.”
- “Study the species’ ecology and breeding system, factors limiting reproductive success, the effect of climate change, and the response to management actions to guide conservation efforts.”
- “Promote awareness and conservation of Umtanum desert buckwheat throughout its geographic range.”

3. **Description of Species Range**
   - “The only known population of Umtanum desert buckwheat occurs along the edges of the steep slopes on Umtanum Ridge, a wide mountain ridge in Benton County, Washington (Critical Habitat Apr 2013).”
   - “It has a discontinuous distribution along a narrow (25 – 150 m (82 – 492 ft) wide by 1.6 km (1 mi) long) portion of the ridge (Critical Habitat Apr 2013).”
   - “It is likely the species has been confined to this location during at least the last 150 years, as annual growth ring counts revealed individual ages in excess of 100 years (Critical Habitat Apr 2013).”

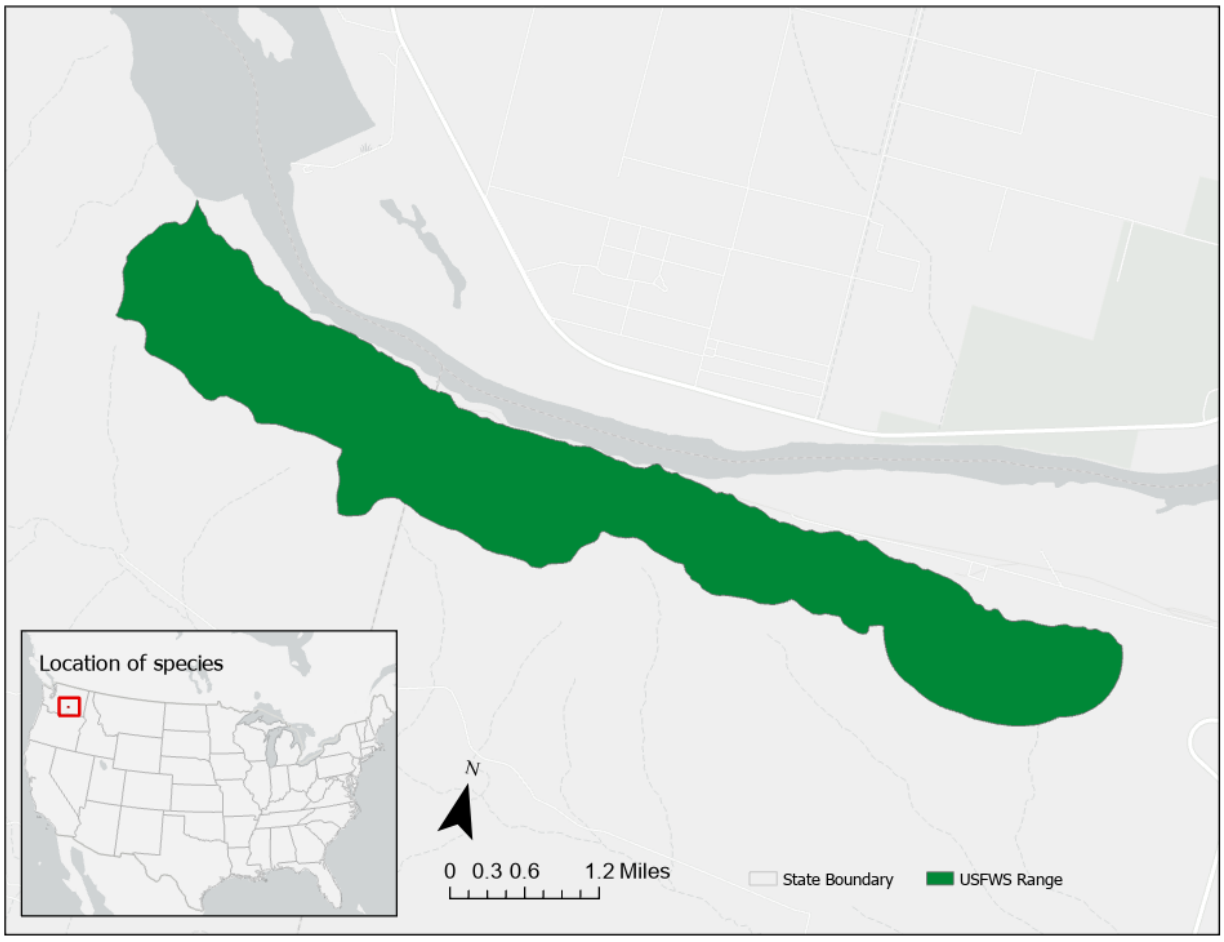

Figure A1-1. FWS range for the Umtanum Desert buckwheat.

4. **Critical Habitat**
    - The Umtanum Desert buckwheat critical habitat designation document was revised in December 2013, but there were no changes made to the 344 acres (139 hectares) decided in April 2013 (Critical Habitat Apr 2013).
    - The Umtanum Desert buckwheat is highly restricted in its distribution and its critical habitat is located on a portion of the Umtanum Ridge all on federally owned land (Critical Habitat Apr 2013).
        - 14.2 acres (5.7 hectares) is occupied by the species and 329.9 acres (133.5 hectares) is unoccupied habitat surround the species.
    - "Other locations containing apparently suitable habitat have been intensively searched since the species' discovery in 1995, and no additional individuals or populations have been found to date (Critical Habitat Apr 2013)."

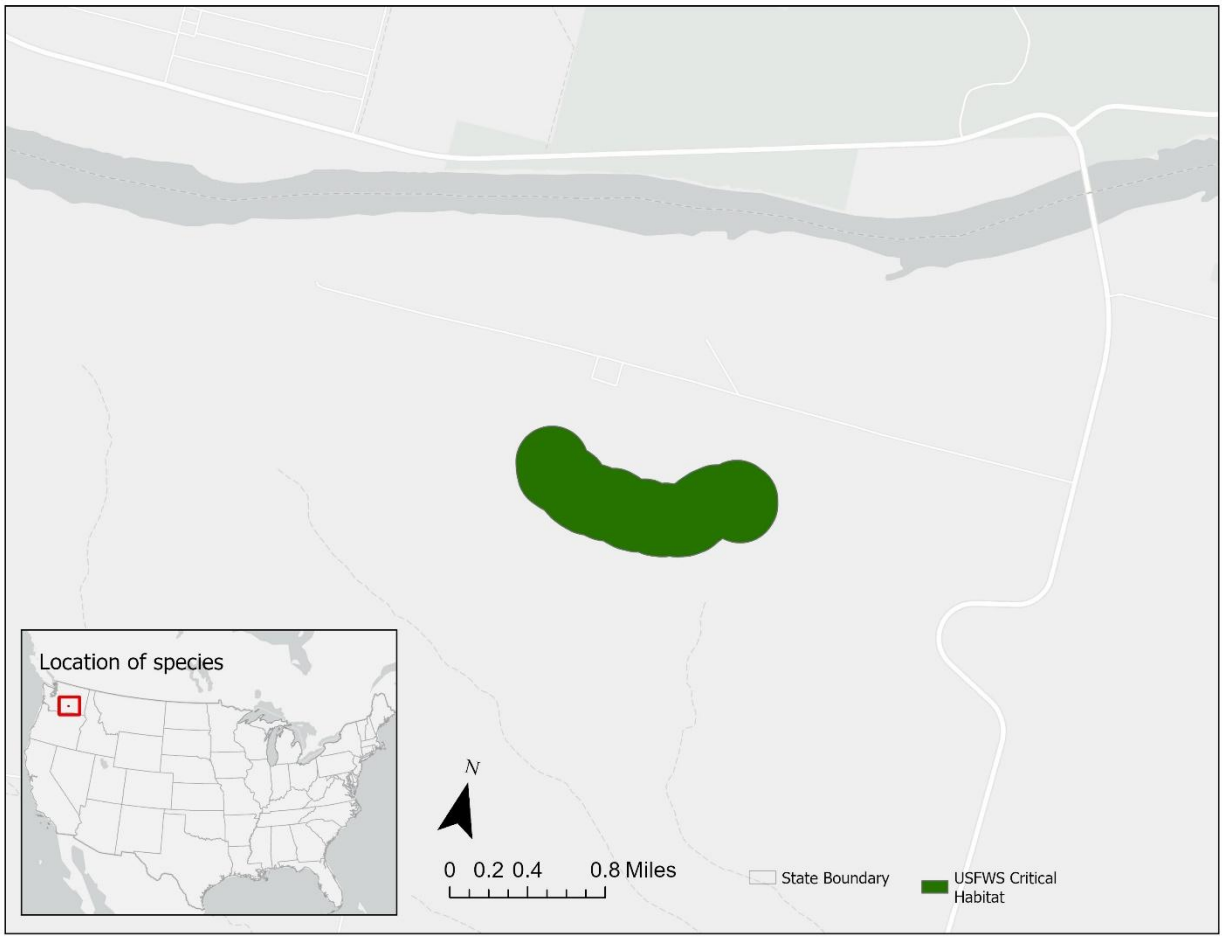

Figure A1-2. FWS designated critical habitat for the Umtanum Desert buckwheat.

5. **Known Locations**
    - **Known Locations Described in FWS Documents**
        - "This species is restricted to a small area of approximately 1.9 hectares (4.8 acres) on a narrow (25 to 150 m or 82 to 492 ft), discontinuous band on the eastern end of Umtanum Ridge in Handord Reach National Monument (Recovery Plan 2022)."

- **Occurrences Included in Public Databases**
    - EPA queried iNaturalist, GBIF, and NatureServe.
    - iNaturalist (available here) had 13 research grade observations for this species. All 11 observations are outside the range identified by FWS.
    - GBIF (available here) included 12 human observations and 1 occurrence (from 2015-2025). The human observations are included in iNaturalist and the occurrence (does not have coordinates) is from NatureServe. 9 of the GBIF points are outside the range identified by FWS.
    - Occurrence in NatureServe were consistent with other occurrence data (linked here) for 3 documented distributions that are within the FWS range.

Given the positional accuracy of the public occurrence information, these data sets do not support expanding the core map beyond the outer extent of the species range.

Appendix 2. GIS Data Review and Method to Develop Core Map

This core map was created based on the species critical habitat. Based on FWS, the Umtanum Desert buckwheat (*Eriogonum codium*) occurs along the edges of the steep slopes on Umtanum Ridge, a wide mountain ridge in Benton County, Washington.

Dataset References and Software

- **ArcGIS Pro**
    - Software used: ArcGIS Pro 3.5.2

- **FWS Species Critical Habitat**
    - From ECOS (https://ecos.fws.gov/ecp/species/3627)
    - Last updated on 12/20/2013